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Safet Kurtovic[*], Sead Talovic[†] and Lejla Dacić[†]

PANEL COINTEGRATION ANALYSIS OF FOREIGN DIRECT INVESTMENTS AND AVERAGE NET WAGES: THE CASE OF FOUR WESTERN BALKAN COUNTRIES

Abstract

This paper studies the relationship between foreign direct investment (FDI) and average net wages (ANW) in Bosnia and Herzegovina, Montenegro, Macedonia and Serbia. The analysis encompasses data for the time series 2007-2014. For this purpose, we have used the econometric technique called panel data analysis. Our research has shown that, in the case of Panel Unit Root Test, Panel Cointegration Test, Dynamic Ordinary Least Squares (DOLS), Fully Modified Ordinary Least Squares (FMOLS), Vector Error Correction Estimates, Impulse Response Function and Variance Decomposition Test, there is a statistical significance or long-term relationship between FDI and ANW; however, no statistical significance has been registered in the case of Granger Causality Test.

JEL CLASSIFICATION: F2, F23, F230.
KEYWORDS: FDI, NET WAGES, COINTEGRATION, CAUSALITY, LONG-TERM EFFECT.

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1. Introduction

Simultaneously with the liberalization of economies in transition countries, foreign companies - via FDI - introduce new technologies, knowledge, skills and organizational business processes, increase productivity, get access to markets, increase market competitiveness of products, get cheaper access to physical capital, possess ability to keep the best workers, reputation and political influence (Bernard and Sjöholm 2003; Harrison and Scorse 2005; Decreuse and Maarek 2013).

FDI inflow is affected by the economic competitiveness factors such as workforce availability, wage levels, transferability, managerial skills and workforce skills, access to inputs, infrastructure, supplier base, technology and financial support. Among the stated factors, some of the most important factors in the process of attracting FDI are wages with the addition of compatible factors such as skills and technical efficiency. FDI and wages are two significant interconnected variables. That is best illustrated by the following two relations. First wages and then FDI, which means that wages are able to affect FDI inflow. First FDI and then wages, meaning that FDI generate change in the wage levels. Low wages affect the attraction of FDI, while high FDI inflow generates increase in wages (Mutascu and Fleischer, 2010).

By means of FDI, foreign companies ensure higher wages than the local companies and thus affect the growth of average net wages in the host country. The following are the reasons why foreign companies pay higher wages than the local companies (Heyman *et al.* 2007). Firstly, foreign companies pay higher wages as a result of greater variability in labor demand and more frequent failures of foreign companies (Fabbri *et al.* 2003; Heyman *et al.* 2007; Javorcik 2014). Secondly, higher wages in foreign companies are not only determined on the basis of certain characteristics of workers such as education and certain skills, but there are other reasons that are taken into consideration. Primarily, foreign companies are forced to pay higher wages due to unfavorable legislation in the host country; in an attempt to reduce fluctuation of workforce, foreign companies invest more in training than the local companies and thus prevent the loss of their technological advantage that is prevent the employees from going over to the

local competition: after a successful training, wages grow because employees' productivity increases that is an employee's wage will be equivalent to his/her marginal productivity (Almeida 2003; Almeida and Lince de Faria 2014). As long as productivity is significant, wages will grow in response to increase in FDI. Then, due to poor knowledge of the local labor market, foreign companies pay higher wages to attract the best workers (Lipsey and Sjoholm 2001; Lipsey 2002; De Velde and Morrissey 2002; Ruane and Uğur 2004). Apart from this, wages are higher in foreign companies because these companies, after the acquisition process, increase wages above the average wage level in the host country. They do this because, in the process of acquisition, foreign companies choose the companies that have the best educated staff and are most similar to them (Almeida 2004).

Certain studies have shown that there is a difference between wages in underdeveloped and developed countries. Development of technological innovations and trade is named as the main cause of this (Feenstra and Hanson 1995; Feenstra and Hanson 2003; Figini and Görg 2006; Driffield *et al.* 2010). In the South-East European countries, average net wage in foreign companies is 10 percent to 70 percent higher than in local companies (Heyman *et al*. 2007; Bircan 2013; Javorcik 2014). Principally, average net wages are almost 50 percent higher in foreign companies than in local companies (Arnal and Hijzen 2008). In certain countries of Latin America, average net wages in foreign companies are 30 percent higher than in local companies. In addition, many companies share their gained profit with their employees. For example, the Law on Cross-Border Profit Sharing in Mexico obligates foreign companies to share with Mexican workers over 10 percent of the total profit gained worldwide and not only in Mexico (Budd *et al.* 2002).

During 1990's, the Western Balkan countries were going through a very difficult development phase including wars and democratic and transitional reforms that had not progressed as planned or provided significant results. At this time, the presence of FDI was negligible. After 2000, significant changes take place in transitional processes and this resulted in greater FDI inflow and increase in ANW. When it comes to the total amount of worldwide investment in the period 1997-2007, 68.32 percent of it pertained to developed economies, 29.27 percent pertained to developing countries and

only 2.39 percent to the countries of the South-East Europe (SEE) and Western Balkans (WB) (Josifidis *et al.* 2011). The share of SEE countries in the total inflow of FDI to transition economies increased from 9.4 percent in 2000 to 14.7 percent in 2010. The share of WB countries in the total inflow of FDI amounted to 5.8 percent in 2010 Estrin and Uvalic (2013). FDI had been significantly growing in WB countries up until 2008. Following the global economic crisis in 2008, inflow of FDI dropped significantly. FDI were reduced from 40 percent to 70 percent in most of the WB countries (Uvalic 2013; Kurtovic *et al.* 2015). B&H and Macedonia saw a drastic drop in FDI inflow, while Montenegro and Serbia registered certain reduction in FDI inflow, albeit not as significant as in the first two countries. Based on the amount of FDI inflow, Serbia is considered a leader in the region and is followed by Montenegro. Total FDI for all four WB countries from 2007 to 2014 amounted to 21.804 bln euros. Considered individually, Serbia had the greatest FDI inflow amounting to 9.947 bln euros, succeeded by Montenegro with 5.893 bln euros, B&H 3.775 bln euros and Macedonia 2.209 bln euros. On the other hand, average net wages in all four WB countries increased negligibly despite numerous oscillations in FDI inflow. According to economists, if WB countries want to attract more FDI, they need to have low wages to be competitive. Of course, low wages are supposed to attract more FDI; however, increase in FDI brings about increase in wages.

Accordingly, this study supports the previously carried out research showing that FDI and ANW have a long-term mutual relationship. This paper has studied cointegration relationship between FDI and ANW in the time period 2007-2014 in four WB countries. This is a very turbulent period in which the analyzed countries faced serious economic problems such as drop in GDP growth, increase in unemployment rate, drop in FDI inflow, etc. This research has shown that there is a strong integration relationship between analyzed variables in the four WB countries. In addition, we have concluded that there is a long-term cointegration between FDI and ANW, that is that FDI have a long-term effect on ANW, and vice-versa. We have also concluded that increase in FDI inflow brings about increase in ANW, while increase in ANW causes reduction in FDI inflow in the four WB countries. Finally, we have determined that increase in ANW will result in increased FDI inflow in the future, while increase in FDI inflow will not

drastically increase ANW in Bosnia and Herzegovina, Montenegro, Macedonia and Serbia.

The main objective of this paper is to study the following: integration between FDI and ANW; existence of a long-term cointegration between FDI and ANW; whether increase in FDI inflow brings about increase in ANW, and vice-versa; whether there is a short-term or long-term relationship between FDI and ANW; to foresee whether there will be an increase in ANW in the future as a result of increase in FDI inflow, and vice-versa.

The paper consists of sections as follows. Section 2 provides an overview of literature or research closely related to this paper's research subject; Section 3 describes econometric techniques and databases used in the research; Section 4 provides the empirical results of the research and, finally, Section 5 contains the Conclusion.

2. Literature Review

Numerous studies explored the relationship between FDI and ANW. In the case of Mexico, Feenstra and Hanson (1995) concluded that there was a strong presence of FDI in the form of outsourcing that caused an increase in demand for skilled workers, which in turn led to increase in wages. In the case of Mexico, Venezuela and USA, Aitken *et al.* (1995) determined that there was a strong link between FDI and high wages in foreign-owned companies. Analyzing the case of Indonesia, Lipsey and Sjoholm (2001) came to the conclusion that foreign companies pay higher wages than the local companies because foreign companies have better characteristics and establish a more significant presence in the leading industries. Using the example of the Central and Eastern European countries, Faggio (2003) concluded that in Bulgaria and Romania presence of FDI did not have a positive effect on the increase in wages, while in Poland it did. Lipsey (2002) determined that foreign companies paid higher wages than the local companies due to several reasons. Namely, foreign companies are bigger, they have better educated and skilled workers, they have capital-intensive production and they are also more productive and more strongly involved in trade flows in comparison to local companies. Bernard and Sjöholm (2003) studied Indonesia's manufacturing sector and found that foreign-owned

companies have 20 percent higher probability to shut down than the local companies. Increased rate of foreign companies' failure is linked with substantial increase in wages, which leads to decrease in companies' profit that is to their shutdown or withdrawal from the market. In the case of Portugal, Almeida (2004) determined that foreign companies employed better educated workers and paid them higher wages than the local companies. Apart from this, foreign companies took over local companies similar to them; however, after the takeover, education and training of workers would remain at the same level as it was prior to takeover. Analyzing the case of Portugal, Martins (2004) found that foreign companies paid higher wage premiums than the local companies. This was caused by the lack of competition in the labor market and insufficient knowledge of employee structure.

In the case of Poland, Goh and Javorcik (2005) concluded that wages grew in the foreign companies belonging to less protected industries. This happened because, when hiring, the companies were taking into consideration workers' characteristics, education level, sex, etc. In the case of Sweden, Heyman *et al.* (2007) determined that foreign companies paid higher wages than the local companies. Foreign companies paid higher wages than the local companies without branches abroad; however, they paid lower wages than the local multinational companies. When it comes to greenfield investment, foreign companies paid higher wages, while reduction in wages was registered in the case of takeovers. In the case of China, Hale and Long (2007) found that FDI had a positive effect on increase in wages of educated workers, while they negatively affected production workers. This led to rural-urban income inequality. Driffield *et al.* (2010) pointed out that increase in industrial concentration led to a greater wage gap, while in the case of greater market share this gap was smaller. FDI help reduce income inequality in the areas that a given country wants to develop. Du Caju *et al.* (2011) studied the effect of international trade on wages in small open economies. Countries with higher export rates in industrial branches saw an increase in wages as compared to the countries with higher import rates. High import rate in a low income country leads to intra-industrial wage gap Giesen and Schwarz (2011) agree that attracting FDI is affected by wages and operating costs. Presence of FDI causes increase in wages in the host country, that is leads to reduced production reallocation. According to this,

foreign companies or exporters see benefits, while local companies are burdened with high labor costs. Bircan (2013) studied the case of Turkey and concluded that foreign companies paid higher wages than the local companies in line with the increase in ownership share in a local company. In companies where a foreign company owned up to 10 percent of the total assets, wages were 4 percent higher for unskilled workers.

3. Methodology and data

Our analysis applies panel cointegration to study long-term relationship between FDI and ANW in B&H, Montenegro, Macedonia and Serbia. It uses cross-section panel data for the time period 2007 - 2014. The data was taken from the database of the Central Bank of B&H, Agency for Statistics of B&H, National Bank of Serbia, Statistical Office of the Republic of Serbia, Central Bank of Montenegro, Statistical Office of Montenegro, National Bank of the FYR of Macedonia and State Statistical Office of the FYR of Macedonia. Amounts of variables are presented in euros. All variables used are natural logarithms.

Within the panel cointegration analysis we defined average net wage as the dependent variable, while foreign direct investments represent the independent variable. We chose the aforementioned variables based on the relevance of their mutual long-term relationship. Our empirical analysis comprises the following steps. Firstly, we introduced the regression equation. Secondly, we provided theoretical explanation for Panel Unit Root Test, Panel Cointegration Test, Dynamic Ordinary Least Squares (DOLS), Fully Modified Ordinary Least Squares (FMOLS), Vector Error Correction Estimates, Granger Causality Test, Impulse Response Function and Variance Decomposition Test. Thirdly, we presented the research results.

The starting point for our study was the following regression equation:

$$lnAW_{it} = \beta_0 + \beta_1 lnFDI_{it} +, \dots, +\varepsilon_{it} \quad (1)$$

where AW_{it} – average net wage in country i in the time period t; FDI_{it} – foreign direct investments in county i in the time period t, and ε_{it} is a residual.

The panel unit root tests are the Levin, Lin and Chu (LLC), Im, Peseran and Shin (IPS), Fisher-ADF and Fisher-PP and Hadri test. *LLC* (2002) test argued that individual unit root tests have limited power against alternative hypotheses with highly persistent deviations from equilibrium. This is particularly severe in small samples. LLC suggest a more powerful panel unit root test than performing individual unit root tests for each cross-section. The null hypothesis is that each individual time series contains a unit root against the alternative that each time series is stationary (Baltagi, 2005). LLC found that the panel approach substantially increases power in finite samples when compared with the single-equation ADF test. Based on the ADF specification, LLC proposed a panel-based version of equation (2) that restricts $\hat{\beta}_i$ by keeping it identical across cross-sectional regions as follows (Ho and Huang, 2009)

$$\Delta X_{i,t} = \alpha_i + \beta X_{i,t-1} + \sum_{j=1}^{k} \theta_{ij} \Delta X_{i,t-j} + \varepsilon_{i,t} \quad (2)$$

where Δ is the first difference operator, X_{it} is the real provincial revenues and expenditures, $\varepsilon_{i,t}$ is a white noise disturbance with a variance of σ^2, $t = 1,2,\dots,T$ indexes time periods, and $i = 1,2,\dots,N$ indexes cross-sectional regions. LLC tested the null hypothesis for the existence of a unit root (that is the series is non stationary) with $\beta_1 = \beta_2 = \cdots = \beta = 0$ against the one-side alternative of having no unit root with $\beta_1 = \beta_2 = \cdots = \beta < 0$, based on the following test statistic

$$t_\beta = \frac{\hat{\beta}}{se(\hat{\beta})} \quad (3)$$

where, $\hat{\beta}$ is the OLS estimate of β in equation (1), and $se(\hat{\beta})$ is its standard error. It is worth noting that the LLC test requires a specification of the number of lags used in each cross-section ADF regression, and that one must specify the exogenous variables used in the testing equations.

Im, Pesaran and Shin (2003) test allows for heterogeneous coefficient of $y_{it-1}$and proposes an alternative testing procedure based on the augmented DF tests when u_{it} is serially correlated with different serial correlation

properties across cross-sectional units, that is $u_{it} = \sum_{j}^{pi} = 1\psi_{it} u_{it-j} + \varepsilon_{it}$. Substituting this u_{it} in equation (1), we get (Chen, 2013)

$$y_{it} = \rho_i y_{it-1} + \sum_{j=1}^{\rho i} \psi_{it}\, u_{it-j} + \alpha_{mi} + \varepsilon_{it}, i = 1, \dots, N, t = 1, \dots, T \quad (4)$$

The null hypothesis is $H_0: \rho_i = 1$ for all i against the alternative hypothesis $H_1: \rho_i < 1$ for at least i. The $T - statistic$ suggested by IPS is defined as

$$\bar{t} = \frac{1}{N} \sum_{i=1}^{N} t_{pi} \quad (5)$$

where $t_{\hat{\rho} i}$ is the individual $t - statistic$ of testing $H_0: \rho_i = 1$. It is known that for a fixed N,

$$t_{pi} \Rightarrow \frac{\varepsilon_0^1 W_{iZ} dW_{iZ}}{\left[\varepsilon_0^1 W_{iZ}^2\right]^{1/2}} = t_{iT} \quad (6)$$

as $T \to \infty$. IPS assumes that t_{iT} has finite means and variances. Then

$$\frac{\sqrt{N\left(\frac{1}{N}\sum_{i=1}^{N} t_{iT} - E\left[\frac{t_{iT}}{\rho_i}=1\right]\right)}}{\sqrt{var}\left[\frac{t_{iT}}{p_i}=1\right]} \Rightarrow N(0,1) \quad (7)$$

as $N \to \infty$ by the Lindeber-Levy central limit theorem or limitations. Hence, the $t - statistic$ of IPS has the limiting distribution as

$$t_{IPS} = \frac{\sqrt{N(\hat{t} - E[t_{iT}/\rho_i=1])}}{\sqrt{var}[t_{iT}/\rho_i=1]} \Rightarrow N(0,1) \quad (8)$$

as T → ∞ followed by N → ∞, sequentially. The values of E $[t_{iT}/\rho_i = 1]$ and $\sqrt{\text{var}}[t_{iT}/\rho_i = 1]$ have been computed by IPS via simulations for different values of T and p_i's (Baltagi, 2005).

Fisher-ADF and Fisher-PP. Augmented Dickey Fuller unit root test: Let us consider the p order autoregressive process (Morshed 2010)

$$y_t = \alpha_0 + \alpha_1 y_{t-1} + \alpha_1 y_{t-1} + \cdots + \alpha_{p-2} y_{t-p+2} + \alpha_{p-1} y_{t-p+1} + \alpha_p y_{t-p} + \varepsilon_t \quad (9)$$

adding and subtracting $\alpha_p y_{t-p+1}$ to obtain

$$y_t = \alpha_0 + \alpha_1 y_{t-1} + \alpha_2 y_{t-2} + \cdots + \alpha_{p-2} y_{t-p+2} + (\alpha_{p-1}+\alpha_p) y_{t-p+1} + \alpha_p \Delta y_{t-p+1} + \varepsilon_t \quad (10)$$

Next, adding and subtracting $(\alpha_{p-1}+\alpha_p) y_{t-p+2}$ to obtain

$$y_t = \alpha_0 + \alpha_1 y_{t-1} + \alpha_2 y_{t-2} + \cdots - (\alpha_{p-1}+\alpha_p) \Delta y_{t-p+2} - \alpha_p \Delta y_{t-p+1} + \varepsilon_t \quad (11)$$

Continuing in this fashion, we obtain

$$\Delta y_t = \alpha_0 + \gamma y_{t-1} + \sum_{i=2}^{p} \beta_i \, \Delta y_{t-i+1} + \varepsilon_t \quad (12)$$

where $\gamma = -(1 - \sum_{i=1}^{p} \alpha_i)$ and $\beta_i = -\sum_{j=i}^{p} \alpha_j$, for $i = 1,2, \ldots, p-1$.

The null and alternative hypotheses of the Augumented Dickey-Fuller t-test are $H_0: \gamma = 0$, $H_0: \gamma < 0$. We can test for the presence of a unit root using the Dickey-Fuller t-test

$$t_{\hat{\gamma}} = \frac{\hat{\gamma}-1}{Se(\hat{\gamma})} \quad (13)$$

This statistic does not follow the conventional student's t-distribution. Critical values are calculated by Dickey and Fuller and depend on whether there is an intercept, deterministic trend or intercept and deterministic trend.

Hadri (2000) *test* is based on the null hypothesis of stationarity. This is an extension test of the stationarity test developed in the time series context (Kwiatkowski *et al.* 1992). The Hadri test is based on the residuals from the individual OLS regression on a single constant, or on a constant and a trend. Given that both constant term and trend are included, the following equation is estimated (Ho and Huang 2009)

$$y_{it} = \alpha_{i2} + \lambda_i t + \varepsilon_{it} \quad (14)$$

where $\hat{\varepsilon}$ is the residual from the regression, and the LM statistics is given as follows,

$$LM_1 = \frac{1}{N}\left(\frac{\sum_{i-1}^{N}\sum_t S_i(t)^2}{T^2}\right)\hat{f}_0) \tag{15}$$

Allowing for heteroskedasticity across cross-sections, we have an alternative LM statistics,

$$LM_2 = \frac{1}{N}\left(\frac{\sum_{i-1}^{N}\sum_t S_i(t)^2}{T^2}\right)\hat{f}_{i0}) \tag{16}$$

where, $S_i(t) = \sum_{s=1}^{t}\hat{\varepsilon}_{it}$ is the cumulative sum of the regression residual and $\hat{f}_0 = \sum_{s=1}^{N} f_{i0}/\mathrm{N}$ is the average of the individual estimators of the residual spectrum at a frequency of zero. Hadri shows that under mild assumptions,

$$Z = \frac{\sqrt{N(LM-\psi)}}{\xi} \rightarrow N(0,1) \tag{17}$$

The Hadri panel unit root test only requires the specification of the form of the OLS regressions. The results will be two Z-statistic values, one based on LM_1, with the associated homoskedasticity assumption, and the other based on LM_2, wich is heteroskedasticity consistent.

Pedroni (2004) panel cointegration test is residual-based and can be regarded as panel equivalent of the Engle-Granger test for cointegration commonly applied in time series analysis. Pedroni proposes seven tests, of which three are group-mean tests and the remaining four are pooled tests (with different alternative hypotheses) (Hossfeld 2010).

The starting point of residual-based panel cointegration test statistics is the computation of the residuals of the hypothesized cointegrating regression (Karaman 2004)

$$y_{i,t} = \alpha_i + \beta_{1,i}x_{1i,t} + \beta_{2,i}x_{2i,t} + \beta_{M,i}x_{Mi,t} + e_{i,t} \tag{18}$$

$t = 1, \dots, T; i = 1, \dots, N; m = 1, \dots, M$

where T is the number of observations over time, N denotes the number of individual members in the panel, and M is the number of independent variables. It is assumed here that the slope coefficients $\beta_{1i}, \ldots, \beta_{Mi}$, and the member specific intercept α_i can vary across each cross-section

$$\Delta y_{i,t} = b_{1,i}\Delta \mathrm{x}_{1,i,t} + \beta_{2,i}\Delta x_{2i,t} + \cdots + b_{Mi}\Delta x_{Mi,t} + \pi_{i,t} \tag{19}$$

For panel-$p$and group-ρ statistics estimate the regression $\hat{e}_{i,t} = \hat{\gamma}_i \hat{e}_{i,t-1} + \hat{u}_{i,t}$ using the residuals $\hat{e}_{i,t}$ from the cointegration regression. Panel cointegration statistic includes following statistic: panel-v (variance ratio statistic), panel-$rho\ statistic$ (non-parametric Phillips and Perron $rho\ statistic$), panel – PP statistic (non-parametric Phillips and Perron type $t-statistic$), panel $-ADF$ statistic (augmented Dickey-Fuller type $t-statistic$), group $-rho$ statistic (group $p-statistic$) and group – PPstatistic (Phillips and Perron type $p-statistic$). Following Pedroni, the heterogeneous pooled panel cointegration test statistics are calculated as follows (Ho and Huang 2009)

$$\text{Panel v statistic} = \left(\sum_{\mathrm{i=1}}^{\mathrm{N}} \sum_{\mathrm{t=1}}^{\mathrm{T}} \hat{\mathrm{L}}_{11\mathrm{i}}^{-2}\, \hat{\mathrm{e}}_{\mathrm{i,t-1}}^{2}\right)^{-1} \tag{20}$$

$$\text{Panel rho statistic} = \left(\sum_{\mathrm{i=1}}^{\mathrm{N}} \sum_{\mathrm{t=1}}^{\mathrm{T}} \hat{\mathrm{L}}_{11\mathrm{i}}^{-2}\, \hat{\mathrm{e}}_{\mathrm{i,t-1}}^{2}\right)^{-1} \sum_{\mathrm{i=1}}^{\mathrm{N}} \sum_{\mathrm{r=1}}^{\mathrm{T}} \hat{\mathrm{L}}_{11\mathrm{i}} \left(\hat{\mathrm{e}}_{\mathrm{i,t-1}} \Delta \hat{\mathrm{e}}_{\mathrm{it}} - \hat{\lambda}_{\mathrm{i}}\right) \tag{21}$$

$$\text{Panel PP statistic} = \left(\sigma^2 \sum_{\mathrm{i=1}}^{\mathrm{N}} \sum_{\mathrm{t=1}}^{\mathrm{T}} \hat{\mathrm{L}}_{11\mathrm{i}}^{-2}\, \hat{\mathrm{e}}_{\mathrm{i,t-1}}^{2}\right)^{-1/2} \sum_{\mathrm{i=1}}^{\mathrm{N}} \sum_{\mathrm{r=1}}^{\mathrm{T}} \hat{\mathrm{L}}_{11,\mathrm{i}}^{-2} \left(\hat{\mathrm{e}}_{\mathrm{i,t-1}} \Delta \hat{\mathrm{e}}_{\mathrm{it}} - \hat{\lambda}_{\mathrm{i}}\right) \tag{22}$$

$$\text{Panel ADF statistics} = \left(\hat{\mathrm{s}}^{*2} \sum_{\mathrm{i=1}}^{\mathrm{N}} \sum_{\mathrm{t=1}}^{\mathrm{T}} \hat{\mathrm{L}}_{11\mathrm{i}}^{-2}\, \hat{\mathrm{e}}_{\mathrm{I,t-1}}^{2}\right)^{-\frac{1}{2}} \left(\sum_{\mathrm{i=1}}^{\mathrm{N}} \sum_{\mathrm{r=1}}^{\mathrm{T}} \hat{\mathrm{L}}_{11,\mathrm{i}}^{-2}\, \hat{\mathrm{e}}_{\mathrm{1,t-1}}^{*} \Delta \hat{\mathrm{e}}_{\mathrm{I,t}}^{*}\right) \tag{23}$$

The heterogeneous group mean panel cointegration test statistics are as follows

$$Group\ rho\ statistic = \sum_{i=1}^{N} \left(\sum_{i=1}^{T} \hat{e}_{i,t-1}^{2}\right)^{-1} \sum_{t=1}^{T} \left(\hat{e}_{i,t-1} \Delta \hat{e}_{i,t} - \hat{\lambda}_i\right) \tag{24}$$

$$Group\ PP\ statistic = \sum_{i=1}^{N} \left(\hat{\sigma}_i^2 \sum_{i=1}^{T} \hat{e}_{i,t-1}^{2}\right)^{-1/2} \sum_{t=1}^{T} \left(\hat{e}_{i,t-1} \Delta \hat{e}_{i,t} - \hat{\lambda}_i\right) \tag{25}$$

$$Group\ ADF\ statistic = \sum_{i=1}^{N}\left(\sum_{i=1}^{T} \hat{s}_i^{-2}\, \hat{e}_{i,t-1}^{*2}\right)^{-1/2} \sum_{t=1}^{T} \hat{e}_{i,t-1}^{*}\, \Delta\hat{e}_{i,t}^{*} \tag{26}$$

The null hypothesis of the between dimension statistics is given by $H_O: \psi_i = 1$ for all i and the alternative is $H_A: \psi_i < 1$ for all i. Pedroni shows that the panel $v - statistic$ is a one-sided test where large positive values reject the null hypothesis that means there is no cointegration. In case of other statistics when $p - value$ is smaller than 5percent, the null hypothesis is rejected (Mucuki and Demirsel 2013).

Kao (1999) test uses both DF and ADF to test for cointegation in panel as well as this test similar to the standard approach adopted in the EG-step procedures (Chaiboonsri *et al*. 2010). In the bivariate case Kao consider the following model (Morshed 2010)

$$y_{it} = \alpha_i + \beta x_{it} + \varepsilon_{it}, \quad {}_{i=1,\dots N, t=1,\dots T} \tag{27}$$

where

$$y_{it} = y_{it-1} + u_{it} \tag{28}$$

$$x_{it} = x_{it-1} + \varepsilon_{it} \tag{29}$$

α_i are the fixed effect varying across the cross-section observations, β is the slope parameter, y_{it} and x_{it} are independent random walks for all i. The residual series ε_{it} should be I (1) series. Now Kao define a long run covariance matrix of $w_{it} = (u_{it}, \varepsilon_{it})$ is given by

$$\Omega = \lim_{T\to\infty} \frac{1}{T} E\left(\sum_{t=1}^{T} w_{it}\right)\left(\sum_{t=1}^{T} w_{it}\right) = \Sigma + \Gamma + \Gamma' \equiv \begin{bmatrix} \sigma_{0u}^2 & \sigma_{0u\varepsilon} \\ \sigma_{0u\varepsilon} & \sigma_{0\varepsilon}^2 \end{bmatrix} \tag{30}$$

Where

$$\Gamma = \lim_{T\to\infty} \frac{1}{T} \sum_{k=1}^{T-1} \sum_{t=k+1}^{T} E\left(w_{it}\, w_{it}'\right) \equiv \begin{bmatrix} \Gamma_u & \Gamma_{\varepsilon u} \\ \Gamma_{\varepsilon u} & \Gamma_u \end{bmatrix} \tag{31}$$

and

$$\Sigma = \lim_{T\to\infty} \frac{1}{T} \sum_{t=1}^{T} E(w_{it}\, w_{it}') \equiv \begin{bmatrix} \sigma_u^2 & \sigma_{u\varepsilon} \\ \sigma_{u\varepsilon} & \sigma_\varepsilon^2 \end{bmatrix} \tag{32}$$

The Dickey-Fuller test can be applied to the estimated residual using

$$\hat{e}_{it} = p\hat{e}_{it-1} + \upsilon_{it} \tag{33}$$

Now the null and alternative hypothesis may be written as $H_0: p = 1$, $H_1: p < 1$. The OLS estimate of p is given by

$$\hat{p} = \frac{\sum_{i=1}^{N} \sum_{t=2}^{T} \hat{e}_{it}\hat{e}_{it-1}}{\sum_{i=1}^{N} \sum_{t=2}^{T} \hat{e}_{it-1}^2} \tag{34}$$

Further calculation for Dickey-Fuller, Kao shows the following statistics

$$DF_p = \frac{\sqrt{NT}\,(\hat{p}-1)+3\sqrt{N}}{\sqrt{51/5}} \tag{35}$$

$$DF_t = \sqrt{\frac{5t_p}{4}} + \sqrt{\frac{15N}{8}} \tag{36}$$

$$DF_P^* = \frac{\sqrt{NT}\,(\hat{p}-1)+\frac{3\sqrt{N\hat{p}_v^2}}{\hat{\sigma}_{Ov}^2}}{\sqrt{3+\frac{36\hat{\sigma}_v^4}{5\hat{\sigma}_{Ov}^4}}} \tag{37}$$

$$DF_t^* = \frac{t_p+\frac{\sqrt{6N\hat{\sigma}_v}}{2\hat{\sigma}_{Ov}}}{\sqrt{\frac{\hat{\sigma}_{Ov}^2}{2\hat{\sigma}_v^2}+\frac{3\hat{\sigma}_v^2}{10\hat{\sigma}_{Ov}^2}}} \tag{38}$$

$$ADF = \frac{t_{ADF}+\sqrt{6N\hat{\sigma}_v/2\hat{\sigma}_{Ov}}}{\frac{\sqrt{\hat{\sigma}_{Ov}^2+3\hat{\sigma}_v^2/10\hat{\sigma}_{Ov}^2}}{2\hat{\sigma}_v^2}} \tag{39}$$

The Johansen test of Cointegration (1988). This is a test which has all desirable statistical properties. The weakness of the test is that it relies on asymptotic properties, and is therefore sensitive to specification errors in limited samples. Start with a VAR representation of the variables, in this case what we think is the economic system we would like to investigate. We have a p-dimensional process, integrated of order d, $\{X\}_t \sim I(d)$, with the VAR representation (Sjo 2008)

$$A_k(L)X_t = \mu_0 + \psi D_t + \varepsilon_t \tag{40}$$

The empirical VAR is formulated with lags and dummy variables so that the residuals become a white noise process. The demands for a well-specified model is higher than for an ARIMA model. Here we do test for all components in the residual process. The reason being that the critical values are determined conditionally on a normal distribution of the residual process. Typically, we will assume that the system is integrated of order one. If there are signs of I (2) variables, we will transform them to I (1) before setting up the VAR. By using the difference operator $\Delta = 1 - L$, or $\Delta = 1 - \Delta$, the VAR in levels can be transformed to a vector error correction model (VECM).

DOLS and FMOLS. Using regression Pedroni constructs his group-mean DOLS panel estimator as follows (Bispham 2008)

$$\hat{\beta}^*_{GD} = [N^{-1} \sum_{i=1}^{N} (\sum_{t=1}^{T} z_{it}\, z'_{it})^{-1} (\sum_{t=1}^{T} z_{it}\, \hat{y}'_{it})] \tag{41}$$

Where z_{it} is the $(K(2p+2)+1)$ vector of regressors

$$z_{it} = ((x_{1it} - \hat{x}_{1i}), \dots, (x_{kit} - \hat{x}_{ki}), \Delta x_{1it-p}, \dots, \Delta x_{kit-p}, \dots, \Delta x_{kit-p})'. \tag{42}$$

The estimator can also be written simply as

$$\hat{\beta}^*_D = N^{-1} \sum_{i=1}^{N} \hat{\beta}^*_{Di} \tag{43}$$

Where $\hat{\beta}^*_{Di}$ is the conventional DOLS time-series estimator applied to the i-th member of the panel. T-statistic for the Pedroni estimator is written

$$t_{\hat{\beta}^*_D} = N^{-0.5} \sum_{i=1}^{N} t_{\hat{\beta}^*_{Di}} \tag{44}$$

The Group-Mean FMOLS estimator is given by

$$\hat{\beta}^*_{GFM} = N^{-1} \sum_{i=1}^{N} \hat{\beta}^*_{FMi} \tag{45}$$

Where $\hat{\beta}^*_{FMi}$ is the conventional FMOLS time-series estimator. The associated t-statistic is

$$t_{\hat{\beta}^*_{GFM}} = N^{-0.5} \sum_{i=1}^{N} t_{\hat{\beta}^*_{GFi}} \tag{46}$$

Vector Error Correction Model (VECM). If cointegration has been detected between series we know that there exists a long-term equilibrium relationship between them so we apply VECM in order to evaluate the short run properties of the cointegrated series. In case of no cointegration VECM is no longer required, we directly proceed to Granger causality tests to establish causal links between variables. The regression equation form for VECM is as follows (Asari *et al.* 2011)

$$\Delta Y_t = \alpha_1 + p_1 e_1 + \sum_{i=0}^{n} \delta_i \, \Delta X_{t-1} + \sum_{i=o}^{n} \gamma_i \, Z_{t-1} \tag{47}$$

$$\Delta X_t = \alpha_2 + p_2 e_{i-1} + \sum_{i=0}^{n} \beta_i \, Y_{t-1} + \sum_{i=0}^{n} \delta_i \, \Delta X_{t-1} + \sum_{i=o}^{n} \gamma_i \, Z_{t-1} \tag{48}$$

In VECM the cointegration rank shows the number of cointegrating vectors. A negative and significant coefficient of the ECM indicates that any short-term fluctuations between the independent variables and the dependent variable will give rise to a stable long run relationship between the variables. We start from the null hypothesis that $H_0: p_1 = 1$ against the alternative hypothesis $H_1: p_1 < 1$.

Panel Granger Causality Test. It is the test whose aim is to find out the causality between the variables test to identify the cause and effect. Granger causality tests measures the causal relationship with bivariate data sets and these relationships can be expressed as unidirectional and bidirectional. The Granger causality test takes the following form (Rajasekar *et al.* 2014)

$$Z_{it} = \sum_{j=i}^{p} \Gamma_{ijt} \, \mathrm{Z}_{i,t-j} + \mu_{it} + \varepsilon_{it}, i = N \,\&\, t = 1, \ldots T \tag{49}$$

Where Z_{it} denote $K-$ dimensional; $\Gamma_{ijt}\mu_{it}$ – the parameter matrices, μ_{it} – vector containing individual specific; ε_{it} – disturbances.

Unidirectional causality between two variables occurs if a null hypothesis is rejected. Bidirectional causality exists if both null hypotheses are rejected.

Impulse response function. Impulse response function (IRF) of a dynamic system is its output when presented with a brief input signal, called an impulse. More generally, an impulse response refers to the reaction of any dynamic system in response to some external change (Lu and Xin 2010). An impulse response function measures the time profile of the effect of shocks at a given point in time on the future values of variables in a dynamic system. The impulse response function is defined as (Nguyen 2011)

$$IR(m,h,Z_{t-1}) = E\left(\frac{y_{t+m}}{e_t} = h, Z_{t-1}\right) - E(y_{t+m}\ /= Z_{t-1}) \tag{50}$$

Where m denotes the time, $h = (h_1, \dots, h_m)$ is $n\ x\ 1$ vector denotes the size of shock, Z_{t-1} denotes accumulative information about the economy from the past up to time $t-1$.

Variance decomposition tells how much a given variable changes under the impact of its own shock and the shock of other variables. Therefore, the variance decomposition defines the relative importance of each random innovation in affecting the variables in the VAR (Nguyen 2011).

According to the representation of $VMA(\infty)$, Sims puts forward the variance decomposition theory (Sims 1980; Peng *et al.* 2011)

$$y_{it} = \sum_{j=1}^{k}(c_{ij}^{(0)}\varepsilon_{ij-1} + c_{ij}^{(1)}\varepsilon_{jt-1} + c_{ij}^{(2)}\varepsilon_{jt-2} + \cdots) \tag{51}$$

The content in each bracket represents sum effect of the j-th disturbance ε_j on y_t from the infinite past to now. Supposing ε_t sequences are independent, we can solve out its variance and get the following equation

$$E\left[(c_{ij}^{(0)}\varepsilon_{ij} + c_{ij}^{(1)}\varepsilon_{it-1} + c_{ij}^{(2)}\varepsilon_{ij-2} + \cdots)^2\right] = \sum_{q=0}^{\infty}(c_{ij}^{(q)})^2\,\delta_{ij} \tag{52}$$

The result, represented by variance, shows the total effect of the $j-th$ disturbance on the $i-th$ variable from the infinite past to now. Besides, assuming covariance matrix of disturbance term vectors is diagonal matrix,

we can get y_i's variance by simply summing the k terms of the above covariances

$$var(y_{it}) = \sum_{j=1}^{k}\{\sum_{q=0}^{\infty}(c_{ij}^{q})^2\delta_{jj}\} \tag{53}$$

y_i's variance can be decomposed to k kinds of different effects. Hence, to determine how much each disturbance affect the variance of y_i, we define the following measure (Peng *et al.* 2011)

$$RVC_{j\to i}(\infty) = \frac{\sum_{q=0}^{\infty}(c_{ij}^{q})^2\delta_{jj}}{VAR(y_{it})} = \frac{\sum_{q=0}^{\infty}(c_{ij}^{q})^2\delta_{jj}}{\sum_{j=1}^{k}\{\sum_{q=0}^{\infty}(c_{ij}^{q})^2\delta_{jj}\}} \tag{54}$$

RVC is the contribution of relative variance, in another words, we investigate how the $j-th$ variable affect the $i-th$ variable through $RVC_{j\to i}(\infty)$. In fact, we cannot calculate $c_{ij}^{(q)}$, $s=\infty$, but if the model fits stationary condition, $c_{ij}^{(q)}$ would present geometric decrease as variable q increases. Therefore, we only need to adopt finite s terms.

4. Estimation results

To test the existence of panel unit root variables we used tests such as LLL (2002), IPS (2003), ADF-Fisher (2001), PP-Fisher (2001) and Hadri (1999). The results of panel unit root tests are presented in Table 1. LLC test demonstrated that variables ANW and FDI are statistically significant at the 1 percent level; therefore, we reject the unit root null hypothesis. In the case of IPS test we have concluded that variables ANW and FDI are statistically significant at the 5 percent level and, accordingly, we reject the unit root null hypothesis. ADF Fisher Chi-square test has pointed out that variables ANW and FDI are statistically significant at the 5 percent level; therefore, we reject the unit root null hypothesis. PP Fisher Chi-square test has also shown that variables ANW and FDI are statistically significant at the 5 percent level and, accordingly, we reject the unit root null hypothesis. Finally, the results of Hadri test demonstrate that variables ANW and FDI are statistically

significant at the 5 percent level and therefore we reject the unit root null hypothesis.

Table 1. Results of Panel Unit Root Tests

Level	LLC (2002) P-value**	IPS (2003) P-value**	ADF (2001) Fisher Chi-Sq. P-value**	PP (2001) Fisher Chi-Sq. P-value**	Hadri (1999) P-value**
lnANW	0.0000	0.0000	0.0016	0.0000	0.0014
lnFDI	0.0000	0.0102	0.0053	0.0010	0.0165
1st differences	LLC (2002) P-value**	IPS (2003) P-value**	ADF (2001) Fisher Chi-Sq. P-value**	PP (2001) Fisher Chi-Sq P-value**	Hadri (1999) P-value**
lnANW	0.0000	0.0000	0.0000	0.0000	0.0000
lnFDI	0.0000	0.0000	0.0000	0.0000	0.0000

Note*- significance at 10 percent level, **- significance at 5 percent level, ***- significance at 1 percent level.
Source: Author's

Based on the results of panel unit root tests, we can conclude that variables ANW and FDI do not have a unit root. Despite this fact, we introduced first differences and came up with the results showing that for all tested a model that is for both ANW and FDI variable there is statistical significance at the 1 percent level. Accordingly, we reject the unit root null hypothesis, which means that we have stationary data and that there is a long-term integration relationship between tested variables in the case of B&H, Montenegro, Macedonia and Serbia.

The results of Pedroni Panel Cointegration Test are presented in Table 3. They show us that we can reject the null hypothesis of no cointegration in the case of Panel ADF Statistic, Panel PP-Statistic and Group PP-Statistic and Group ADF-Statistic, while in the case of Panel v-Statistic, Panel rho-Statistic, Group rho-Statistic and Group ADF-Statistic we cannot reject the null hypothesis of no cointegration. Based on the significance of two panel statistics and two group statistics at the level of 5 percent, we reject the null hypothesis of no cointegration. The results of Kao Residual Cointegration

Test are also given in Table 3. Based on these results, we observed the statistical significance at the level of 1 percent; hence, we reject the null hypothesis of no cointegration. This means that there is a long-term relationship or cointegration between the analyzed variables. Finally, we used the results of Johansen Panel Cointegration Test to determine the statistical significance at the level of 1 percent and therefore reject the null hypothesis of no cointegration. Based on all three panel cointegration tests, we conclude that there is a long-term cointegration between ANW and FDI in the countries under analysis.

Table 2. Panel Cointegration Test

Test Name	T - statistic	Prob. percent
(1) **Pedroni Residual Cointegration Tests**		
Panel v-Statistic	-1.460938	0.9280
Panel rho-Statistic	-1.384271	0.0831
Panel PP-Statistic	-2.775733	0.0028
Panel ADF-Statistic	-2.220206	0.0132
Group rho-Statistic	0.344832	0.6349
Group PP-Statistic	-2.711933	0.0039
Group ADF-Statistic	-1.830446	0.0336
(2) **Kao Residual Cointegration Test**		
ADF-Statistic	-3.994308	0.0000
(3) **Johansen Panel Cointegration Test**		
Trace Statistic	48.21427	0.0000

Note: *- significance at 10 percent level, **- significance at 5 percent level, ***- significance at 1 percent level.
Source: Author's

The results for DOLS and FMOLS estimators are provided in Table 3. The results of DOLS cointegration analysis show that statistical value of FDI and ANW for B&H, Montenegro, Macedonia and Serbia has significance level of 5 percent and, therefore, we reject the null hypothesis of no cointegration.

This indicates that there is a long-term relationship or cointegration between FDI and ANW. However, in the case of FMOLS cointegration analysis, statistical value of the analyzed variables has significance level of 1

percent; hence, we reject the null hypothesis of no cointegration between FDI and ANW for the four countries that are the subject of our analysis. The analysis of FMOLS indicates that there is a long-term relationship between FDI and ANW in B&H, Montenegro, Macedonia and Serbia.

The existence of a positive long-term relationship between FDI and ANW in analyzed countries is explained by the fact that all the countries in question had a strong FDI inflow during 2007 and 2008, which affected the growth in average net wages in these countries. This period was followed by the global economic crisis, which resulted in reduced FDI inflow and thus in lower growth in average net wages in the given countries.

Table 3. DOLS and FMOLS estimators

Country	DOLS		FMOLS	
	t-stat.	prob. percent	t-stat.	prob. percent
B&H	93.21181	0.0068	84.03198	0.0000
Montenegro	37.76484	0.0169	-11.29700	0.0001
FYR Macedonia	162.5981	0.0039	44.41188	0.0000
Serbia	32.52383	0.0196	32.19900	0.0000
Panel group	106.6068	0.0000	104.3863	0.0000

Note: *- significance at 10 percent level, **- significance at 5 percent level, ***- significance at 1 percent level.
Source: Author's

Empirical results of the panel error correction model are presented in Table 4. Based on these results, we can conclude that the statistical value of ANW is insignificant as compared to FDI. This means that increase in ANW leads to reduction in FDI inflow in the countries that are the subject of analysis. On the other hand, FDI have a positive impact on ANW, that is they have significance level of 5 percent.

Therefore, with an increase in FDI there comes along an increase in average net wages in the given countries. Eventually, it is important to note that in the case of ANW and FDI there is a short-term causality and cointegration, while in the case of FDI and ANW there is a long-term causality and cointegration. In order to determine whether there is a short-term causality between ANW and FDI, we need to apply a Wald Test. The

results of the Wald Test are presented in Table 4 below. Based on the results, we conclude that we have an insignificant value, which means that there is no short-term relationship between analyzed variables.

Table 4. Vector Error Correction Estimates

Cointegrating Eq:	CointEq1	
lnANW (-1)	1.000000	
FDI(-1)	-0.689684 (0.11617) [-5.93696]	
C	-21.17579	
Error Correction:	D(AWAGE)	D(FDI)
CointEq1	-0.008276 (0.00798) [-1.03679]	0.747336 (0.18766) [3.98242]
D(lnANW (-1))	0.186520 (0.10372) [1.79831]	-5.072204 (2.43836) [-0.47402]
D(lnANW (-2))	-0.127348 (0.07576) [-1.68100]	5.072204 (1.78098) [-2.84799]
D(FDI(-1))	-0.019675 (0.00653) [-3.01447]	-0.745056 (0.15344) [-4.85561]
D(FDI(-2))	-0.000958 (0.00594) [-0.16119]	-0.550484 (0.13970) [-3.94041]
Wald Test	F-statistic	Prob.
		0.7081

Note:*- significance at 10 percent level, **- significance at 5 percent level, ***- significance at 1 percent level.
Source: Author's

Granger (1969) Causality tests results are provided in Table 5. Granger Causality tests measure causality between variables in one direction (unidirectional) and two directions (bidirectional). They show that in the case of lags 1 and lags 2, upon testing causality between ANW and FDI, we

observed statistical significance level of 5 percent in the case of B&H that is unidirectional, which tells us that there is a short-term causality between FDI and ANW. This indicates that FDI positively affect the growth in average net wages in the short run, but that there is no positive or long-term effect of ANW on attracting FDI in B&H. In the case of Montenegro, Serbia and Macedonia, we detected statistical significance level of 10 percent.

Therefore, we concluded that there was no long-term causality between analyzed variables in these countries. The lack of long-term relationship between FDI and ANW in the long run leads to reduction in FDI inflow in countries under analysis, which in turn reduces the level of economic development.

Table 5. Pairwise Granger Causality Tests

Null Hypothesis	Lags	F-stat.	Prob.	Lags	F-stat.	Prob.
Bosnia and Herzegovina						
lnFDI does not Gran. Cau. lnANW	1	0.72909	0.4413	2	340.773	0.0383
lnANW does not Gran. Cau. lnFDI		4.03579	0.1149		0.97744	0.5817
Montenegro						
lnFDI does not Gran. Cau. lnANW	1	0.65586	0.4635	2	0.76818	0.6279
lnANW does not Gran. Cau. lnFDI		1.47634	0.2912		10.7695	0.2106
FYR Macedonia						
lnFDI does not Gran. Cau. lnANW	1	0.04984	0.8343	2	2.79531	0.3895
lnANW does not Gran. Cau. lnFDI		0.55482	0.4977		1.84317	0.4619
Serbia						
lnFDI does not Gran. Cau. lnANW	1	0.76565	0.4310	2	29.1456	0.1299
lnANW does not Gran. Cau. lnFDI		0.18472	0.6895		0.01099	0.9892

Note: *- significance at 10 percent level, **- significance at 5 percent level, ***- significance at 1 percent level.
Source: Author's

Nevertheless, Granger Causality tests often turn out to be unreliable when measuring long-term causality between analyzed variables. Therefore, we applied the Impulse Response Function Test and Variance Decomposition Test. The results of the Impulse Response Function Test are shown in Table 6.

They indicate that the reaction of ANW to FDI impulse will be mostly positive in the next ten years. On the other hand, reaction of FDI to ANW impulse encompasses both positive and negative values in the next ten years, that is there will be a positive response of FDI to ANW impulse or action in the aforementioned future period.

This bring us to the conclusion that there will be a long-term relationship between analyzed variables in the given four Western Balkan countries, that is that ANW will grow as a result of the increase in FDI, and vice-versa.

Table 6. Impulse Response Function Test

Response of lnANW			Response of lnFDI		
Period	lnANW	lnFDI	Period	lnANW	lnFDI
1	0.031865	0.000000	1	0.207564	0.381353
2	0.029208	-0.006316	2	-0.099140	-0.041627
3	0.030603	0.001770	3	5.09E-05	0.037424
4	0.029733	0.003794	4	0.152788	0.220023
5	0.025801	-0.000291	5	-0.052695	-0.065661
6	0.029129	0.004984	6	0.049765	0.050602
7	0.028268	0.004848	7	0.109601	0.124060
8	0.026136	0.002670	8	-0.021044	-0.056899
9	0.028471	0.006259	9	0.069993	0.053531
10	0.027389	0.005320	10	0.081257	0.067082

Note: *- significance at 10 percent level, **- significance at 5 percent level, ***- significance at 1 percent level.
Source: Author's

Table 7. Variance Decomposition Test

Variance Decomposition of lnANW			Variance Decomposition of lnFDI		
Period	lnANW	lnFDI	Period	lnANW	lnFDI
1	0.031865	100.0000	1	0.434181	22.85403
2	0.043685	97.90948	2	0.447297	26.44590
3	0.053367	98.48930	3	0.448860	26.26207
4	0.061209	98.46742	4	0.522714	27.90904
5	0.066425	98.69676	5	0.529451	28.19392
6	0.072702	98.44214	6	0.534186	28.56412
7	0.078155	98.26718	7	0.559248	29.90216
8	0.082452	98.33822	8	0.562529	29.69433
9	0.087454	98.01064	9	0.569388	30.49426
10	0.091797	97.85851	10	0.579056	31.45370

Note: *- significance at 10 percent level, **- significance at 5 percent level, ***- significance at 1 percent level.
Source: Author's

Variance Decomposition Test results are given in Table 7 above. They demonstrate that the reaction of FDI to ANW signal is positive with a high percentage change over the next ten years. This means that an increase in ANW over the next ten years will lead to an increase in FDI in the given four WB countries. Reaction of ANW to FDI impulse is positive, albeit with a lower percentage change over the next ten years. Hence, increase in FDI inflow will not significantly affect the growth in ANW in B&H, Montenegro, Macedonia and Serbia.

5. Conclusion

This paper investigated whether there is cointegration or causality between ANW and FDI in B&H, Montenegro, Macedonia and Serbia. For the aforementioned countries we used the time series 2007 -2014. The research applied the econometric techniques such as LLC (2002), IPS (2003), ADF-Fisher (2001), PP-Fisher (2001) and Hadri Test (1999), Kao Cointegration Test (1998), Pedroni Cointegration Test (2004), Johanson Cointegration Test (1998), DOLS and FMOLS estimators, Vector Error

Correction Estimates, Panel Granger Causality, Impulse Response Function and Variance Decomposition Test.

Having applied panel unit root tests, we concluded that there is a long-term integration between ANW and FDI. This indicates that there is a strong link between the increase in ANW and FDI inflow in B&H, Montenegro, Macedonia and Serbia, and vice-versa. In the case of Kao Cointegration Test, Pedroni Cointegration Test and Johansen Cointegration Test, we determined that there is a long-term relationship or cointegration between ANW and FDI for all four WB countries under analysis. Increase or reduction in FDI in these countries is in a long-term relationship with the increase or reduction in ANW, and vice-versa. The analysis of DOLS and FMOLS has shown that there is a long-term relationship between FDI and ANW for all four WB countries under analysis. This positive long-term relationship between FDI and ANW in the countries under analysis is explained by the fact that all analyzed countries saw record FDI inflows during 2007 and 2008, which affected the growth in ANW. This period was followed by the global economic crisis, which resulted in reduced FDI inflows and, consequently, in low growth in average net wages in the given countries.

Additionally, Vector Error Correction Estimates have shown that there is a long-term relationship between ANW and FDI in the four given WB countries. This means that increase in FDI inflow leads to growth in ANW, while the growth in ANW results in reduced FDI inflow. The results of Panel Granger Causality test demonstrate that there is only a unidirectional relationship between ANW and FDI in the case of B&H, that is that there is a short-term causality. Short-term causality means that FDI affect the growth of ANW, while ANW do not have a positive effect on attracting FDI. In the case of Montenegro, Serbia and Macedonia, there is neither short-run nor long-run causality between the analyzed variables. It can be stated for all the countries that there is no long-term relationship between FDI and ANW. On the other hand, the results of Impulse Response Function Test have shown that there will be a mutual positive reaction between ANW and FDI over the next ten years, that is ANW will grow as a result of increased FDI inflow, and vice-versa. Finally, having applied the Variance Decomposition Test, we determined that over the next ten years the growth in ANW will lead to increase in FDI inflow, but that the increase in FDI inflow will not have a

significant impact on the growth in ANW in the four WB countries under analysis.

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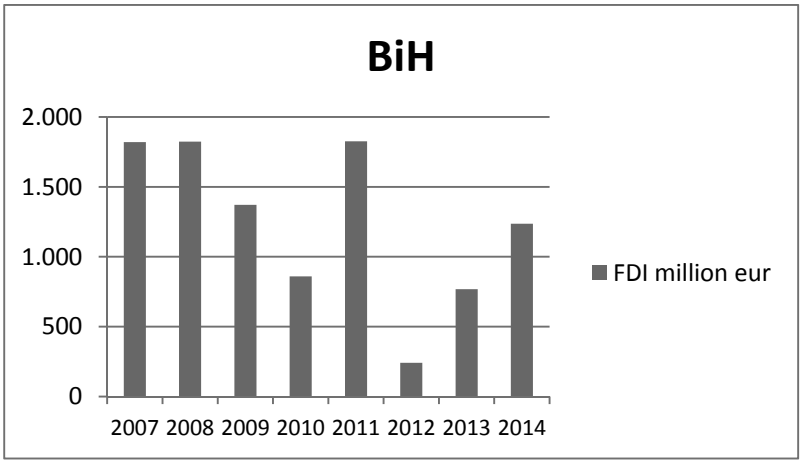
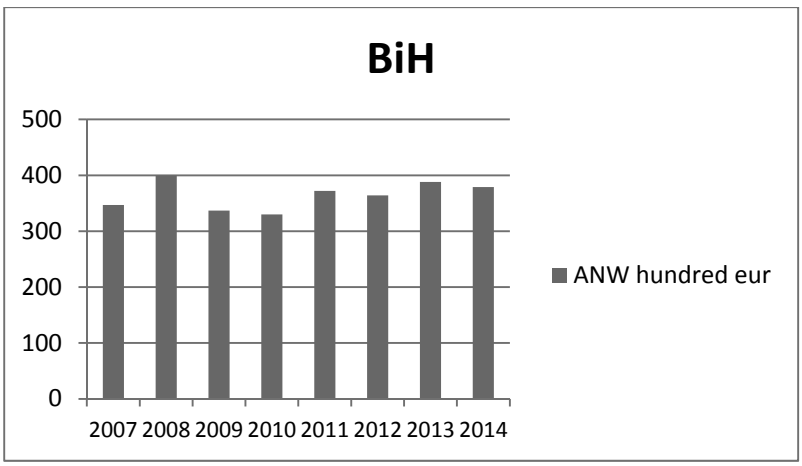
Appendix

Figure A1. Amount of FDI in B&H in the period 2007-2014



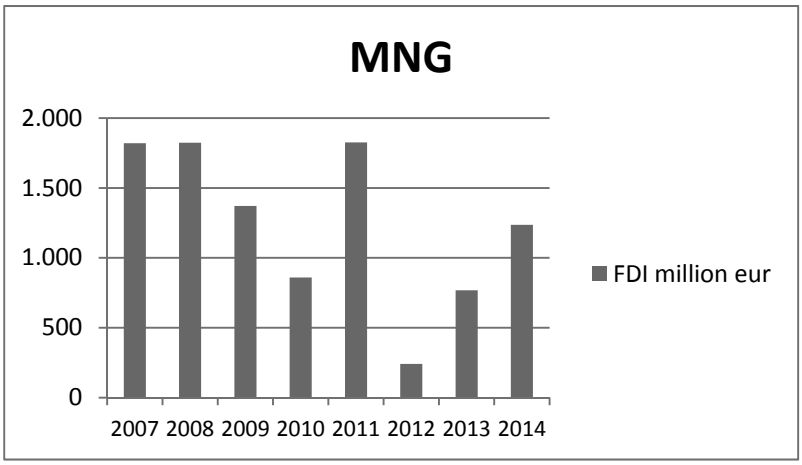
Source: Author's

Figure A2. Average net wage in B&H in the period 2007 - 2014



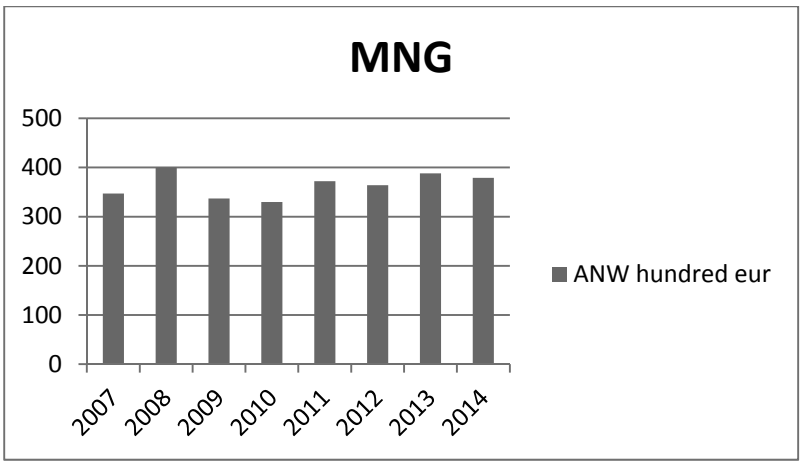
Source: Author's

Figure A3. Amount of FDI in Montenegro in the period 2007-2014



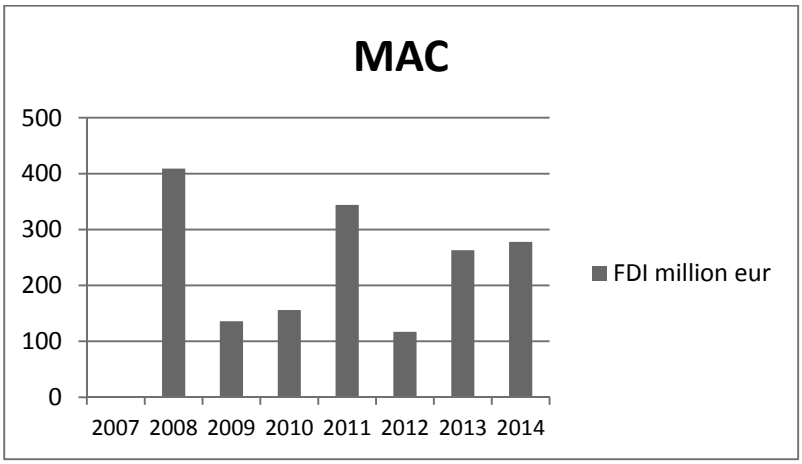
Source: Author's

Figure A4. Average net wage in Montenegro in the period 2007-2014



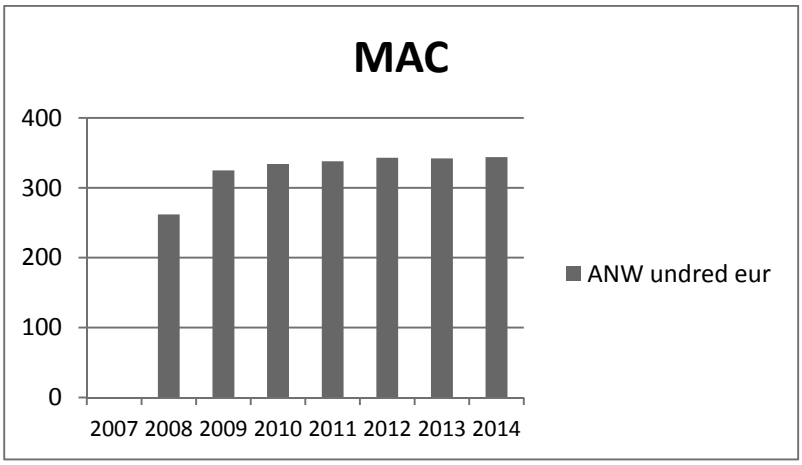
Source: Author's

Figure A5. Amount of FDI in Macedonia in the period 2007-2014



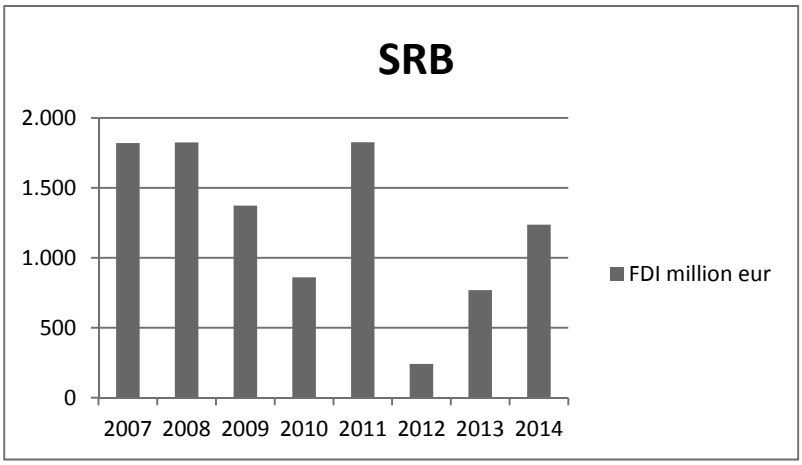
Source: Author's

Figure A6. Average net wage in Macedonia in the period 2007-2014



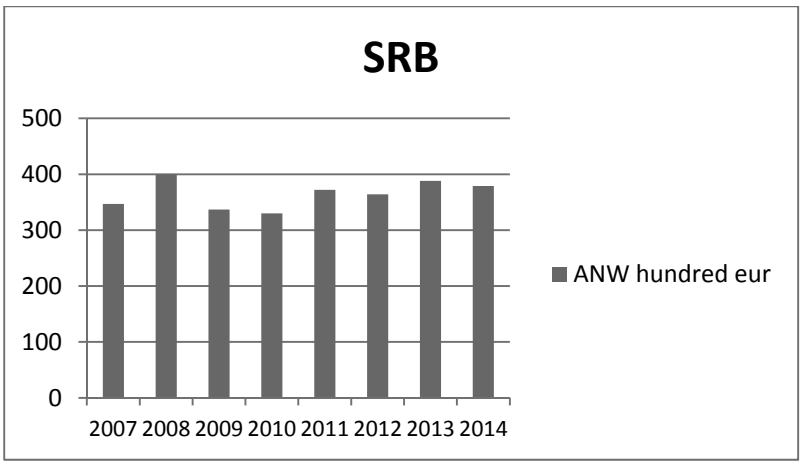
Source: Author's

Figure A7. Amount of FDI in Serbia in the period 2007 - 2014



Source: Author's

Figure A6. Average net wage in Serbia in the period 2007 - 2014



Source: Author's

Tonio Di Battista[1] - Francesca Fortuna[2] - Fabrizio Maturo[3]

DIVERSITY IN REGIONAL ECONOMICS: A CASE STUDY IN THE ABRUZZO REGION

Abstract

The concept of diversity is widely debated in scientific fields. It assumes a central role in economy because many theoretical arguments suggest that growth and economic diversity are intrinsically linked. However, in the literature, the problem of defining and quantifying diversity is still open. Indeed, although several indices have been proposed, there is not yet a universally accepted diversity measure. In this context, the choice of an appropriate diversity index becomes crucial in order to attain suitable conclusions.

The economic diversity is analysed differently depending on the considered variables. With regard to the qualitative variables, many ecological diversity indices have been restated in economics. However, statisticians show several limitations of the standard diversity indices, suggesting the use of diversity profiles as a possible solution. Indeed, a single index is not able to reflects the multidimensional concept of diversity. For this reason, we propose to assess the regional economic diversity through the diversity profiles.

In particular, the beta profile is used for the analysis of the diversity of the four provinces of the Abruzzo region (Central Italy), considering first the number of companies present in different sectors and then the number of employees per sector.

JEL CLASSIFICATION: C0, C40, C50.
KEYWORDS: DIVERSITY PROFILE, REGIONAL ECONOMIC ANALYSIS, BETA PROFILE, GROWTH.

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1. Introduction

The interaction of regional industrial diversity, economic performance and instability is nowadays a key topic of economic research. Many theoretical arguments suggest that growth and economic diversity are intrinsically linked (Jacobs 1969; Malizia and Ke 1993; Pede 2013).

The concept of diversity arises in several disciplines; in particular, Attaran (1986) defines economic diversity as "the presence in an area of a great number of different types of industries" or "the extent to which economic activity of a region is distributed among a number of categories".

Proponents of economic diversity suggest that if a regional economy is diversified in its economic structure, it may be less affected by an economic downturn (Tran 2011) because it becomes less sensitive to fluctuations caused by factors outside the region (Nourse 1968; Richardson 1969) and it is therefore able to avoid fluctuations in employment and income (Hackbart and Anderson 1975; Dissart 2003). On the contrary, reliance upon a small group of specialized industries for the majority of regional income is risky due to contractions or reductions in demand for certain goods in an industry (Kort 1981).

Several studies argue that economic diversity within a region promotes technological innovation through knowledge and technology spillovers across sectors in a single geographic location (Jacobs 1969; Feldman and Audretsch 1999).

Pede (2013), analysing the period 1990-2007, highlights that firms in a diverse economy have the ability to hire displaced workers from other industries; thus diverse regional economies are more stable. This stability within a region may facilitate growth in productivity and income.

However empirical studies about the relationship between diversity and growth provide ambiguous conclusions. Indeed, some economic theories suggest that regional specialization fosters employment growth. For example, Glaeser *et al*. (1992) argue that absolute regional specialization, or a spatial monopoly, may be more efficient in the production of goods and services than perfectly competitive firms. On the other hand, Malizia and Ke (1993) define diversity as not the absence of specialization but the presence of multiple specializations and sectors with strong inter-industry linkages.

A wide number of indices is already used in literature for diversity assessment. In particular, some ecological diversity indices have been restated to deal with economic qualitative variables. In the ecological

framework, the problem of the diversity measurement has been addressed in great detail (Gove *et al.* 1994). In particular, it is well known that the use of a single index reduces the multidimensional aspect of diversity. In this context, the diversity profile is presented as a possible solution for this limitation (Hill 1973; Patil and Taillie 1982) because it displays a family of indices in a single graph.

In this paper we propose the use of the diversity profile for the measurement of regional diversity. The paper is organized as follow: in section 2 we introduce the concept of diversity; in section 3 the beta profile is presented; section 4 displays an analysis of the economic diversity in the Abruzzo region (central Italy) and section 5 concludes the paper.

2. The concept of diversity in ecology and in economy: similarities and differences

Diversity is a crucial concept both in ecology and in economics. It assumes a different meaning in the two contexts, even if, in some cases, its measurement is quite similar.

Diversity is related to the apportionment of some quantity into a number of categories (Patil and Taillie 1979). In particular, in an ecological framework, bio-diversity relies on the variety of living organisms in a delineated study area (Pielou 1975). Diversity is a multidimensional concept accounting for both richness (number of different species) and evenness (relative abundance of different species). These various aspects are measured by several biodiversity indices; the most common are the richness index, the Simpson diversity index (Simpson 1949) and the Shannon-Weaver diversity index (Shannon 1948). Species richness is the simplest measure of diversity; it easily counts the species of a community and it does not take into account how the population is distributed across species. Species evenness refers to the relative abundance of the species in the population. The Simpson diversity index and the Shannon-Weaver diversity index consider both the richness and the evenness. The same two dimensions of diversity are studied in economics, even though from a different perspective. When economics deals with discrete qualitative variables such as industries or firms, it is easy to find similarities between biodiversity and economic diversity indexes.

However economics deals also with quantitative variables; thus the diversity indices are very different according to the phenomena under study.

With regard to the qualitative variables, it is possible to identify three areas of economics research (Maignan *et al.* 2003):

1. **Welfare economics** deals with different preferences, attitudes, religious and ethnic backgrounds, which may have consequences for economic and socio-political behaviour. In this context richness is related to the number of languages, ethnies, religions; whereas evenness represents their relative proportion in terms of population share. The most common measure of welfare economics diversity is the Simpson index which represents a good indicator of heterogeneity;

2. **Industrial organisation** studies market concentration of the industry. In this context, richness is given by the number of firm represented in the industry and evenness is the market share of each firm. Since the market concentration is the opposite of diversity, the widely used index is the complement to one of the Simpson diversity index;

3. **Regional sciences** deals with the diversity of industries in a delimited region. Obviously, in this case, richness is represented by the number of industries and evenness is the relative proportion in terms of different types of industries (Rodgers 1957; Attaran 1987) or in terms of balanced employment across industry classes (Attaran 1987).

3. The beta diversity profile

Although many diversity indices have been proposed over the years, no universally accepted measure has yet been established (Ricotta 2005). The main issue of the standard indices is that richness and evenness are confounded when a single index is considered. For example, in ecology, a community with few species and high evenness could have the same diversity measure as another community with many species and low evenness (Pielou 1977).

Therefore, different indices could lead to different ranking (Patil and Taillie 1982) and the choice of an index must be considered with care (Di

Battista *et al*. 2015). This problem highlights how the use of a single indicator greatly reduces the complexity of the ecological systems and hides the multidimensional aspect of biodiversity (Gattone and Di Battista 2009; Gove *et al*. 1994; Patil and Taillie 1979; Di Battista and Gattone 2003).

In the ecological literature, diversity profiles are presented as a possible solution for this limitation (Hill 1973; Patil and Taillie 1982; Tthmrsz 1995; Carranza *et al.* 2007).

A diversity profile is a curve depicting several values of diversity indices simultaneously, including Shannon, Simpson and species richness. Therefore, the diversity profile is a family of measures, that is a family of diversity indices dependent upon a single continuous parameter that is sensitive to both rare and common species. The plot of diversity profiles plays a fundamental role in comparing different communities. Indeed, if the diversity profiles do not intersect, the higher curve corresponds to the community with greater diversity.

In this paper, we propose the use of this method to study the diversity in the field of regional science. In economics, it is not clear the interaction between diversity and growth. Indeed, some empirical studies assert that there is a positive correlation between them; whereas, other analysis show that specialization is the major driver of economic performance. Obviously, specialization is the opposite concept of diversity. This ambiguity in results may depend on the different definitions of diversity indicators used in the analysis (Beaudry and Schiffauerova 2009) and on the type of sectors analyzed (Bishop and Gripaios 2010). The beta profile allows us to compare and to examine regions that were considered diverse or specialized taking into account jointly richness and evenness.

Let us suppose that a region is composed of N industries and it is partitioned into s sectors (i=1,2,...,s). Let $\mathbf{N}=(N_1,...,N_s)'$ be the industry abundance vector whose generic element N_i represents the number of industries belonging to the i-th sector and $\mathbf{p}=(p_1,...,p_s)'$ be the relative abundance vector with $p_i = N_i / \sum_{i=1}^{s} N_i$, such that $0 \leq p_i \leq 1$ and $\sum_{i=1}^{s} p_i = 1$.

In order to evaluate the regional economic diversity, we consider the β diversity profile proposed by Patil and Taillie (1979, 1982):

$$\Delta_{\beta=}\sum_{i=1}^{s}\frac{(1-p_i^{\beta})}{\beta}p_i;\beta\geq -1 \qquad (1)$$

where the value of β denotes the relative importance of richness and evenness.

Δ_β is defined for any β ϵ R and the restriction, β ≥ 1, assures certain desirable properties. Calculating and plotting Δ_β for β > 1 may not be helpful because the profiles tend to converge quickly beyond this point (Patil and Taillie 1979, Patil and Taillie 1982). Δ_β, thus, can be considered as a function of β in a closed domain, β ϵ [-1, 1].

The plot of Δ_β versus β provides the diversity profile. It is a decreasing and convex curve showing different values of diversity for each value of β.

The most frequently used indices of diversity are special cases of equation (1): for β = - 1, we get the richness index; for lim β→0, we have the Shannon diversity index; and for β=1, we obtain the Simpson index. The diversity profile, thus, displays a complete picture of diversity.

The following example of two regions, each composed of five industries, serves to clarify this concept. Let $\boldsymbol{p}_1$=(0.8,0.05,0.05,0.05,0.05)' and $\boldsymbol{p}_2$=(0.20,0.20,0.20,0.20,0.20)' be the relative abundance vectors of region 1 and 2, respectively. The β diversity profiles (equation 1) are plotted in figure 1.

Figure 1. Beta diversity profiles of two hypothetical regions

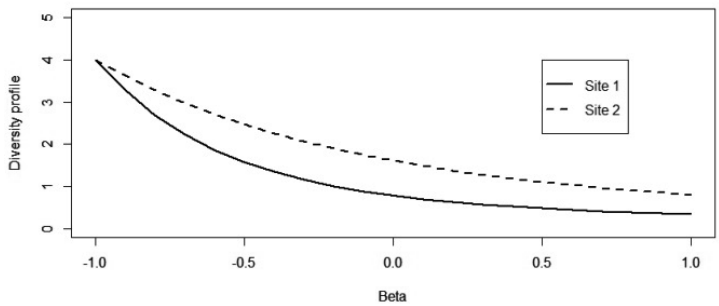


Figure 1 shows that region 2 has greater diversity compared to region 1. Indeed, region 2 is characterized by a greater dominance for each value of the domain, because the curve is always below the profile of region 1. As shown, the criterion is very convenient to carry out a ranking and to understand the characteristics and the economic composition of a region.

Besides, the profile does not neglect the multidimensional aspect of diversity, indeed it counts three indices simultaneously and detects both the richness and the evenness.

4. Data set and application

In this section we show an application of the beta profile for the diversity assessment of four province of Abruzzo: L'Aquila, Chieti, Pescara and Teramo. The Abruzzo region is located in south central Italy between the central Apennines and the Adriatic coast. It is a mainly mountainous region (65%); the hills cover 34% of the territory and the plain (1%) consists of a narrow coastal strip along the Adriatic coast. Abruzzo is considered one of the most industrialized regions in southern Italy, together with Puglia. The region has recently experienced a rapid industrial growth especially in the engineering, alimentary, transportation, telecommunications and tourism sectors. Other important industries are production of chemicals, furniture, crafts and textiles.

The data set of our research is taken from AIDA (Computerized analysis of Italian Firms). Our study considers 17.623 firms; in particular we analyse all the unlisted active corporations of the four Abruzzo provinces.

As stated in section 2, in the economic literature, regional sciences deals with the diversity of industries in a delimited region. Richness is represented by the number of industries whereas evenness is the relative proportion in terms of different types of industries or in terms of balanced employment across industry classes.

According to the ATECO 2007 classification of economic activities of ISTAT (Istat, 2009), there are 21 macro classes (identified by letters from "A" to "U") corresponding to different sectors (Table 1). Using the ATECO 2007 codes as qualitative variable, we studied the diversity of the four provinces of the region from two different point of view. First, we computed diversity considering the number of firms for each business sector and then we use employment shares.

Table 2 shows the absolute and relative frequencies of the firms for each province. Relative frequencies are indispensable to calculate and plot the beta profile (equation 1). Table 3 displays the main classical diversity indices based on the number of firms for each area. In this case the richness index is the same for the four provinces; indeed it displays the same diversity for each one. On the contrary, the Shannon and the Simpson indices show that it is possibile to establish a unique sorting. These two indices give the same ranking: Teramo, Chieti, Pescara, L'Aquila.

Table 1. Business sector classification according to ATECO 2007

Code	Business sector
A	Agriculture, foresty and fishing
B	Mining from cave and mines
C	Manufacturing
D	Electricity, gas, steam and air conditioning supply
E	Water supply, sewerage, waste management and rehabilitation
F	Construction
G	Wholesale and retail trade; repair of motor vehicles and motorcycles
H	Transportation and storage
I	Accommodation and food services
J	Information and communication
K	Financial and insurance
L	Real estate activities
M	Professional, scientific and technical
N	Hire, travel agents, support services for business
O	Public administration and defence; compulsory social security
P	Education
Q	Health and social
R	Arts, sports, entertainment and recreation
S	Other service activities
T	Activities of households
U	Extraterritorial organizations and bodies

Source: Istat

The beta profiles (Figure 2) of the four provinces shows that the profile of Teramo is the highest curve on the whole domain while the profile of L'Aquila is the lower; it confirms that Teramo in the most diverse province according to the firms per sector while L'Aquila is the more specialized.

Since the richness is equal to 19 for each province, we display the detail of the beta profile in Figure 3, without considering the first part of the domain.

Table 2. Firms abundance in the provinces of Abruzzo

ATECO codes	***Absolute frequencies***					***Relative frequencies***			
	AQ	**CH**	**PE**	**TE**	**TOT**	**AQ**	**CH**	**PE**	**TE**
A	51	45	44	70	210	0,0144	0,0104	0,0104	0,0148
B	9	15	13	10	47	0,0025	0,0035	0,0031	0,0021
C	359	857	530	1034	2780	0,1015	0,1972	0,1253	0,2181
D	45	72	60	120	297	0,0127	0,0166	0,0142	0,0253
E	36	51	27	40	154	0,0102	0,0117	0,0064	0,0084
F	1013	938	944	960	3855	0,2863	0,2158	0,2231	0,2025
G	656	864	852	836	3208	0,1854	0,1988	0,2014	0,1763
H	75	184	134	113	506	0,0212	0,0423	0,0317	0,0238
I	259	258	252	360	1129	0,0732	0,0594	0,0596	0,0759
J	157	137	178	142	614	0,0444	0,0315	0,0421	0,0300
K	31	46	72	42	191	0,0088	0,0106	0,0170	0,0089
L	293	255	388	499	1435	0,0828	0,0587	0,0917	0,1053
M	197	227	312	191	927	0,0557	0,0522	0,0737	0,0403
N	149	174	197	126	646	0,0421	0,0400	0,0466	0,0266
P	33	31	33	16	113	0,0093	0,0071	0,0078	0,0034
Q	51	48	47	37	183	0,0144	0,0110	0,0111	0,0078
R	79	87	80	97	343	0,0223	0,0200	0,0189	0,0205
S	44	54	67	46	211	0,0124	0,0124	0,0158	0,0097
U	1	3	1	2	7	0,0003	0,0007	0,0002	0,0004
TOT	3538	4346	4231	4741	16856	1	1	1	1

Source: AIDA

Table 3. Diversity indices for the four provinces of Abruzzo

Prov	*Richness*	*Shannon*	*Simpson*	*Line*
TE	19	2.240	0,858	dotdash
CH	19	2.217	0,851	dashed
PE	19	2.147	0,851	dotted
AQ	19	2.129	0,827	solid

Figure 2. Beta profiles (diversity based on number of firms per sector) for the four provinces of Abruzzo

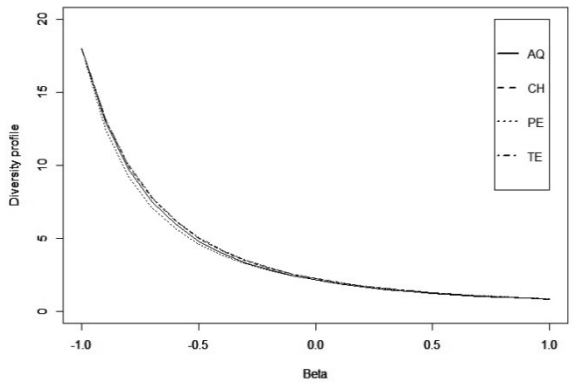
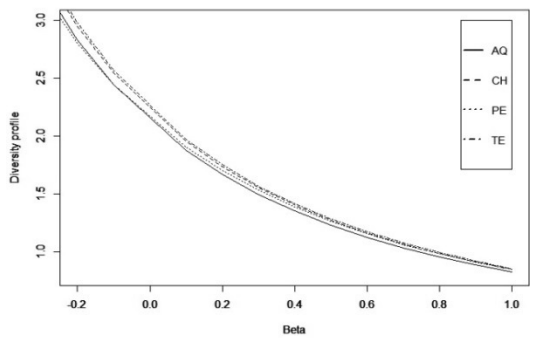


Figure 3. Detail of Beta profiles (diversity based on number of firms per sector) for the four provinces of Abruzzo



In regional diversity studies, most researchers measure industrial diversity through employment shares because they assert that regions with high degrees of diversity have lower unemployment rate (Kort 1981; Wagner and Deller 1998). Table 4 shows the absolute and relative frequencies of employment for each province. Relative frequencies indicates the ratio between the number of employees of a sector and the total employees of the province. Table 5 displays the main classical indices of diversity for the four provinces based on employment. In this case it is clear that the richness index gives a different sort respect to the other indices. Indeed it displays that Pescara and L'Aquila are the more diverse provinces (richness equal to 19). On the contrary, the Shannon and the Simpson indices show that Chieti is the most diverse (2.227 and 0.855, respectively). Figure 4 shows the beta profiles of the four provinces. According to the graph we can see that the dashed curve (province of Chieti) intersect the dotted and the solid curves (province of Pescara and province of L'Aquila, respectively). It means that it is not possible to establish a ranking. We can conclude that Teramo is the most specialized province according to employment rate because the dot-dash curve is the lowest. However it is impossible to sort the other three provinces (Chieti, Pescara and L'Aquila) and it is a mistake to find a forced ordering according to a single index. Since the richness is similar for each province (from 18 to 19), we display the detail of Figure 4 in Figure 5.

Table 4. Employees abundance in the provinces of Abruzzo

ATECO codes	*Absolute frequencies*					*Relative frequencies*			
	AQ	**CH**	**PE**	**TE**	**TOT**	**AQ**	**CH**	**PE**	**TE**
A	412	149	167	288	1016	0,0221	0,0034	0,0054	0,0090
B	30	396	415	**79**	920	0,0016	0,0089	0,0135	0,0025
C	5135	23781	9241	16632	54789	0,2751	0,5348	0,3002	0,5185
D	48	89	87	57	281	0,0026	0,0020	0,0028	0,0018
E	953	684	282	402	2321	0,0511	0,0154	0,0092	0,0125
F	3839	4910	3617	3595	15961	0,2057	0,1104	0,1175	0,1121
G	2397	4219	6407	4384	17407	0,1284	0,0949	0,2082	0,1367
H	861	3321	1649	1194	7025	0,0461	0,0747	0,0536	0,0372
I	1322	2044	1914	1880	7160	0,0708	0,0460	0,0622	0,0586
J	476	515	543	374	1908	0,0255	0,0116	0,0176	0,0117
K	283	72	132	368	855	0,0152	0,0016	0,0043	0,0115
L	239	175	193	298	905	0,0128	0,0039	0,0063	0,0093
M	534	883	2448	495	4360	0,0286	0,0199	0,0795	0,0154
N	983	1986	1742	1183	5894	0,0527	0,0447	0,0566	0,0369
P	290	76	92	58	516	0,0155	0,0017	0,0030	0,0018
Q	330	300	1227	123	1980	0,0177	0,0067	0,0399	0,0038
R	293	383	355	470	1501	0,0157	0,0086	0,0115	0,0147
S	231	480	260	199	1170	0,0124	0,0108	0,0084	0,0062
U	9	0	7	0	16	0,0005	0,0000	0,0002	0,0000
TOT	18665	44463	30778	32079	125985	1	1	1	1

Source: AIDA

Table 5. Diversity indices for employment rate in the provinces of Abruzzo

Prov	*Richness*	*Shannon*	*Simpson*	*Line*
PE	19	2.199	0,841	dotted
AQ	19	2.111	0,828	solid
CH	18	2.227	0,855	dashed
TE	18	1.674	0,683	dotdash

Figures 6 and 7 inspect the firm and the employment distributions respectively for business sector and province. The histograms show that in sector C (Manufacturing) there are many companies and many employees for each province, but in sectors F, H and L (in that order construction; transportation and storage; and real estate activities) there are many companies but few workers. This circumstance confirms that, from an

economic point of view, it is more relevant to analyze employment shares rather than the number of firms.

Figure 4. Beta profiles (diversity based on employment rate per sector) for the four provinces of Abruzzo

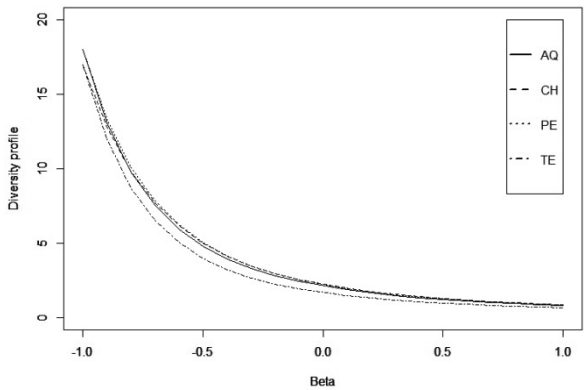


Figure 5. Detail of Beta profiles (diversity based on employment rate per sector) for the four provinces of Abruzzo

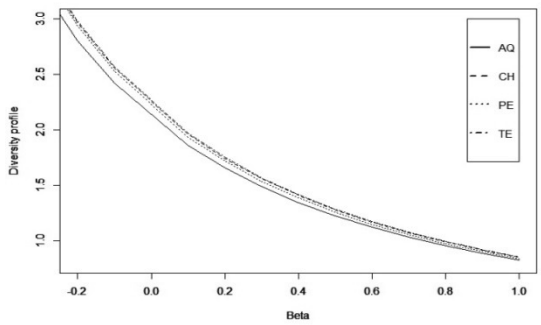


Figure 6. Frequency distribution of firms in Abruzzo provinces

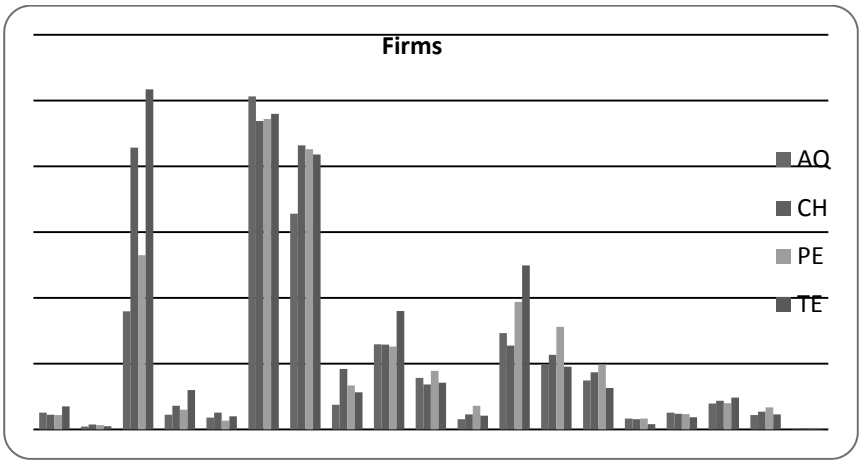
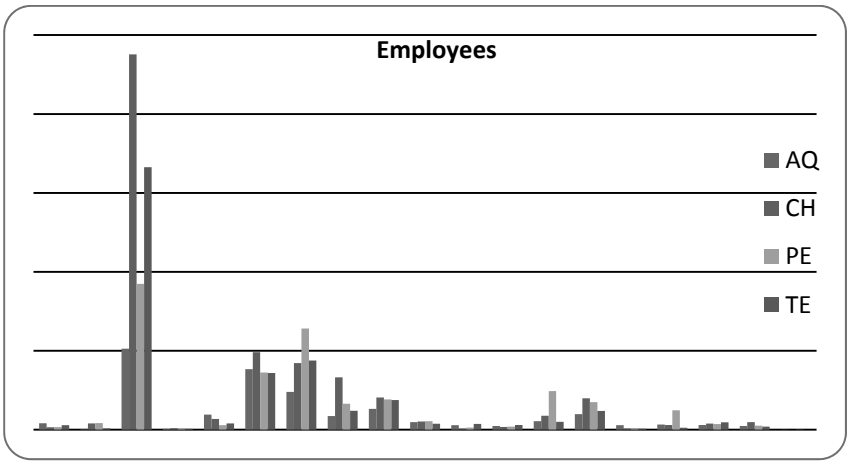


Figure 7. Frequency distribution of employees in Abruzzo provinces



5. Conclusion

The importance of diversity in regional economics has been highlighted in the introduction and in section 1. However, in the academic literature, this concept has suffered the problems of defining regional diversity in a theoretically meaningful way and of measuring relative diversity quantitatively.

At this purpose some ecological diversity indices have been restated in economics to deal with qualitative variables. The use of indices as summary measures of regional diversity is particularly appealing for their ability to synthesize vast amounts of information with a scalar measure. However, in the literature, it is well known that the use of a single index reduces the multidimensional aspect of diversity. The diversity profile is presented as a possible solution for this limitation.

In this paper we have proposed the use of diversity profiles to measure regional diversity and to investigate the different aspects of economic diversity.

In particular, the beta diversity profiles have been applied to evaluate the diversity of the four provinces of the Abruzzo region (Central Italy), providing an alternative way of understanding the economic diversity.

The regional economic diversity has been analysed by considering first the number of companies present in different sectors and second the number of employees per sector.

The results show that it is more relevant to analyze employment rate to assess regional diversity rather than the number of firms.

The above findings have implications which are potentially important to regional policy. The process of economic diversification is a considerably more complex matter than simply findind new industries which are merely different from the existing ones.

Several empirical studies have shown that regions with high degrees of diversity generally present lower unemployment rate and stability. Therefore employment shares allows us to compute industrial diversity, that can be a proxy of the stability of a region.

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EUROPE AS A RELATIONAL GOOD[‡]

Abstract

The present contribution is a part of a research on the prospect of European unity, defined by the dialectical poles of monist and polyarchical forms of distribution of the power. This reflection tries to decline this approach into a political science perspective, according to that theoretical and empirical approach called "Relational Sociology" or "Relational Theory of Society".
To overcome the bottleneck of the process of European construction, the functionalist solution pursued until now, is no longer enough. We must rediscover, within European political thought itself, some cultural trends that dissent from that technocratical uniformity of which Brussels is the last agonizing manifestation. However, we need to rediscover it not in the name of mere values or interests, but rather in the name of an adherence to reality, which also means an adherence to the deeper truth of things. For instance, it could be useful to analyze the evolutions of social bond through the lens of the "ordoliberal" tradition, going further a mere Welfare State-perspective.

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[‡] Paragraphs no. 1, 3 and 5 are written by Maurizio Serio. Paragraphs no. 2 and 4 are written by Flavio Felice.

So doing, we could rethink the very nature of political bond in a relational key.

Actually, a sort of subsidiary representation should be created, so that it can be put in a position to produce relational goods. On the one hand, it implies a reform of the European institutions towards a redistribution of powers between the European Commission and the Parliament; on the other hand, it implies a reform of the same selection process both of the representatives and the issues through old and new tools of participatory democracy. All that will be made possible through the expansion of the quantity and quality of the political demand in a key of inclusion - the very challenge of a Third millennium democracy in Europe.

JEL CLASSIFICATION: B20, K10, K33, Y8.
KEYWORDS: ORDOLIBERALISM, SOCIAL MARKET ECONOMY, EUROPE, RELATIONAL GOODS.

> Our leaders have told us that the main road to get into Europe and make Europe was the single currency (the euro). Today, we know that this is false. Europe will, and it will be good, if we think of it as a relational good and not as "the big market of the euro". Only in this way we can overcome the crisis. Not counting on the power of money, but on the quality of life.
>
> (Donati 2011)

1. The Relation after the Function

This reflection aims to bring some elements of that theoretical and empirical approach called "Relational Sociology" or "Relational Theory of Society" into a proper politological perspective, even at the risk of providing a prescriptive assessment of the current European situation.

Such a relational approach (Donati 1991) refers to a methodological pluralism where "the decisive step [...] is that goes over the social primacy of policy. This step consists of starting to think not to a unique social order, rather to different and irreducible orders limiting one another" (Censis 2000, p 20). It looks at the perspective of European unity within the dialectical poles of monist or polyarchical forms of the distribution of power according to the principles of solidarity and subsidiarity. These elements are peculiar to political authority, and make it capable of a kind global governance which is very far from any European Super-State perspective. In fact, to bring back a State-form orientation could reveal a historical nonsense§, just when the State itself enjoys a low rate of popular legitimacy, since a general request of new forms of organization has arisen from many territories: in terms of *governance* (Calise 2000, p. 132 and f.; Fiaschi 2008, pp. 2-3; Held and McGrew 2007, ch. 6), liquid government (Messina 2012), "glocalism" (Holton 2005); (Bauman 2005). Moreover, sovereignty, as state's distinctive and fundamental feature, has been deconstructed and reinterpreted according to standard quite far from a state dimension. Indeed, as noted by Censis Research Center, "you can say that now, more than the evaporation of state sovereignty, is the oldest liquefaction of the sovereignty of the citizen to cause widespread grumblings" (Censis 2012).

Instead, we know how Europe's building up has progressed by adopting a functionalist methodology, following the idea that inter-state cooperation over single policy-areas would have favored a greater union. Functionalism had the great historical credit to start the rebuilding of the political system of the Old Continent around concrete issues and not around vague principles. Since the Westphalian-Realpolitik ended into bloody trenches of the two world wars, that was an enormous risk; it could be simpler to appeal to a

§ Don't mix this statement with that naive cosmpolitism that has been stigmatized also by LIND 2011.

vague humanitarianism able to tie with necessity those Countries, wasted by wars and one another distrustful. At most, there could be a changeable balance with a pattern of mutual alliances drawn up only on bilateral bases.

Yet, this approach has, since then, turned into a neo-functionalism in the grip of the lobbies; today it seems not to be enough, both because its fundamental premise (the unity and homogeneity of the markets as a way to unify the peoples) is undermined, and on account of the re-surfaced request of a political unity, even in the form of a "Europe of nations, or peoples", which had once seemed to have been defeated by the very historical evolution of the EU.

European Founding Fathers (Adenauer, Schuman, De Gasperi and Monnet) implemented a great functionalist policy to cement the cooperative ability of a group of countries around the same resources, the control of which for centuries had been the source of many conflicts. That functionalism responded with a compromise (rewarding each country, but not maximizing at the expense of the others) to the "prisoner's dilemma of the 20th century", where the prisoners were national spirits, humiliated by totalitarianism and therefore potentially vindictive. In addition, it was a right application of "trial-and-error" form of liberalism, since it managed to survive the sinking of the European Defence Community (1954), a project, however, that was part of the plan to create joint management of the typical functions of national state. In fact, the European integration "aimed to create further limitations to the idea of the democratic nation-state, due to the presence of non-elective institutions" (Müller 2011), thus placing itself in a state of perennially searching for a principle of justification to legitimize it in the eyes of the people.

Actually, the building-up of Europe began to creak when the 2004 enlargement towards recent-democratic countries (as happened before with Spain, Portugal and Greece) was pursued by the diffusion of standards and rules, rather than *values*, and of techniques, rather than *ideals*, in this way contributing to Brussels' claims of despotic sovereignty. In the same way, the clumsy project – which later shipwrecked in 2009 – of a European Constitution superimposed upon the historical, religious and political cultures of the Continent, finally revealed the futility of such an inauthentic interpretation of functionalism. It caused particularistic, populist and xenophobic oppositions and was further exacerbated by the Crisis that is still heavily affecting us today.

In front of such a historical *impasse*, we can adopt a stratified approach to put aside the claims of supremacy nurtured by Politics. As Luigi Sturzo suggested, politics must be content to be counted as sphere of production of a particular share of the common good (public order and peace), among many other spheres that are indifferent to politics or not subordinated to it. This does not mean to "limit" Politics – something attempted several times in the Modern Age – but rather implies that its meanings and functions should be redefined.

Europe can then change direction to avoid that trap of "Occidentalism" already described by Spengler both as a theory and a praxis of decadence. This doesn't mean to embrace a sort of "second-hand globalism" in the way many do when looked uncritically to the great Eastern traditions, as the Chinese and Indian. Today, there is no territory like Europe where the globalization shows with more patency its whole semantic extension, along the two specular meaning of *crisis* and/or *opportunity.* After having spent many years in the persuasion that *opportunity* was the real face of global processes, we bitterly awakened in a situation where the crisis seems normal. In other words, it seems as the same crisis would be a recurring phase of human history where the strongest or the smartest have necessarily to prevail.

This fake and bizarre Machiavellian stereotype prevent us from conceiving the shades of human action, its unintentional consequences and its natural fallibility. Maybe for a moment we can forget those two opposite meanings of globalization, focusing instead on a realistic attitude which consider the global processes in their mere *complexity*. Actually, complexity is the reality of globalization; still, complexity pushes us to act, insisting on our rational and relational anthropological structure; and complexity alone can and need to be governed, since it has to be oriented and guided to reach common good.

The often painful experience of these years is showing that there are no fixes to govern the crisis; the experience of "the world of yesterday" instead showed us how illusory is to think to govern opportunities, because it is impossible to control the human instinct for abusing power – in finance as in politics, all the way. Therefore, both crisis and opportunity are reductionisms which don't let us face a global and complex world. A world where we all are "without maps", quoting the title of a smart book by a former vice-secretary of NATO (Minuto Rizzo 2013). Nor policy makers, nor private-sector operators have this kind of help and orientation. But, they hopefully manage to increase the civil social capital. And it feeds on the quality of relationships among different spheres of social existence where everyone of us spends his/her life.

Adopting the relational paradigm, this leads to promote a *fundamentally cooperative* structure of human relationships. Only open societies, or polyarchies, are able to promote this paradigm: nor imperialisms, nor dictatorships, nor those narrow-minded claims of self-sufficiency that even today go with the pooped debates about European future. Along this way, it is possible to rediscover, within European political thought itself, some cultural trends that dissent from that technocratical uniformity of which Brussels is the last agonizing manifestation. However, we need to rediscover it not in the name of mere values or interests, but rather in the name of an adherence to reality, which also means an adherence to the deeper truth of things. A renewed European realism, thus, based on empirical evidence of historical relations and political contingencies, because, as Robert Schuman said in his Declaration of 9th May 1950: "Europe will not be made all at once, or according to a single plan. It will be built through concrete achievements which first create a de facto solidarity".

To do this, we must reject that Hobbesian interpretation seeing a political link as a mere pact of submission to the State from citizens. In fact, despite all the formal statements in the name of subsidiarity contained in EU documents, the Crisis has shown the absolute self-referentiality of European politics, which imposes solutions, even drastically, regardless of popular consensus.

Now, in the democratic age, the face of the consensus is found in the principle of representation, especially in its indirect version. The matter turns up on two levels:

i) making the representation subsidiarian for all intents and purposes, seeing that decision-making becomes no more the outcome of a dark plan, often arbitrated by lobbies, but rests on popular sovereignty;

ii) enabling that subsidiarian representation to produce "relational goods": those goods that "consist of social relations among people (or citizens) and that require an attitude of sharing from those who generate and enjoy them" (Donati 2011). In this way, the relation is no more a "*primum immobile*" but it can regenerate itself over and over, until it becomes the very form of politics.

Thus, on political matter the solution may be an institutional reform that would give meaning and substance to the invocation of a European political union. Such a reform, interpreted in a subsidiary, polyarchical and relational key, will aim to reduce the "democratic deficit" that has been a part of the European project since its inception. Therefore, one might expect a

redistribution of powers between the Commission and the European Parliament, dividing the latter into two popularly-elected chambers: one composed of the political representatives of every member State, the other with a technical, non-political, though not exclusive competence on economic and social matters. It could be expressive of transnational interest groups, enrolled in a special register. We might add that this house should strengthen (and ultimately replace) the skills and profile of the Economic and Social Council, which is currently only an advisory body. As far as the selection of representatives, this house could be elected in a single European electoral constituency, provided that it includes a fixed number (3?) of representatives from each State-member. At the same time, the "political" chamber should continue to be elected on a national-based constituency.

According to a relational perspective, the implications deriving from this reform should concern both the process of popular consultation and the accountability of the European political class, providing a media-platform to connect constantly the members of both houses with their voters, during both the electoral campaign and their mandate. All this can be pursued by resorting to open-source tools, for monitoring parliamentary activity, which grant immediate feedback to the policies implemented. These tools of participatory democracy can include wider and wider layers of citizens in political activity, distancing them from being enmeshed by any populist movement, and improving their loyalty towards an international perspective more than to a narrow-minded vision on mere domestic issues.

Yet, looking beyond the usual reverence for the mantra of technological innovation, and any futuristic rhetoric, the same massive spread of peer-to-peer instruments of web-democracy (*i.e.* social networks, forums or applications for the aggregation and the study of open data) should be considered in the light of the danger of the setting of a "dictatorship of the active" that would simply replace the (supposed) corrupt and unqualified élite with another élite: namely, some aggressive, organized and diligent minorities imposing themselves with no less coercion on the majority of citizens.

As the European political space does not seem sufficiently impenetrable when facing with a probable escalation of this kind, such a shift could start a trend of gradual marginalization of the moderates from the political debate (Hindman 2008). This could occur in a manner analogous to what happened at the hand of some *avant-garde* political groups who inspired the action of international and non-governmental organizations. These new populist élites

are not so different from lobbies currently working at the margins of the European Parliament, which are often fostered by radical public opinion.

We have no more time: the constituency is required to be gradually diverted from the populist sirens and from their allure of transgression against the canons of political orthodoxy: rather, people have to be passionate about authentic democratic game. Democracy is centered on the inexhaustible capacity for innovation which exists in the nature of these very same institutions (Acemoglu and Robinson, 2012), inasmuch as they embody the highest expression of popular sovereignty. Coherently with the call addressed by Pope Francis "to initiate processes rather than occupy spaces", today the challenge of politics has to be played on the grounds of inclusion, whether you consider democracy in terms of liberty, or you consider it in terms of equality.

2. The evolution of social bond

The inclusion is just the way that can help us to reach a further step in our argumentation: the issue of the evolution of the social bond.

In an open society, in which bonds are inevitably – and in some respects, positively – partially dissolved, political policy has no monopoly on the "civil bond", or on the "social bond" as they say. Policy, if any, plays a key role within its own order, as in it are institutions dedicated to the definition of the rules of the game. However, it is only one of many orders that an open society is called upon to deal with. In an "open society", a "great society", or a "big society", we are dealing with a wide variety of orders and thus the political link is one of many necessary links, but it does not exhaust the scope of civil society; neither can politics claim to homogenize society by law. Political order, ultimately, relates to other orders (Sturzo 1935).

In this sense the term "civil solution" rather than "political solution", becomes relevant if, of course, we also include the political moment in the civil. I think, for example, that the oft-cited principle of subsidiarity which seems to haunt every debate and is sometimes called, liberal, recalls exactly, in its horizontal and vertical dimensions, a need for connection of civil orders. Moreover, it is articulated in such a way that no one can lay claim to have a monopoly on civil society (Sturzo 1935, pp. 72-77). I am referring to that particular formalization of the public decision-making moment that Professor Stefano Zamagni calls "circular subsidiarity", *i.e.*, the continuous call for coordination of systems which operates in civil society and among

the actors who are protagonists in it: in short, an open polyarchycal society, articulated according to the principle of subsidiarity, requires a lot more than government governance.

We should be more attentive to expressions such as civil society and civic culture, and not use them in such a rhetorical way. Think, for example, how many political parties, even in the last Italian election, are presented with a term that refers to the concept of "civil" and how many times we hear our politicians speak of civil society, with the sole aim of presenting themselves as unique and, *ça va sans dire*, its most authoritative interpreters. We should seriously commit ourselves to reflecting on what the notion of "civilian" is to understand what we really mean by "civil". Now, considering the history of ideas, we know that all in some way have appealed to the notion of "civil society." But we know that the understanding of "civil" according to Hobbes was not the same "civil" according to Mandeville or Smith or Marx or Hegel and so on. So, what do we really mean by civil society? If we mean a reality in which the strongest necessarily prevail over the weak and thereby assume a Hobbesian type anthropology and perspective, which welfare society or community, could we ever imagine? The answer is obvious, none. We can only imagine an imposing welfare state: rigid, all-encompassing and engulfing everything. I want to emphasize that with regard to the comparison between the "welfare state" and "welfare society" there isn't a difference of degree. A slight "welfare state" is still something different from the model of "welfare society": it is a difference of "kind", not of degree (Donati 1997).

On the other hand, while excluding the "Hobbesian solution," we can imagine a society equally distant from that which is described by the principle of subsidiarity: an idea of civil society in which the "civil" actually resolves itself in the alliance among the cliques. In this case, the civic culture would be the basis of political legitimacy: "we need civil society to legitimate the political order." If we continue to consider viable options in the two models set out above, and if we persist in the theorizing of a welfare community as an expression of a slightly more free welfare state, but still the son of the ideal-typical models of civil societies mentioned above, it is clear that there will never be space for civil society, for a civil economy and for a welfare community.

There will be no room for subsidiarity and polyarchy will be denied. We will always need an intrusive political system that will not only regulate the processes, but also advise, as its essential mission and vocation to homogenize cultures, values, interests and engulf the freedom of non

homogenizeable intermediate bodies. The idea, however, which we think is the foundation of an authentic order of subsidiarity in classical liberal tone, is a civil society understood as a critical levee to political order: an insurmountable limit whose importance and need no one seeks to challenge, so that it doesn't absorb everything else.

Regarding this aspect, Pierpaolo Donati says that "civil society understood as a plurality of coexisting autonomous social formations collaborating for the common good has been wasting away, especially in legitimacy, in ability and in organizational resources. In our country, it translates into a tragicomedy. Civil society is enhanced only to be used as a tool of a power play for the conquest of the State" (Donati 1997, p. 26). Here, then, if our civil society has slowly become all this, then there is no link that holds: there may be only either cliques or the Leviathan.

The fact remains that civil society as a civil culture would need all of the others and not of this, in order to be a welfare society or a welfare community consistent with an open and poliarchycal society according to the principle of subsidiarity.

3. Beyond a Welfare perspective

Regarding this end, the benchmark is the controversial affair of the Welfare State, with its results in terms of material wealth and psychological dependence. Thse last two dimensions often turned the Welfare from a factor of progress to an obstacle towards that social mobility it stated to promote. The First Wold War and the spread of the Great Depression abroad saw States taking on unprecedented prerogatives and expanding in sectors of social and economic life once managed only by privates. The measures of planning, rationing, mobilization and reconstruction taken at that time, created new links between governments and groups of producers, giving to the latter broader legislative powers, with a decisive impact on subsequent paradigms of public policy.

According to Charles Maier, the corporatist organization increased apace with the increased government functions. "Every centralization of an allocative task prompts a new search for consultation and codecision making" with the actors involved. And the "crisis involved in wartime provided just the clearest and most dramatic example in delegations from industry and labor". Maier concludes that the new corporatism has its roots

in the "recasting bourgeois Europe" which took place between the two World Wars (Maier 1981, p.52).

Philippe Schmitter noticed that John Maynard Keynes was "the first major theorist to perceive certain emergent imperatives of capitalism and to link them explicitly with corporatism" (Schmitter 1974, p. 108 f). In his essay *The End of Laissez-Faire* (1926), Keynes challenged the economic and anthropological assumptions of the classical theory, according to which the enlightened self-interest always operates, albeit unintentionally, for the public interest (the Adam Smith's "invisible hand" by Adam Smith). One year before, Keynes stated that "in the future, the Government will have to take on many duties which it has avoided in the past". As Schmitter commented, the objective of this imperative policy expansion was to exercise "directive intelligence through some appropriate organ of action over the many intricacies of private business, yet (…) leave private initiative and enterprise unhindered". In turn, all his critics highlighted, especially looking at the results achieved in the application of these theories, the contradiction expressed in these words.

But Keyens continued: "I believe that in many cases the ideal size for the unit of control and organization lies somewhere between the individual and the modern state. I suggest, therefore, that progress lies in the growth and recognition of semi-autonomous bodies within the state – bodies whose criterion of action within their own field is solely the public good as they understand it, and from whose deliberations motives of private advantage are excluded, though some place it may still be necessary to leave, until the ambit of men's altruism grows wider, to the separate advantage of particular groups, classes, or faculties – bodies which in their ordinary course of affairs are mainly autonomous within their prescribed limitations, but are subject in the last resort to the sovereignty of democracy expressed through parliament. I propose a return, it may be said, towards medieval conceptions of separate autonomies" (Keynes 1952, pp. 313-314; Schmitter 1974, p. 110).

Well, here lies to me the paradox of the modern State: the modern, monist State was born just to constrast that social fragmentation and (poliarchycal) dispersion of power typical of Middle Age and Ancien régime. The State was conceived to reduce the diversity to the unity under the supreme sphere of a positive law. It had to be implemented by the State *longa manus*, the Bureaucracy, in order to build a constricted space for individual and social liberties, and make them controlled and submitted to the State (liberty *in* the State).

On the other hand, the progressive development of liberalism threatened state sovreignty, since it is a doctrine of liberty coming just from the State. It reacted organizing common interests and limiting the acknowledgement of their action and existence. This was a clear attempt to rule the natural complexity of society, re-imposing a shaky order on the liberties' emerging vitality (Galli 2001; Diotallevi 2010).

In other words, the State realized that it needed professional and specialized skills to *rule the complexity*. They could be extracted only from some monopolies of representation organized into a hierarchy under the State control. Besides, the governments benefited from a too fragile legitimacy to impose their own policy directions. Then, they sought to include in the decision-making the big organizations of interests. In order to pursue this aim, the State even consented to transfer or divide with those groups a great part of its own decision authority. In this sense, some scholars equated the new corporatism to consultation (or "*concertazione*") in the matter of an economic policy. In fact, some corporations were always used to be consulted by government before the implementation of political measures.

To sum: in new corporatist countries, the *State* is the driving and aggregative force of interests – not the *civil society* (as pluralist or polyarchical orthodoxy would like) (Schmitter 1981). Here, from the Sixties onward, some groups of interests (trade unions and industrial associations) handed the upper hand on the others, replacing even political parties in their roles and functions. In the same way, those groups got also a decisive influence on social and economic policies, to such an extent to be considered the principal or exclusive beneficiaries of such policies. In fact those groups don't limit themselves to represent the interests of their members, rather they generate and impose them on the whole society; nor they limit themselves to give their demands in the political arena, but they take part to it in order to guide the decision-making on their paths.

We may find fixed on this level the reasons of a widespread hostility towards these new corporatist arrangements. They come undoubtedly from those vital social forces which cannot tolerate further narrowings in the sphere of influence of their political representation.

In my opinion too, the social model resulting from new corporatism is the real accused of the current and systemic crisis of our Continent. Yet, there is at least another European tradition from which we can glean useful suggestions in order to escape from these doldrums: the economic

ordoliberalism theory and the social market economy, which according to many observers can be considered as the foundation of the European Community (De Benedetto 2000, pp. 18-19).

4. The Ordoliberalism as a resource for Europe in crisis

First of all, our reference to the social market economy meets an academic (more than political) experiment that was initiated in the second half of the Thirties in Nazified Germany as an experiment that took the name of "Ordoliberalism" (Forte and Felice 2012). Among the main representatives who contributed to the development and dissemination of that school of thought there were economists such as Walter Eucken, Alexander Rüstov, and Wilhelm Röpke and jurists such as Hans Grossman-Dörth and Franz Böhm (Habermann 2006); the latter, together with Eucken, were the coeditors of the "Ordo" journal. In the first volume of their publication, *Ordnug der Wirtschaft* (1936), Böhm, Eucken and Grossman-Dörth drafted a programmatic introduction in which they articulated their firm stance against the persistent legacy of the German Historical School of Economics of Gustav Schmöller and they also asserted the general principle that "all the practical political-legal or political-economic issues had to be linked to the notion of economic constitution", in the conviction that the interrelationship between law and economics is "crucial". In the essay/manifesto of 1936, named "Our Task", the fathers of ordoliberalism pointed out: «Law and political economy were constitutive forces that exercised a remarkable influence – for instance, in the reconstruction of the legal and economic system that took place in all civilized countries at the end of the 18th century. Only during the course of the 19th century and at the beginning of the 20th century they lost their prominence» (Böhm, Eucken and Grossmann-Dörth, in Peacock and Willgerodt 1989, p. 15). The Historical School of Economics, as Eucken wrote in the 1951 edition in his *Foundations of political economy* [1939], is atheoretical in the sphere of political economy and arbitrary in the sphere of economic policy: «Menger maintains that the historical economist must find out the "concrete relationships between facts". But this is exactly what a historian cannot do. How can he establish through his historical method the connections that exist between price drops, unemployment and output decline and the concrete

causes of all these phenomena?» (Eucken 1951, p 51). According to Eucken, the relations that the "historical economist" discerns "are still unknowable through his methods". In other words, at the heart of the concept of "Ordo" there is a free competitive market, essential so as to ascertain a freedom which is not only economic. Without regulation which conforms to such principles, the market cannot work appropriately or sustain economic growth while providing the base for equitable distribution.

After the Second World War, the Ordoliberal program offered the theoretical foundation for the development of the so-called "social market economy" (Felice 2008). The social market economy and its underlying theory, ordoliberalism, both present themselves like an alternate and systematic approach leading up to the *Ordnungstheorie* and to the *Ordnungspolitik* (Vanberg 2006, p. 916). Unlike the authoritarian understanding of the term "order", for "ordoliberals" the notion refers to *coordination* of individual plans, a decentralized coordination of economic activities in a general framework of rules of the game, and refuse to *subordinate* economic activities to a central authority[**]. This is the reason why we believe, like Vanberg does, that the founders of ordoliberalism emphasized the role of the rules of the game, as the main means to attempt to put in place an economic policy capable of improving economy, i.e. to put in place "correct economic institutions" (Vanberg 2006, p. 917). For our authors the combination of law and economic analysis is a prerequisite to create what they called the social market economy, i.e. the development of an economic constitution attempting to improve the economic system in an *indirect manner*, revising the rules of the game, in sharp contrast with an interventionist economic policy. Razeen Sally writes: «It's up to the State to put in place and maintain the institutional framework of a free economic order, but it must not intervene in the mechanisms of the competitive economic process: here is the essence of the *Ordnungspolitik*» (Sally 1996, p. 8). All of this in the conviction that the establishment of such an institutional and legal framework, of an effective market order, could have enabled to solve of the social issues of the 19th century. In 1936 Eucken,

[**] For an analysis of the debate between ordoliberals and Austrian economists, see Felice (2008, pp. 57-62). See also Bladel (2005, p. 22). For a wide overview of the Austrian critique on the ordoliberal perspective, see Sally (1998).

Böhm and Grossmann-Dörth themselves, in the "Ordo" manifesto, stated that: "We seek to create an economic and social order ensuring, at the same time, the proper functioning of the economic activity as well as decent and humane living conditions. We are in favour of a competitive economy, since it allows to achieve these goals. And we can also say that this end cannot but be accomplished by this means. Competition is a means, and not an end in itself" (Böhm, Eucken and Grossman-Dörth, in Peacock and Willgerodt 1989, p. 15).

Thus, which are in synthesis the ideal features of the social market economy model?

the State must put clear rules in order to ensure equality between the various economic operators. Among these, we mention the control of concentrations of economic powers, in particular, endanger the middle class. Similarly, the State should defend and promote family savings and "self consumption"[††].

Only if there is a clear failure of the market to function in a satisfactory competitive way, the State will assume the exercise of public enterprise or regulate those private, in a market consistent way.

Right prices and wages, as a result of a genuine competitive process, are the best protection against unemployment. The task of the State is only to prevent the "exploitative wages".

Social policy should not consist merely in the sum of uncoordinated individual measures, but must ensure a true community of men. State responsibility is to create the conditions.

The economic system must be protected by constitutional rules which clearly fix the fundamental principles.

Anyway, in order to prove the adherence of this proposal to the current moment, we need to reach a deeper comprehension of such as argumentations, with the help of German economist Alfred Müller-Armack. In 1978, he published an interesting essay with an eloquent title: *The Five Major Themes of Future Economic Policy* (Forte and Felice 2012, p. 403). The article begins with the assumption that classical liberal democracy is a

[††] Here is a clear reference to the small peasant property and the ownership of the factory workers of houses with small farms that allow them a certain degree of economic autonomy

constitutive element of the economic model called the "social market economy" and therefore, that this model should be taken as the instrument of social and economic policy by which a truly freedom-oriented political system pursues its goals.

Müller-Armack identified five tasks and measured them against a basically freedom-oriented order, that of the Federal Republic of Germany, which had assumed the typical institutions of social market economy as instruments of economic policy:

i) First of all, such a freedom-oriented order would have to make clear that any attitude, more or less radical, which was contrary to the market economy, would have condemned it to a certain shipwreck. For Müller-Armack, it is nothing other than to plan the final outcome of such a wreck well in advance: through controlling investments, with the resulting brake on growth, promoting the expansion of the State, and finally with price controls.

ii) Secondly, a freedom-oriented system, established according to the principles of the social market economy, would have favored the full extent of mobilization of financial resources, through the instrument of the "tax credit". The Müller-Armack proposal is such that vouchers would have the function to repay, with the payment of taxes by companies (for example in the payment of VAT), a certain percentage, say 10%, in tax credit, which, for example staggered over five years to five installments, can be spent by the taxpayer or by the person who has acquired such tax credit for subsequent years, with the payment of this or that tax of one's choice. Such a procedure, says Müller-Armack, would improve the companies' income situation, it would not change the revenues of the state today, but they would be greatly reduced in subsequent years. This seems possible and bearable if through such income support for companies, these are then given the possibility of increased investment and the economy as a whole is set in motion.

iii) The third task expected of a freedom-oriented system inspired by the model of social market economy, would be in reference to the "spiritual forces" that underlie the democratic experiment and the same market processes. Here Müller-Armack seems overwhelmed by certain pessimism and denounces the cultural and moral deficits that would have made it more difficult to understand how freedom, democracy and competition all depend, from a particular anthropological perspective, on one's ability to grasp the real. Müller-Armack denounces the loss of a general outlook that probed the depths of the structure of the market processes. Ultimately, he denounces the lack of accountability of those in the sphere of politics. According to Muller

Armack, absent from the public arena is the idea of competition and the constitution background which supports it. The social arena of the German Republic lacks the knowledge of the positive social and political effects of a free market and the idea that a free-market is compatible both with justice and raising the living conditions of the most disadvantaged. It is here that we can see one of the fundamental principles of German economic policy after World War II, one that is considered a cornerstone theory of social market economy. Today it is barely even criticized by those who see in the rigor imposed by the European institutions a reflection of the claim hegemony of German economic policy. In practice, it is the idea that a policy of monetary stability is the only basis, in the long run, for economic growth and greater employment. In as much as Müller-Armack avoids the temptation to offer a dogmatic interpretation of social market economy, he recognizes that there is however a theoretical core that acts as a pivot-point around which possible interpretations and different public policy recipes revolve. In practice, social market economy needs a public policy geared to integral and indivisible freedom, it is faithful to the principles of classical liberalism, combines the principle of free competition, it does not theorize any limitation of social guarantees in favor of freedom and vice versa. This model promotes economic growth, from which social benefits and many possible assurances spring: wages, pensions, annuities, and capital formation at the widest possible basis of the population.

iv) The fourth task that Müller-Armack assigns to a system inspired by the social market economy model is the establishment of a European order that reaches up to the establishment of a stable monetary order. Müller-Armack was aware that no monetary order would ever have been born if it had not been preceded by a progressive convergence of different parameters that serve as fundamental economic policies of individual countries. Even for a father of social market economy such as Müller-Armack, as long as different rates of inflation and different rates growth in individual countries existed, a single monetary order would never have been able to be born. The responsibility of each of the individual countries and the European institutions would have been that of creating the preconditions of an economic policy which would have favored financial stability, a balanced budget and long-term growth. In this context, the monetary order would be come to pass as the spontaneous result of a long process, perhaps an objective farther away than it was in reality, but certainly not impossible. From this point of view the model of the social market economy in the most

radical way expresses the belief that only a "relatively stable" monetary order can be the basis for growth which is orderly and lasting. This is a fundamental prerequisite to ensure the best conditions for businesses, workers, consumers and the public administration.

v) Finally, the fifth task Müller-Armack assigns to a freedom-oriented system inspired by social market economy is to always seek tirelessly and creatively new institutional paths that may achieve the "social compromise" between liberty and justice, though always within the situation of the free market and to conform to it.

After thirty-six years, the economic policy agenda of a father of the social market economy such as Müller-Armack retains its value, a value that can be measured in terms of defense and promotion of the free institutions, of responsibility for future generations, and awareness about the distribution of income and the social function of the principle of competition. The market thrives on competition and dies in its absence, but the market *in primis* requires a culture that presupposes an arbitrator which defends it from unfaithful merchants, from the spirit of fraud and from abuse; it needs a mature and free political system that puts itself at the service of civil society, punishing and expelling anyone - including corporations and factions - which would try to subjugate it and turn it into a sad playground where the winners are always the same (and, of course, never the best).

From these considerations naturally descends another relevant aspect of the so-called model of Social Market Economy: the reflection on the relationship between ethics and economics. Alfred Müller-Armack, in his essay *The Moralist and the Economist: On the Question of the Humanization of the Economy* (Forte, Felice and Forte 2012, p. 279), takes on the possible dialogue between scholars of moral theories and economic scientists, suggesting the need for a synthesis that can respond to the conceptual needs of both.

In short, Müller-Armack does not theorize about the ethics of rigid disciplinary segregation, or even a vague interdisciplinarity, which are two "enemies" on the methodological front, from which the German economist will take quite a distance. That is to say, in terms of the relationship between ethics and economics, we can consider two main approaches: the first can be called "ethics of the addition" and a second, "ethics of substitution." In the first case, one would not do anything other than juxtapose and add questions of deontology to the classic "arsenal" of the discipline one intended to moralize. In the second case, it is believed that the presence of a moral

element involves the reduction of that "arsenal," inasmuch as ethics would be in contradiction with ordinary economic action.

Both approaches support the contention that the ethical prospective would be, respectively, either an accessory or a real alternative, with respect to the economic dimension. Ultimately, both share a notion of ethics as a set of rules and prohibitions, a deontological code of ethics which is a must, or should be useful to follow. On the other hand, Müller-Armack and, more generally, the perspective of the social market economy seems timely in proposing a "transdisciplinary" approach that neither juxtaposes nor replaces ethical questions with economic ones, confusing one with another in an impersonal way. Rather, they propose an approach to economic issues across disciplines, in their common object: homo agens. They also bind together the issues identified as relevant on the basis of a declared anthropological perspective - the ontological, methodological and moral centrality of the human person - and therefore propose that an ideal society is characterized by the principles of freedom and justice. In short, this method is able to grasp the mutual influence which each discipline can exert on the other, in relation to their common object: the person.

For this reason, the very idea of a social market economy has become the ideal perspective around which, in the aftermath of World War II, a group of social scientists found themselves organized. They belonged to the liberal circles who had opposed the rise of totalitarianism in Germany - the archenemy - which was implemented by politicians who believed that the post-war reconstruction would have to go through a "regeneration of the idea of competition," until the humiliating moment of the centralized management of the economic processes. The search for a new "order" in the eyes of these intellectuals and politicians who set themselves the goal of putting into practice the theory of "Ordo", resulted in an attempt to create a sort of competition through which the needs of the market economy could be reconciled with those of a general well-being.

Therefore, in order to be able to speak concretely of civil progress, it is necessary to compare this progress with the efficiency of our political institutions and economic relations (such as infrastructure, transportation, energy), as well as financial institutions that should ensure the optimal use of savings. All of this requires large sums of money that only a prosperous market economy is able to provide. In contrast, the economic scientist, entrepreneur and politician must think in a global and multidimensional way; they must demonstrate that they know how to take responsibility at various

levels in the face of the foreseeable consequences of their choices in political, economic and financial fields, and to react adequately in the face of still present unintended consequences. Economists, businessmen and politicians, even without denying the functionality of the economic laws that they are required to implement, can never neglect the moral perspective. Together with the moral experts they must always tend towards an institutional solution that can meet the demands of social justice, personal freedom and democratic formation of a political consensus.

However, even once this ethical foundations are established, we still have the problem of aligning political actions in accordance with the market, authentically participating in subsidiarity, and yet not a part of the welfare state. It is at this level of the discussion that interpretative problems and threats posed by enemies within the model begin, posing the risk of deviating from the soul of classical social market economy.

In his discussion of the political process, economist Afred Müller-Armack's interpretation of "conformity to the market" offers the greatest possibilities but also the increased risk of enemy infiltration. According to Müller-Armack, subsidies of social policy (in the form of direct subsidies and those for rents and construction of housing) are in accordance with market. Between measures that are against the market and those in full compliance with the market, there remains in practice an intermediate level of measures yet to be reconciled with the market economy. Moreover, even those measures that he would define to be clearly not in accordance with the market would not necessarily represent a problem, since the market economy would be able to tolerate a large proportion of non-conforming measures without losing its nature. The interpretation of Müller-Armack is an evident internal obstacle to the model of social market economy that, over time, has exposed such an idea to considerable misunderstandings, and has sided with severe criticism. Finally, Röpke, who has proposed a narrower and stricter interpretation of the notion of market conformity, denies that the distorting effects of intervening in the market may depend on the amount of intervention. He considers the qualitative aspect of the intervention to be more detrimental than the quantitative aspect. This means that an intervention dissimilar to the market, even if minimal, would be able to destroy the free market, while an intervention compliant, although massive, would allow market processes to absorb it and to resume their course.

The scope and discretion with which, over time, the internal enemies have interpreted the principle of "compliant intervention in the market" is at the

base of a certain stigma that has affected the concept of a social market economy. In front of external enemies, this principle seems to be an "empty formula" to which anyone can appeal or behind which they can hide, in order to justify increasingly massive interventions that are prejudicial to the principle of free competition.

In contrast, interventions compliant to the market are those which, although changing preferences of the operators, do not alter the logic of the market: optimal allocation of scarce resources to alternative uses. The preferences change along with market conditions, and in practice, are reabsorbed by the new equilibrium. By contrast, a non-compliant intervention gives a misleading signal, whereby investors receive bad information that will cause them to act accordingly. Practically, in the latter case, the changed behavior does not follow the real market conditions. It rather corresponds to the impulses that have been at the base of a policy simulation founded on wished-for market activity, which in turn is based on partisan, lobbyist and corporatist interests that inevitably dwell in any society. In this case, the changes are not absorbed by market processes, but by subsequent and more massive doses of non-compliant interventionism.

In the most authentic view of the social market economy, the logic of the market offers a compass to navigate the maze of its processes. We could say, by analogy, it is like the light of the lighthouse which allows sailors to return to port. The compliant intervention, even though not necessarily recommended by the theorists of social market economy, actually moves the mouth of the harbor, but, unlike the non-compliant intervention, keeps the authentic signal-light and does allow the ships to crash on the rocks. On the contrary, the non-compliant intervention is such that it has the ability to turn off the lighthouse of the market and turn on the deceptive lights of particularistic opportunism dictated by political contingency; and it turns them in an inopportune direction for the ships.

5. A short conclusion

In short, the socio-economic constitution of Europe outlines a model of social market economy. According to that, public authorities have to promote a "smart, sustainable and inclusive growth", and they have to implement a set of interventions conformable to the subsidiarity principle.

Even here, if we would adopt a subsidiarian and relational view, we could find both theoretical and empirical evidence of our starting point. It stands to reason that the supply of essential services for individual subsistence could not be limited to a redistribution of economic resources; rather, it has to turn into a growth of that quality of life we quoted at the beginning of this work.

In other words, as Robert Kennedy suggested some decades ago, GNP is not enough. Only relations could keep societies united and cohesive through those agencies devoted to creating and promoting relational goods, as *in primis* the families, the associations of families, the third sector, even those companies engaged in paths of corporate responsibility. In this sense, and only in this sense, "private is public", as the revolutionary slogan of '68 stated. And Europe can be considered a relational good if it becomes the multiplier of our deeper ambitions and truer bonds, as citizens and as nations.

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ANATOMY OF CORRUPTION IN BANGLADESH: CAUSES, IMPACTS AND POSSIBLE SUGGESTIONS

Abstract

The 21st century is defined by the social hazards that gradually affect the well-being of people, societies and environments. A social hazardous situation is a condition or crisis that displaces social order and solidarity in the social structure. Corruption has emerged as an incurable disease which has paralyzed each part of the social systems that cannot ensure social harmony within the system. Corruption has different characters and it occurs in all domains of public sphere of the country. This article presents an initial overview on how different forms and causes of corruption are responsible to displace the social order within the social structure. Although, there have no clear definition of corruption, it can be defined as doing anything for vested self-interest through many ways that violates social norms and ethics. By examining the causes of corruption of corruption in the line of qualitative method, the aim of the article is to bring into focus how multiple socio-economic factors such as such as the dishonesty of top leaders, lack of commitment, injustices, poverty, low salary, lack of accountability and transparency, lack of good governance, administrative procedures, traditional values, and social and political structure are responsible behind the all pervasive characters of corruption in Bangladesh. The people are experiencing with poverty, social inequality, and distort income earning distribution and they are becoming poorer in the society. This system have

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been institutionalized in the social systems from top to bottom level that have created social pathologies and disorders in the whole system of the society.

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1. Introduction

Corruption as one of the oldest phenomenon in human society exists in all societies of developing countries. Bangladesh as a developing country, the political systems have shaped the nature and extent of corruption over the long years. Corruption, in recent years, has increased both vertically and horizontally. It has become an issue of major economic and political significance in Bangladesh and has created a massive debate in political and academic atmosphere. Political pressures continue to play a vital role on sustaining corruption in society. In the line of these debates, the present study is designed to demonstrate the nature, causes and consequences of corruption in Bangladesh.

The study has also emphasized on a theoretical view about how corruption is being practiced or occurred in public sector for personal gain. Although, there have no any concrete definition of corruption, the study defines corruption as any illegal and unethical activities performed by public officers and use the public for personal gain and interest which it increases poverty, social inequality, and distorts income earning capacity of the mass people. Thus, it has become a common enemy of Bangladeshi society. Even, corruption has also broken down the social capital and increased social disorder in the society.

2. An overview of literature: delineation of corruption

In conducting the research work the researcher had reviewed several books, articles, newspapers and reports from the multi-disciplines in order to get an insight about the research subject. In this section the piece of work

attempts to provide a number of seminal scholarly contributions, which are fervently referred to in ongoing debates on corruption, which help in searching for a better understanding of its form, causes and consequences of corruption.

The general point of view is that the definition of corruption is controversy (see Table 1). The word is generally used to refer to a wide range of illicit or illegal activities. Although there is no universal or comprehensive definition of what constitutes corrupt behavior, the most prominent defining emphasizes the abuse of public power or position for personal benefit. World Bank defines corruption as 'the abuse of public power for private gain (WDR 1997)'. In this regards Zakiuddin (no date) opines that corruption is a specific exchange, behavior, activity or process occurring at a point where the public and private dominos come into contact, although corruption can also exist in the private sector. From this definition, it is obvious, that corruption carries within it several assumptions of a 'public' as opposed to a private domain; an official code of behavior, the existence of a public or state apparatus; and even the existence of a particular kind of social, economic and political organization (within which the public and private can operate smoothly).These assumptions are significant when it comes to dealing with corruption at the political, economic and sociological level it is often difficult to decide exactly what constitutes corruption.

It is difficult to generalize about the form that corruption assumes in different country contexts. According to Robinson (1998), corruption can be categorized corruption into three main form: 'incidental', institutional' and systematic'. Here incidental corruption tends to be episodic being part of daily life which exists at all political and socio-economic levels influencing individual behavior and institutional systems where as Johnston (1998) argues that this form of corruptions troubling 'worst case scenario' growing out of and perpetuating the development problems of so many poor countries. On the other hand, World Bank (2000) identifies three typologies of corruption which distinguishes between 'grand corruption' typically at governmental level, 'middling corruption' typically at the enterprise level and 'petty corruption' such as small-scale transactions between citizens and public officials. Petty corruption is most pervasive and harmful to the poor. Heidenheinmer (1978, pp. 3-30; c. f. Morgan 1998) proposed three types of corruption: 'while', 'grey' and 'black'. Black corruption designates those

actions, which a majority consensus of both elite and mass opinion in a given society would condemn and want to see punished. Heidenheimer combines those three categories of corruption with ten types of behavior exploring the incidence of and reactions to the latter in four basic types of political system (Ibid). These typologies are interesting, as it emphasizes the variability of societal reaction to various types of behavior.

The causes of corruption are as multiple and complex as its forms are varied (Rose-Ackerman 1996). Corruption exists in different institutional as well as social settings (Johnoston 1999). The root of corruption tends to be grounded in a country's political and economic history, bureaucratic traditions and process of social and cultural information. Systematic corruption for example tends to be organized; pervasive and deeply rooted in certain socio-cultural environments, typically 'monopolistic' (Robinson 1998). Dobel (1978) in this regard claims most of its sources lie in patterns of inequality in wealth, power and status. A lack of or political or economic competition and slow or uneven economic growth are found to encourage this type of corruption (Robinson 1998). Weak or under developed civil society, democracy or institutional capacity and an underpaid and hidebound bureaucracy (Rose-Ackerman 1999) are also fundamental ingredients. According to United Nations (1990), corruption in fact is the result of the presence of a number of several factors. These include rapid economic and social change, strong kinship and sometimes confliction views about what is proper public behavior, governmental monopoly over economic activities, political softness, widespread poverty and socio-economic inequalities, ignorance, lack of knowledge about individual entitlement, communal bounds, ambivalence towards legitimacy of governmental organizations, asymmetric relationship factoring those in control of state power, economic shortages in which public officials assume extra ordinary control over scarce goods and services, greed, patronage and systematic maladministration (Azad and Huda 2010). Most of the above mentioned factors contributing to corruption could be categorized into six-fold typology in accordance with Caiden's view (1991a; cited from Khan 1998) which are ideological, external, economic, political, socio-cultural and technological.

Corruption is also often attributed to an underdeveloped democracy. Corruption simultaneously destroys institutional and political efficiency and legitimacy feeding into the rent-seeking vested interests, posing a huge

barrier to reform (Siddique 2001). Colonial regimes often institutional legalize and organizational cultures that shaped the nature and extent of corruption practices. In addition, it could be argued that the constitution of colonial legislation in present day legal systems also encourages corruption (WDR 2001).

Table 1. Theoretical standpoints of corruption

Characteristics	*Definition*	*Considerations*
Illegal activities	The abuse of public power for private gain (WDR, 1997).	Corrupt behavior
Interrelation between public and private domain	Corruption is a specific exchange and activity or process occurring at a point where the public and private dominos come into contact (Zakiuddin, no date).	The existence of such type of social, economic and political organization in social system
Political and economic composition	Corruption can be seen from incidental, institutional and systematic point of view which has a tendency to be episodic being part of daily lives that exist at all political and socio-economic levels. (Robinson, 1998).	Influencing individual behavior and institutional systems
Weak governance	Weak or under developed civil society, democracy or institutional capacity and an underpaid and hidebound bureaucracy (Rose-Ackerman, 1999) are also fundamental ingredients of corruption.	Lack of strong bridge between government and civil society
Absence of rational legal democracy	Corruption is also often attributed to an underdeveloped democracy. Due to lack of democracy corruption simultaneously destroys institutional and political efficiency and legitimacy feeding into the rent-seeking vested interests (Siddique 2001).	Self interest

3. Situation of corruption in Bangladesh: British to present

Bangladesh is a developing country in the world with an approximate per capita income of US $580 (WDI 2011) ranked 140 out of 177 countries in UNDP's 2007/2008 Human Development Report. Out of a population of

around 162 million (WDI 2011) among 32 % of the population live under the poverty line (The Daily Prothom Alo 2011). The projected population of the country is about 250 million by the year 2035 (World Bank 2006). About 41.3 percent population has below US$1 income per day (WDR 2008). It faces tremendous challenges in coping with the infrastructure and service requirements of its growing population, with a total public expenditure of US$ 819.1 million (BBS 2003).

Despite poor initial conditions, a widespread perception of poor governance, confrontational politics, and vulnerability to natural disasters, Bangladesh has achieved steady economic growth of 4-5% annually over the last decade. Around 52% of the civilian labor force of the country is engaged in agriculture and 14% is engaged in industry (BBS 2006). Though social indicators do show improvements, no stably in fertility reduction, child mortality and primary education (DFID 1998) they still remain relatively low, social problems has become widespread in Bangladesh. These refer with a backward economy, political instability and particularly corruption at all levels of society and government (TI 2000). Among these problems, corruption is predominantly symptomatic of inefficiencies and distortions within the public sector.

The structure of malpractice and legacy of client-patron relations can be identified from the British regime. The British administrative structure had institutionalized a highly corrupt system of administration in subcontinent. Employees were paid subsistence salaries effectively pushing them into exploration and private business (World Bank 2000). Kamal (ibid) reveals that after forty years of Independence (1971) Bangladesh is condemned to oscillate between autocracy and democratic rule. Even, at independence Bangladesh was an extremely patrimonial state, with and administrative system a business class completely dependent on state patronage (Rose Ackerman 1999). However, after independence all the effective rulers had been accused of either direct or indirect involvement in large scale corruption. The father of nations Bongbundhu Sheikh Mujibur Rahman was conscious about corruption. During the regime (1972-1975) of Bongobondhu Sheikh Mujibur Rahman, corruption became a major issue and tried to minimize it in public sector (Khan 1998). On the other hand, General Ziaur Rahman established record level of corruption through establishing the political party (*i.e.* Bangladesh Nationalist Party).

During his tenure local units of BNP become pockets of corruption and built on loyalty to his party and patronage distribution. Under Zia presidential, parliamentary and local elections were to some extent manipulated in favor of his part (Khan 1989; cited from Khan, 1998). Under Zia's patronization politics had been guided by greed, lust and naked struggle for raw power (Huda, unpublished). General Hossain Mohammad Ershad's (Ershad) government established record level of venality. He seized control under a military group under his nine year military rule market rules were supplanted by military power. The countries already weak institutions and administration were eroded further ailing side principles their legitimacy through a system of patronage bestowing rewards on select supports and scaling corrupt alliances (World Bank 2000).

After Ershad regime BNP won general election in 1991. BNP was familiar Khakade Zia's government. During this period (1991-1996) all ministers and parliament members involve in corruption. BNP government fostered corruption through patronization and even all ministers and parliament members supported by government. As a result BNP government was failed to win general election in 1996. Again BNP won 2001 general election, during this period (2001-2006) corruption was perceived to be the most corrupt country for five consecutive years according to the corruption perception index of the Berlin based Transparency International. In 2005, corruption has accounted for a total loss of TK526 core of the government for the year (The Bangladesh Observer 10 July 2006). According to TI-B report, LGRD and cooperatives ministry is at top of the list corruption with incurring over TK208 losses in 2005 (Ibid).

While 24 percent of population remains below the poverty line and the buying capacity of the middle class continues to shrink, there has not been any let up in the influx of top ends cars, such as BMW and Mercedes Benz an delusory commodities. During this government about 5 percent of the population accumulated massive amount of money through corruption in the past five years, leading to an unjustifiable distribution of wealth and reduction in buying capacity of the majority. Many ministers, parliament members and other leaders of the government turned into millionaires over the last five years. Among them some have literally become hero from zero literally. There is a common belief that a young group of people, based in Hawa Bhaban, was largely involved in corruption throughout the tenure of

BNP government. This group was controlled the senior join-secretary of BNP and son of Khalada Zia Tarque Rahman (The Daily New Age, 9 November 2009) to foster corruption for their private gain. In 1996 general election Bangladesh Awami league won and this government was deliberated by the daughter of Bangobandhu Sheikh Hasina (1996-2001). During this period corruption was controlled by the government was committed to control corruption. As result, corruption was minimized in all public sectors during that period.

It was observed that the general people of Bangladesh were only victims of corruption (News Bulletin's, 16 October 2005, February 2006). According to a recent study conducted by the Transparency International Bangladesh (TIB), corruption has accounted for a total loss of 526 core of the government. It is mostly likely to be representative, not the actual size of corruption (The Bangladesh Observer, 10 July 2006). TIB report also mentioned that LGED and Cooperatives ministry was at the top of the list of corruption with incurring over TK 208 core losses in 2005. It was followed by power division and forest department that caused TK 68 core and TK 69.25 core losses respectively during the period followed it (The Bangladesh Observer, 6 July 2006). The level of corruption was indentified at among the high officials and the law enforcement department of the government. Certainly this is not a vicious circle of dishonest officials whose always use the political shelter for their defense. For the reason of political shelter, the growth of corruption has also kept raising.

4. Research methodology

In order to get an insight about the nature of corruption, impacts and consequences in public sector in Bangladesh, the research work offers a qualitative research method following key informant interview (KII) technique as a part of in-depth individual interview. The qualitative data had been collected from NGOs leaders, university professors, journalists, lawyer, economists, political scientists, and sociologists who have engaged themselves in the development of society through different positive activities. The method of sampling for the foregoing research was not random rather selective based on purposes of the research. Since, many members of civil society were not easily visible here, but it would not be

feasible to define and sample all members of civil society. On the other hand, corruption is a very sensitive, touching and harmful issue. The members of civil society didn't want to focus about it. Thus, the respondents were selected for the qualitative survey according to their opinions and cooperation, if they are agreed. A total of 12 in-depth individual interviews were conducted among nine male members and three female members of civil society. Thus, this piece of work is a summary based on filed data which had been collected from the field during the tenure of care taker government in 2007 to elicit the scenario and consequences of corruption in public sector in Bangladesh.

The research paper had been carried out the following research questions: (i) What are the basic natures of corruption in the public sector? (ii) What are the basic causes of corruption that are breaking down social equilibrium within the social structure of society? and (iii) What are the impacts and consequences of corruption in society?

5. Results and Discussions

The present study identifies the nature, causes and impacts of corruption following an interpretative analysis. The findings collected through data analysis have been discussed in this chapter in the light of Weber's Partrimonialism model, applies to Bangladesh context.

5.1 Corruption as a major problem

The 2007 government was not constitutional government and had no constitutional support. Due to unconstitutional government the level of corruption was extended all over the country. Like others' problem such as insecurity, food scarcity, health problems, communication problems, poverty, disasters etc. corruption was identified as a major problem due to its' pervasiveness in public sector of Bangladesh. Since, there had no any constitutional parliament and democracy, the unconstitutional government was not transparent and accountable to the parliament due to absent of elected government. However, accountable and good governance, transparency and good governance, democracy and accountability in political parties were not practiced properly in our country. Besides, the

problem of democratic government and the practice of democracy in political parties and the awful vision of political parties are apparent in Bangladesh. Due to absence of constitutional government and accountability government officers easily used the public office for their private gain and personal benefits. For these reasons, corruption had become as an enemy of society that undermined overall development process of society. Regarding the unconstitutional government a renowned National Professor Dr. Rangalal Sen commented:

"Now a days we see various problems such as corruption, unemployment, raise of JMB (Jamatt-Ul Mujahidin Bangladesh), security, problem in general election etc. Among these problems, corruption is the most crucial problem.

5.2 Meaning and nature of corruption in Bangladesh

The term 'corruption' generally has been used to refer to wide range of illicit or illegal activities. There is no universal or comprehensive definition of what constitutes corrupt behavior, the most prominent definitions emphasize the abuse of public power or position for personal interest and benefit. It was observed that corruption is all pervasive in Bangladesh and is extensive and seriously dominates the public sector due to having no deference between public property and private property. The government officers get more chance to use public property for their own interest. In general it is understood as a resource gaining process through immoral and illicit ways (Azad and Wahid 2010). It is also mentionable that corruption does not only mean the appropriation of money which also includes grabbing of land without any legitimacy, appropriation of food, land and wealth by illegal means. The concept of corruption, moreover, indicates the negligence in duty and work in timely and refraining from conducting attributed responsibilities and misuse of power position for financial or another facility for own or for relatives. It is comprehend from the study here that the views of corruption are related to Weberian partimonialism system (Lenski and Lenski 1987) in which Weber shows no separation between what is public property and private property of the ruler and his/her officers (Azad and Wahid 2010). This is why corrupt and extortion practices could occur on a mass-scale basis within the system. It is clearly argued that corruption is a

multi-dimensional term which in general it can be understood as utilization of public office and official resources for personal interest in public sector. Indeed, under the patrimonial system the government leaders of Bangladesh get the chance to use the national wealth and resources to enrich themselves, the corruption takes several forms (Azad and Wahid 2010).

Corruption is not confined to Bangladesh and a few neighboring countries alone. It is now global phenomenon and has become an international problem. There exist many types of corruption in Bangladesh. According to the most of the informants, pecuniary bribes and *tadbir* (lobbying) are major process of corruption. Besides, the study finds out several forms of corruption in Bangladesh which it includes abuse of authority, negligence of duty not according to the rule and law, nepotism, favoritism, frauds, patronage, theft and deceit etc. Moreover, the prevalence of political corruption and administrative corruption are also mentionable in Bangladesh. A reverend respondent, Professor Dr. Mohammad Mohabbat Khan also points out three types of corruption, which are very different from other types of corruption. According to him, petty corruption occurs at the lower level public officials. This type of corruption is the most pervasive and harmful to the poor. The second type is middling corruption which found generally at the enterprise level. The third type of corruption is grand corruption which is more prevalence in Bangladesh. It is appeared typically at the government level officials such as bureaucratic and other high official authority.

Table 2. Understanding and nature of corruption in Bangladesh

Understanding about corruption in the context of Bangladesh	***Nature of corruption in Bangladesh***
× Corruption is pervasive and extensive at every level of public sector due to having no deference between public property and private property. In general it is understood as a resource gaining process through immoral and illicit ways. × The concept of corruption, moreover, is used to indicate the negligence in duty and work in timely and refraining from conducting attributed responsibilities and misuse of power position for financial or another facility for own or for relatives. × Corruption does not only mean the appropriation of money which also includes grabbing of land without any legitimacy, appropriation of food, land and wealth by illegal means.	× Pecuniary bribes × *Tadbir* (lobbying) × Abuse of authority Negligence of duty × Nepotism × Favoritism, Frauds, Patronage × Theft × Deceit × Political corruption × Administrative/bureaucratic × Election trading and nomination × Extortion × Petty corruption occurs at the lower level public officials. × Middling corruption which found generally at the enterprise level. × Grand corruption which is more prevalence in Bangladesh. It is appeared typically at the government level officials such as bureaucratic and other high official authority.

5.3 Causes behind corruption and political nature in Bangladesh

The causes of corruption are multidimensional and are related to socio-economic nature of Bangladesh. Though the economic growth of the country is flourishing like a developed country, the moral values of the people are degrading so profoundly and any cost they want to be rich. The corrupt behavior of people is not only related to poverty, it is also related to their

mental development. For instance, the study revealed that the persons who are involved in corruption currently they are not poor. But they practice corrupt behavior to be a rich man in the country. Indeed, a participant alleged injustice in the judiciary, habit of doing mal practices, lack of quality and leadership are causes behind corruption. Though, some people indulge corruption due to poverty and low salary, moral values are identified as a significant reason behind corruption. A prominent political scientist Professor Dr. Abul Fazlul Huq expressed that:

> "Our moral values are degrading so profoundly that we want to be rich anyway at any cost. Some people indulge corruption due to poverty. But currently most of the corrupted people are rich people, not poor."

In Bangladesh political leadership and corruption has come simultaneously. Political corruption is one of the significant types of corruption in present society of Bangladesh. Political parties provide shelter and indulge the corrupt person. Under this practice the political parties accelerate corruption in public sector in Bangladesh. The political leaders practice corruption in a variety ways including trade and nomination, exercise lobbying and extortion etc. The leaders of political parties are involved to misuse the power and have a negative attitude to maintain the party constitution. Even, the state has no particular monitoring system to regularize the activities of the parties. Thus, the parties have no accountability to the state or mass people. Indeed, the lack of regulation of political parties, lack of accountability, lack of transparency, lack of commitment of political parties to the public and dishonesty of political leaders are major contributory factors behind the practice of corruption in political parties. Though it is supposed that the politicians will lead the country and will uphold the rational democratic ideas, they themselves are the patronizers of corruption. The lack of 'rational democracy' in terms of effective meanings is one of the reasons behind corruption. In this regard, an eminent political scientist Professor Dr. Harun ur Rashid delineated about the political party of Bangladesh.

> "The political leaders don't take any action against corruption persons. They fail to take action against the people around them. And how can they control others when they themselves are involved in corruption?"

Like political corruption, bureaucratic corruption is also identified as a major barrier of economic development of the country. Lack of transparency, lack of rational legal bureaucracy, lack of inefficiency of the anti-corruption commission, patron client relationship between bureaucrat and political masters have also been identified as major factors that provide opportunities to indulge the public property for personal gain. Since, the bureaucrats are involved in decision making process, resource allocation and planning implementation. The administrative officials also get supports from political parties and their leader. Thus, due to lack of proper service system at the public sphere social, political and economic unrest are increasing in the society.

5.4 Impact and consequences of corruption on society in Bangladesh

Corruption has an adverse impact on the socio-economic condition of Bangladesh. Corruption has become a national problem and it requires rational solution in Bangladesh. It is examined that corruption has an adverse impact on economy which it increases poverty among the mass people because of massive illegal practice. Corruption has also broken down social capital and has increased social inequality and social disorder. Corruption, moreover, destroys our social system and creates disorder in the practice of law and regulations of the country. Thereby, political system does not work properly and justice is delayed. The study also pointed that corruption causes mistrust among people and creates pessimism. Corruption is now seen as a means of sucking of blood of poor people. Thus, human resources become disappointed in the country through this process. The following remark was a crystal clear description about social system of the country.

> "Corruption distorts our income and earning distribution. And it creates polarization system in the society and divides the society into two parts and increases inequality in wealth and accumulation. So,

> social capital cannot grow smoothly which creates social inequality and many illicit activities are conducted through corruption. Thus, the entire pathological situation of the society is generally affected by corruption." The views expressed by National Professor and an eminent sociologist Dr. Rangalal Sen.

Laws and orders are significant parts of social structure within a social system. Corruption also deteriorates laws and orders and disrupts the social capital. It was found that justice remained out of the reach of the common people and the political system of the country won't work effectively. The person in the society had to face corruption at every step of society. For example, corruption grips all sectors of the country from the traffic to the highest level of the country. Traffic police men are taking bribe from transports. The police men in Bangladesh are setting the criminals free from case in exchange of bribe, files are signed in the government offices and courts in exchange of money. Political activities are committing corruption under the patronization of the ruling party. The government is providing opportunities and privileges to the people close to them. In this way, in every spheres of the society corruption is taking place. Corruption puts people lives at risk in case of high price of the commodities, legislative assistance and so on.

Table 3. Causes, impacts and alternative proposals to combat corruption

Attribute	*Causes*	*Impacts*	*Alternative proposals*
Mental development	Degradation of moral values among the people	Deteriorating beliefs and trust among the people Destroying social system Creating pessimism	The empowerment of the local government organization and building up the consciousness of government officials about the ethical consideration of corruption is required to nurture an anti-corruption culture in society.
Judiciary	Lack of effective and independent judiciary services and co-existence between judiciary and political party	Deteriorating laws and orders Justice remained out of the reach of the common people	Independence justice system is required to tackle corruption against any person.
Economic problem	Poverty and low salary have been found as significant reasons behind corruption.	Increasing poverty among the mass people because of massive illegal practice Increasing social inequality and social disorder Political system of the country is not working effectively.	The government should provide standard salary so that the public officials can ensure minimum life sustaining needs.
Political leadership	Simultaneous relationship between political leader and corrupt person	Deteriorating political system and functions	Strict law should be enacted by the government for all the political parties so that the political leaders don't any change to indulge corruption. The ruling party as well as opposition political parties should ensure that the corrupt politician will not get any chance at the general election and political parties should nominated honest politician.
Monitoring system of political parties	There have no particular monitoring system to regularize the activities of the parties. Thus, the parties have no accountability to the state or mass people.	Deteriorating respects toward political parties	A strong monitoring framework should be developed to observe overall activities of political parties from bottom to top level.
Accountability and commitment	Lack of accountability and transparency, lack of commitment of political parties to the public and dishonesty of political leaders are major contributory factors behind political corruption in Bangladesh.	Breaking down social capital	Like public officers the state should develop mechanisms to awake their moral values for ensuring commitment to the public.
Rational legal democracy	The lack of 'rational legal democracy' in terms of effective meanings is one of the reasons behind	Increasing social, political and economic unrest in the society	A strong rational legal democracy like developed is required to curb the corruption from the society.

	corruption. In this regard, an eminent economist Professor Mozaffar Ahmed expressed that: *"Political parties of our country do not follow the constitution. Thus, proper structure and democracy do not flourish in the political parties of our country."*		
Bureaucracy	Patron-client relationship between bureaucrat and political masters has also been identified as major factors for personal gain.	People are not receiving proper service system at the public sphere	Proper implementation of law, comprehensive and enforceable reforms are required for reducing corruption involving public officials and administration.
Anti-corruption commission	Lack of transparency, lack of good governance and lack of inefficiency of the anti-corruption commission have been emphasized for the basic reasons of corruption.	Social laws, judiciary, bureaucratic system and other public institutions are become ineffective in society.	The anti-corruption commission must be made fully operational, independent and effective and it will be free from political affiliation. Civil society and media are working as watchdog agency to curb corruption in Bangladesh. The state should work with civil society members and media to monitor overall scenario of corruption.

6. Concluding remarks and proposals to reduce corruption

Corruption is all pervasive and extensive at every sphere of public sector in Bangladesh. The causes of corruption are multiple such as lack of accountability and transparency in political parties and government officials, lack of rational legal bureaucracy and the illegal practice of democracy among political parties etc. It takes places as an out of deficiencies in existing public administration apparatus and systems as well as cultural, political and social factors. The study observed that the consequences of corruption are very terrible. Corruption is indentified as an obstacle to sustainable development which is increasing acute poverty among poor people. The poor people don't work smoothly in the public offices, they have to pay bribe. Within public sector corruption distorts decision making processes and undermines service delivery, leading to huge misuse of

resources and social capital. And, corruption has become a national enemy in the society. Though, the civil society has come forward to establish the right of the people and to ensure the role of law in Bangladesh through some anti-corruption movements, the political parties repress and harass them in different ways. Thus, corruption free country is still a dream of all people of the country. In order to establish good governance and democratic government civil society and conscious citizens should come forward to make a corruption free country.

Based on the present study we can recommend a number of measures to curb corruption in Bangladesh. These initiatives should start with the empowerment of the local government organization and building up the consciousness of government officials about the ethical consideration of corruption to nurture an anti-corruption culture in society. Independence justice system is required to take the action against any person. Though the independent justice system exists in Bangladesh, it is now using for political purpose. It requires a free independent justice system because of bringing revolutionary motivation in this aspect that will change the present identity as a corruption free nation in the world. The anti-corruption commission must be made fully operational, independent and effective and it will be free from political affiliation. The commission should also monitor the newspaper reports on corruption and take appropriate legal action against the accused.

Strict law should be enacted by the government for all the political parties so that they can prevent corruption and the practice of law should be ensured among political parties. The ruling party as well as opposition political parties should ensure that the corrupt politician will not get any chance at the general election and political parties should nominated honest politician. The political parties should make a party constitution that will reflect a mandate for the nation. Moreover, political leader should accountable to local people. Proper implementation of law, comprehensive and enforceable reforms are required for reducing corruption involving public officials and administration and also for political leader. Civil society and media are working as watchdog agency to curb corruption in Bangladesh. The state should involve the media and civil society as a monitoring agency to find out the corruption related information. Media could be used to create awareness among the mass people against corruption. Therefore, it is very imperative

that the government should cooperate with the civil society and should seek its suggestions. Otherwise, it is impossible to exterminate corruption from the country. Civil society is third sector to eradicate corruption from the country. In a word, there require an excellent combination between the government and the civil society. Finally, a comprehensive national strategy and action plan in the line of MDGs (Millennium Development Goals) for combating corruption are required for being a sustainable developed country in the 21st century.

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