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COMPETITIVE POSITION
OF THE ALBANIAN
ECONOMY IN TERMS
OF PRODUCTIVITY
AND LABOUR COST

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CONTENTS

"Productivity is not everything but in the long run it is almost everything. A country's ability to improve its standard of living over time depends almost entirely on its ability to raise its output per worker." (P. Krugman, 1994)[1]

ABSTRACT

Based on calculations of productivity (LP) and unit labour cost (ULC), this study aims to assess labour utilization efficiency and the competitive profile of the Albanian economy over the period 2003 – second quarter of 2010, period for which the database is available (INSTAT). In this paper we present an analysis of LP and ULC trends and volatility over the considered time period. It also evidences branches and sectors that have defined their mid-term developments. The gap indicator between annual changes in LP and ULC, on average terms has resulted negative, indicating low efficiency in labour force utilization in the economy. The Granger-Causality technique shows that even in quarterly terms, the conclusions drawn from the gap analysis hold. Wages index developments in the tradable sector (TR) have been relatively supported by LP developments of this sector, whereas it doesn't happen in the non-tradable sector (NTR), which has the dominant share in the economic activity. The study of Albanian competitive profile through relative indicators of LP and ULC supports the fragile level of competitive advantages of our economy relative to the other economies observed in this study. Competitive disadvantages stem primarily from large differences between LP of Albanian economy and LP of comparative economies, as well as from still low share of the tradable sector in the economy.

Key words: Labour productivity, unit labour cost, competitiveness

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[1] Paul Krugman won the Nobel Prize in Economics in 2008. The citation can be found in "The Age of Diminishing Expectations" (1994).

ABBREVIATIONS:

Labour productivity -	LP
Unit labour costs -	ULC
Relative labour productivity -	RLP
Relative Unit Labour Cost -	RULC
Value Added -	VA
Tradable Sector of Economy -	TR
Non – Tradable Sector of the Economy -	NTR
Wages -	Wg
Quarter -	Q
Central South - Est European Countries -	CSEE

NON-TECHNICAL SUMMARY

The study aims at estimating the efficiency and the competitive profile of the Albanian economy, based on the labour productivity indicator (LP) and unit labour costs (ULC). These indicators are calculated in accordance with best statistical practices outlined in the respective OECD manuals (2001 and 2008). Sections 2 and 3 of the paper present approaches to their calculation and the database description over the time period Q1:2003–Q2:2010. The main trends and their volatility over the observed period are analyzed in section 4. Hence, LP in the economy presents a downward trend. The administrative factor aiming to increase labour market formalization contributed significantly to the marked trend breaking in 2008. Sustainable developments towards slight improvements can be noticed over the second half of 2008. LP trend varies by branches and sectors, with industry and tradable services activities showing a higher and upward productivity. But, the above positive developments in the tradable sector (TR), as the most exposed sector to international competitiveness, do not yet manage to be determinant to the economy due to its low share compared to non-tradable sector (NTR). Less optimistic messages derive from ULC trend. In the medium term, based on assessments of the main trend's functional form, it's suggested that this indicator should continue the non-downward trend for both sectors, simultaneously. Both LP and ULC indicators are characterized by medium to high volatility levels for the economy (excluding agriculture). The presence of a high volatility would hinder the analysis process in terms of the main trends. According to conclusion of Alessandria (2005), higher volatility in ULC compared to that of LP indicates that higher fluctuations are generated from shocks on wages.

In sections 5 and 6 of this study, based on economic indicators and econometric test applications, is assessed the relationship between LP and ULC for the whole economy, sectors and groups of sectors. The focus has been on the way the annual and quarterly changes in ULC are supported by those in LP. The results obtained from the gap indicator of annual changes in LP and ULC and the Granger-Causality tests on quarterly changes in LP and wages, generally, converge. The negative value of the gap

for the economy reflects the lack of average upward efficiency, affected mainly by developments in the non-tradable sector. The tradable sector presents positive developments of this indicator, but with a more-than-modest contribution to improving the gap level in the economy. The Granger - Causality procedure shows that the causality direction between LP and wage (Wg) in the tradable sector of the economy is twofold. This conclusion is in line with the relatively narrow gap value in this sector. Meanwhile, a relationship from LP to Wg of the non-tradable sector of the economy is verified, albeit with a high lag. A deeper effort to explore this relationship between sectors shows that changes in Wg indicator in the non tradable sector of the economy are led by changes verified in the previous four quarters in LP and Wg in the tradable sector of the economy.

This pass-through is attributed to the pressing exerted from wages in the tradable sector to the non-tradable sector, supporting the presence of one of the preconditions for the presence of the Balassa - Samuelson effect in the economy1.

The study of the competitive position of the Albanian economy compared to other economies in terms of LP and ULC was conducted using respective relative indicators (RLP and RULC) in section 7 of this paper. These indicators were constructed following Ban van Ark et. al. (2005) approach. The results indicate the presence from vulnerability to lack of competitive advantages in the Albanian economy relative to the panel of foreign economies in comparison.

In terms of RLP, Albania has remained below the Euro zone (EU-16, its early member states) the U.S.A., and the CSEE countries throughout the observed time period. Endeavours for improvement have resulted only short-term. The relative backwardness in implementing the modern technologies, involving the innovations and the low share of exports in the economy have made the tradable sector suffer from low efficiency of labour force utilization, hence impairing the aggregate LP and RLR indicator. In terms of ULC, there exist marked differences between the Albanian economy and

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[1] Moderate effect until end-2007, (Çeliku and Hoxholli, 2009)

that of the U.S.A, of Europe and of the most important trading partners. This development shows that the above-mentioned economies have operated with a relatively lower ULC than Albania, creating significant disadvantages of the latter. Related to CSEE countries and the Baltic economies, there is a marked convergence as regards the RULC indicator. Moreover, from 2005 and on the Albanian economy has gained ground in its competitive advantages over these countries. The combined information from RLP and RULC shows that behind relatively deep competitive disadvantages of the Albanian economy compared to the USA, Euro zone, main trading partners and CSEE countries economies, stands the high differences in LP.

In the concluding section, we emphasize that implementation of a strategy that combines LP growth by implementing the upgraded technologies in the production process, more efficient labour force utilization in the economy and cautious monitoring of wage growth, would improve Albania's competitive position and expand exports and the tradable sector of the economy, focusing on the balanced effects on monetary policy.

THEORETICAL CONSIDERATIONS

Growth of productivity in general and of labour productivity (LP) in particular constitutes a leading force for a sound macroeconomic framework of a country in the long run. According to standard economic theory, long-term productivity growth is the primary source of growth of real income per capita, a measure of economic living standards. In the short run, LP growth, coupled with an increase in total working hours (number of employed persons), constitute the key determinants of real GDP changes. Assessing the role of labour productivity shocks and interpreting this indicator's pro-cyclicality constitute the analysis basis of business cycle volatility and turning points. The analysis of LP developments assumes importance for explaining future evolution of other macroeconomic variables, such as inflation and exchange rate. In this sense, LP developments potentially impact significantly the macroeconomic environment where a certain monetary policy is compiled and implemented. Shifts to LP trend affect the foundations for an optimal monetary policy. The analysis of consequences of these developments is difficult to make not only in the short but also in the medium run, on which the monetary policy decisions are extended. The implications of LP trend changes to monetary policy are different and depend on essential factors, one of which is the tightened initial conditions of aggregate demand response to the economy (Gomez-Salvador et. al., 2006).

Inflationary pressures beyond those of medium term are mostly explained by the extent to which the variation in labour income is supported by LP changes. LP growth rates depend on numerous factors and their combination. The share of manufacturing and service sectors to the economy constitutes one of the determinants to those rates. A considerable share of manufacturing industries to the economy, coupled with the application of advanced technologies in respective sectors, serves to accelerate the growth rates of production factors productivity in general and of LP in particular. On the other hand, lack of technological progress or slow reforms in product and labour markets, may hinder productivity growth rates

The indicator, synthesizing the main trends in wages and labour market, is the unit labour cost (ULC). Expressed as an index, ULC reveals some of the main sources causing inter-sectoral and inter-economy differences. An increase in ULC indicator may be due to higher pressure exerted from wages compared to that of LP. The same situation may be due to a slowdown in LP growth rates. Increasing wage pressures may derive from internal and external factors of the economy. Among external factors the most important one concerns the appreciation of a country's currency. Whereas, an increase above the equilibrium in the labour market, is often regarded as a kind of internal factor in the economy.

As a result of all these links, the causes behind changes in LP and in ULC impact policies related to labour markets, product markets, and technological progress and trade policies.

The ULC index also reveals aspects of inter sectoral and between countries competing ability performance. In an economy, continued ULC growth would give signals for increased domestic supply side inflationary pressures, materialized in expected higher producer prices, which with a high probability would be transmitted into consumer prices. This phenomenon becomes worrisome when ULC growth rates exceed those of LP for sufficiently long and consecutive time periods. In other words, the economy turns out to be a "producer of additional labour costs", which are not preceded by an increase in labour force productivity or efficiency.

The study of LP and ULC by branches/sectors of an economy - the tradable (TR) and non-tradable (NTR) sectors - draws special attention, due to two main reasons relating primarily to the tradable sector characteristics. Firstly, LP in this sector should "tone up" and play a leading role in LP growth rates of the economy. Secondly, this sector should enjoy the properties of the most competitive sector of an economy in foreign markets. It should offer attractive prices and labour costs per unit of output, a substantial level of output, distinct quality products and services. The latter are mainly provided by the application of advanced technologies offered by modern marketing methods. In principle, this sector should represent priorities in terms of the country's competitiveness related to output and labour costs.

From a comparative viewpoint, the upward ULC trend in an economy relative to another economy trading partner would signal "loss" of competitiveness of the first economy in the labour market and in that of goods and services prices. The second economy would represent a more attractive market for investments, because it could provide lower relative labour cost and hence lower producer prices and higher earning opportunities for investors.

In general, an economy can improve its competitiveness by moderating wage growth rates, in order to cut production costs, raising productivity which would allow achieving higher levels of output; mixing and optimizing both strategies. Depending on the chosen strategy, which depends on a country's development level, a specific competitive profile of an economy can be created.

2. APPROACHES TO MEASURING THE LP AND ULC

Productivity expresses the degree of efficiency in using the main factors of production (labour, capital and land) in an economy. Productivity, as one of the main sources of economic growth and improvement of a country's competitiveness, can be measured in several ways. Each of them generates statistical information required to assess a country's economic performance relative to other countries.

In the manuals of best statistical practices of international organizations, such as Eurostat, OECD, the productivity calculation converges towards a ratio between a measure of the economic activity and a measure of inputs/factors used to produce an output over a certain time period. The different ways of productivity calculation relate to the type of measures (indicators) that can be used in this ratio. The choice between the calculation methods of this indicator depends on the using purposes and on the availability of data.

Productivity can be calculated as the ratio between the production measure (output) and a single production factor – single factor productivity – or multiple production factors – multifactor productivity. It may be calculated as the ratio between gross domestic product (GDP) to one or more production factors or as the ratio between the value-added (VA) to one or more production factors. Depending on the type of production factors used in computation, the indicator is called: labour productivity, capital productivity, labour and capital productivity and multifactor productivity. As highlighted in the introductory section, this paper will focus on measuring the *labour productivity* (LP). It can be calculated based on the series of quarterly GDP and the value added one.

According to the OECD manual on "Measuring Productivity", measuring LP as the ratio between the value-added indicator and the production factor labour shows the efficiency level of using labour to generate value added over a certain time period. LP change calculated in this way reflects the joint impact carried by

changes in capital, technical and technological as well as the organizational - administrative ones. It also reflects changes in efficiency of an economic entity and between entities, the impact of economies of scale as well as different capacity utilisation rates and measurement errors. This shows a significant impact on the LP of the other production factors part of this process. In terms of individual capabilities of employees and their work, the ratio used to calculate LP reflects them only partially. The measurement of LP in terms of VA compared to the GDP measurement depends to a lesser degree on changes in the ratio between intermediate production factors and labour. The LP in terms of VA is an indicator that can be used to analyze the contribution of constituent sectors of the economy to the total LP and economic growth.

Regarding the LP measurement, literature raises another aspect related to the indicator that will measure the labour factor - the number of employees or total working hours. The most comprehensive measure of the labour factor is considered the total working hours. Another important link of LP, combined with changing working hours, unemployment, labour force participation rates and demographic changes, is GDP per capita, as a measure of living standards. However, from a statistical point of view, not every country can calculate and possess the indicator of the total working hours at a national statistical level. Even when this indicator is available, caution should be shown regarding the methodology of its calculation. Frequently, different countries use different databases as administrative statistical sources, thus hampering the comparative process.

The unit labour cost (ULC) is defined as the cost of labour required to produce one unit of production in a particular industry, sector or the aggregate economy. The ULC indicator is calculated as the ratio between the main item of costs in the production process – labour compensation – and realized production level – represented by GDP or VA. ULC concept might be even better understood when expressed as the ratio of labour compensation (wage or the total labour cost per employee or per hour worked) and the LP.

As also stated in the introductory section, the information conveyed by ULC is useful for comparative analyses across countries. To make such a step, ULCs should become comparable in nominal terms. Bart van Ark et al., (2005) suggest that wages or labour compensation should be converted using the official exchange rate against a representative currency, highlighting the arbitrage cost element between countries. On the other hand, output or productivity are volume measures or quantitative indicators per unit of output. Hence for comparison purposes, it is necessary to express production in terms of a common currency using the purchasing power parity (PPP) in the country in relation to another currency (according to the exchange rate). In this way, production levels among countries which we want to compare are adjusted for relative price differences between countries.

When ULC is calculated as a disaggregate indicator by sectors, it provides information on inter-sectoral competitiveness of the economy. However, according to Papademos (2007), the ULC for the tradable sector of the economy, should not be interpreted as a comprehensive indicator of competitiveness for several reasons. Firstly, ULC indicator is related to labour costs. Although labour costs account for the biggest part on total factors used, the cost of capital and intermediate inputs part of the production process may also represent important indicators for a comparison in cost levels of competition between countries. Secondly, this indicator reflects only the cost competitively. When manufacturing products are durable consumer goods and for investment purposes, the degree of competition depends on the technology used, human resources skills and demand factors. Improvements in products quality or improved after-sales services are not necessarily reflected in lower ULC. Special attention is paid not only to the production factors, but also to demand conditions, the presence of local suppliers or their clusters, as well as the creation or presence of a suitable environment for investments, innovation and competition. According to Porter 1990, the indicators used to measure ULC do not include assessments of the economic performance, innovative capacities, structural changes, improvement of living standards and social conditions. Finally, indicators for measuring cost competitiveness may be distorted due to the effects from bilateral

market access agreements, direct and indirect export subsidies and the application of tariff protection.

When inputs in the tradable sector of the economy derive mainly from the non-tradable sector, ULC changes in the latter, may also affect the tradable sector. Over the last decade, several branches of the services sector (usually incorporated in the non-tradable sector) have gained features of the tradable sector, which indicates that the classic distinction between the two sectors of the economy is considered difficult to apply in the current conditions. In this regard, focusing mainly on manufacturing industry ULC study (most exposed to foreign markets) may therefore be a very restrictive approach to study sectoral and between countries competitiveness.

3. DATABASE DESCRIPTION

According to the most encountered approaches in LP and ULC calculations, presented in section 2, as well as depending on the available data, the above mentioned indicators were calculated. ULC and LP indicators for the Albanian economy are calculated using the value-added indicator, employment index and the wages index. These indicators are calculated for the whole economy, sectors and sub – sectors.

Time series presenting high seasonality are seasonally adjusted. This process is applied on the VA, CPI, and the USD/LEK exchange rate. LP calculations are made including and excluding the agriculture sector. In the first case, there are used data on employed people in this sector (from INSTAT). While, ULC calculation was done excluding this sector, due to lack of data on this sector's wages. LP index is calculated as the ratio of the VA (as index, base year = 2005) to the employment index. ULC index is calculated as the ratio of real wages index to value-added index. The quarterly CPI series is used to obtain the real wage index. For comparison purposes, with other economies, ULC and LP are corrected, respectively, for the PPP and the nominal exchange rate (USD/ALL). The Albanian economy series cover the time period Q1 '03 - Q2 '10. Those of foreign economies incorporated in the comparative analysis cover the time period 2003 - 2009.

Branch breakdown coverage includes: agriculture, industry, construction and services. Services branch is studied more specifically and was divided in two sub-branches: (i) trade, hotels, restaurants and other services, (ii) transport, post and telecommunications. This division is done by using information from Short-term Statistics and from Nominal Sales (INSTAT). The first sub-branch coincides with the non-tradable services and the second with the tradable ones in the economy.

The judgement on the division of economic activities into TR and NTR is based on Giovannini and Wolf (1994) criteria, which relates to export weight to the activity of a branch in the economy. There is not any "strict recipe" in this definition. Research evidence defines a
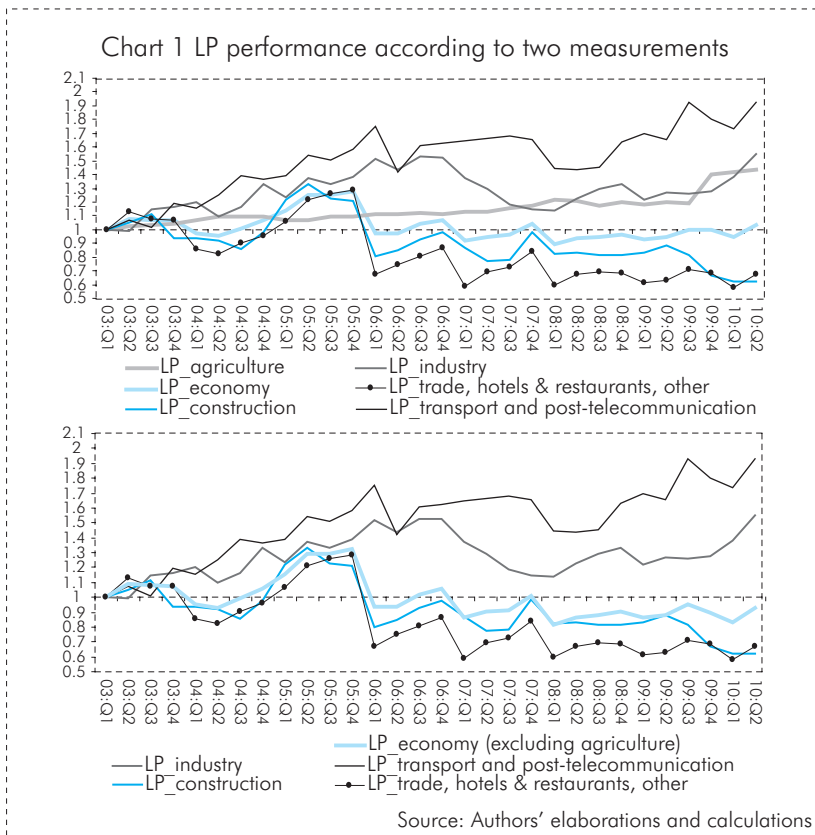
sector as tradable if more than 10% of its total production is exported. Given these considerations and the available data, it results that industry and services "transport, post and telecommunications" branch have increased their share of exports, accounting for 30% and 35%, respectively over the last four years.

Agriculture is excluded from the above classification, due to obligations arising from the application of tariffs free trade agreements (Mihaljek and Klau, 2008). Construction branch, despite the prices behaviour, is included in the NTR sector of the economy.

The sub-branch of services "trade, hotels, restaurants and other services", which accounts for about 46% of the value-added to GDP, has a very low share in exports. Consequently, it is deemed not to affect prices in foreign markets. The sub-branch "other" in the services sector, which accounts on average for about 25% of the VA, includes financial services, real estate services, public administration ones (education, health, social protection and social security, etc.), services regulated within the domestic market or in an administrative way. As such, they are included in the NTR services sector and in the NTR sector of the economic activity. In conclusion, the NTR sector dominates the economic activity, accounting for about 80%.

4. LABOUR PRODUCTIVITY AND UNIT LABOUR COST TRENDS AND VOLATILITY

Over the period Q1 '03 – Q2 '10, LP in the economy presents a declining trend. This behaviour averages the situation of this indicator for two sub-periods. Until the end of 2005, when LP reaches the maximum value (1.3), a linear upward trend is highlighted (with a positive average coefficient of 0.02 units in each quarter). The trend for successive periods is approximated to the linear function with a negative sloping coefficient (average decline to -0.01 units in each quarter). During this period, a more evident decrease is marked in Q1:08, about 0.89 and 0.81 for LP measures (with and without agriculture branch, respectively). This decline results for all sectors and is mostly due to the measures taken by the government

Chart 1 LP performance according to two measurements

Source: Authors' elaborations and calculations

in order to formalize labour market, wages, social security and health insurance for employees. Following this structural change, a turning point appears in the LP of the economy, tending to increase towards the values of 0.9-0.94.
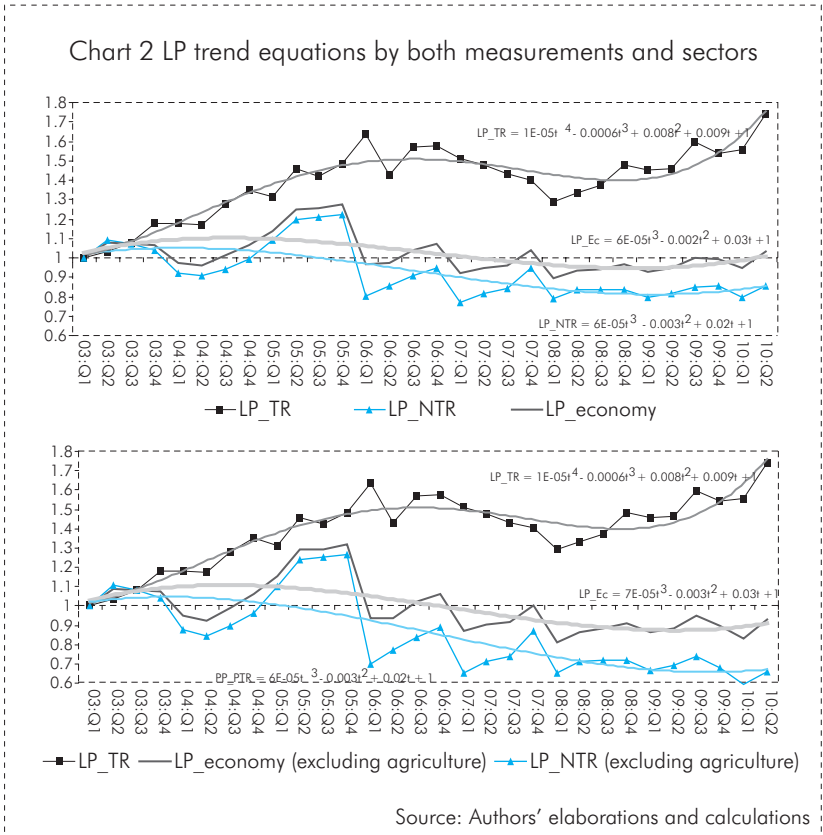
LP indicator profile by branches appears diversified. Industry and tradable (TR) services (transport, post and telecommunication) are the branches with the highest LP on average terms. Despite the positive performance of LP in the abovementioned sectors, they could not play a dominant role in the LP of the economy, due to their low share in the VA (20%). Trade, hotels, restaurants and other services have been the main determinants for the efficiency utilization of human resources in the economy. Only "other services" account for about 25% of the value added in average terms. The LP indicator in construction branch has followed an increasing trend up to the end of 2007. In the Q1:08, the quarterly fall of this indicator was the deepest of all the LP indicators for the other sectors of the economy. An important reason behind this large fall might be the higher informality in the labour market of construction prior to this period compared to the ones of other sectors. After the administrative measures taken by the government, the employment index in construction increased more than in the other sectors, thus creating a stronger break in its LP indicator. A distinct decrease in the labour efficiency in construction is present since the second quarter of 2009 in line with the fall of the economic activity in this sector. In the last four quarters, the average LP resulted 0.68 – its lowest historic level.

The non-decreasing LP trend in agriculture, even after the structural change in Q1:08, highlights the need for monitoring this branch's labour market.

The value of the LP indicator for the tradable sector (LP_T) and non-tradable (LP_NT) of the economy (excluding agriculture) resulted on average terms 1.4 and 0.9, respectively.

The following are presented the trends functional forms, which help in LP and ULC indicators forecasting for the future periods depending on the time variable (t by quarter). These estimates do

not take into account the short-term fluctuations that cause the movements up and down the trend line of these indicators.

Chart 2 LP trend equations by both measurements and sectors

$LP\_TR = 1E-05t^4 - 0.0006t^3 + 0.008t^2 + 0.009t + 1$

$LP\_Ec = 6E-05t^3 - 0.002t^2 + 0.03t + 1$

$LP\_NTR = 6E-05t^3 - 0.003t^2 + 0.02t + 1$

— LP_TR   — LP_NTR   — LP_economy

$LP\_TR = 1E-05t^4 - 0.0006t^3 + 0.008t^2 + 0.009t + 1$

$LP\_Ec = 7E-05t^3 - 0.003t^2 + 0.03t + 1$

$PP\_PTR = 6E-05t^3 - 0.003t^2 + 0.02t + 1$

— LP_TR   — LP_economy (excluding agriculture)   — LP_NTR (excluding agriculture)

LP_TR trend is approximated in a better way by a fourth-degree non linear polynomial equation, linearized in log-log form. The functional form suggests developments in the form of repeated cycles. Coefficients size, always below 1, becomes lower with the increase of the polynomial degree. Such a form suggests a slowdown in the growth of LP_TR over time during the next few years, reaching the value of 1.5 after 3.5 years/ 14 quarters. LP_NTR trend is approximated by a third-degree polynomial function, suggesting a moderated sinusoidal volatility of LP indicator over time. On average terms, in spite of fluctuations, the function suggests a

decreasing trend. Over most of the period Q1'06 Q2'10, LP_NTR trend (with and without agriculture), fluctuates around the values of 0.8 and 0.7, respectively. The NTR sector accounts for about 80% of the economic activity in the country, implying a similar trend function and downward, for the LP indicator for the economy, according both approaches.

ULC trend in the economy (excluding agriculture) has resulted moderately upward. By end-2007, in average terms, ULC has been around 0.94. In the following period, ULC indicator rose continuously reaching the highest level in Q2'10 (1.48). The first shock was recorded in early-2008. The second one occurred in Q1 10, with a similar pattern to the former, as a consequence of imbalances between developments in wages and in economic activity, mainly in the construction's branch.

Chart 3 ULC trend performance and equation by sectors

$ULC\_NTR = -2E\text{-}06t^4 + 0.0002t^3 - 0.002t^2 + 0.001t + 1$

$ULC\_Ec\ (excl.\ agric.) = -3E\text{-}06t^4 + 0.0002t^3 - 0.002t^2 - 0.003t + 1$

$ULC\_TR = -4E\text{-}05t^3 + 0.003t^2 - 0.05t + 1$

Source: Authors' elaborations and calculations
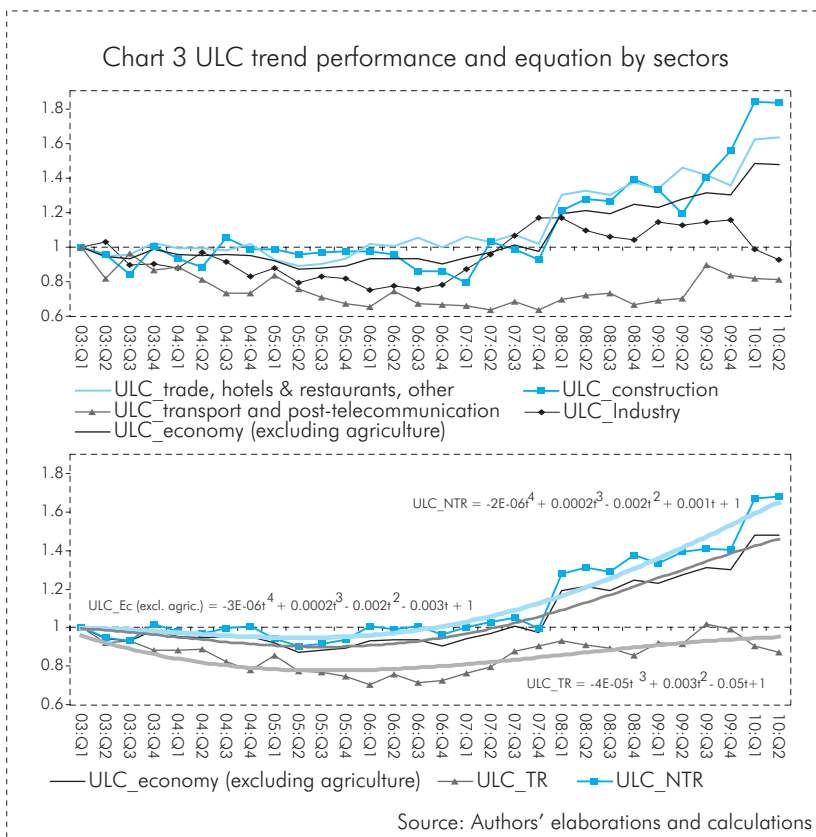
Developments in the sub-sector of "trade, hotels, restaurants and other services" and in construction, classified as NTR activities have been determinant to the performance of ULC indicator in economy. Industrial branch2 and sub-branches of transport, post and telecommunications - classified in the TR sector – have shown different trends compared to those of other sectors. The ULC indicator for these sectors showed a converging trend close to each other until Q3'06, whereas in the subsequent periods, their trends became quite different, More specifically, ULC increased for industry and was almost stable within the 0.7-0.8 interval for the services' group of transport, post and telecommunication. Among all sub-branches, only that of the above-mentioned services has followed a very contained trend throughout the observed time period. Due to low share to GDP and low volatility of ULC indicator of this sub-sector, its impact on ULC trend of the economy has been quite modest.

ULC trends according TR and NTR sectors can be approximated by the polynomials functional forms of third- and fourth-degree, respectively, suggesting a marginal cyclical volatility over time. Functions suggest that on average the ULC in the economy and NTR sector will not increase further. Meanwhile, in the TR sector it might continue its gradual increase.

The volatility for LP and ULC indicators in terms of coefficients of variance during the period in analyse is assessed almost moderate. A considerable volatility supports the presence of high level and frequent shocks to these indicators, diverting them from their main trend. As a consequence, it hampers the analysis process in terms of main tendencies. Examining the relative volatility of the above-mentioned indicators is crucial for studying the economy, its sectors and branches. Alessandria (2005) states that relatively small fluctuations in labour productivity and relatively larger fluctuations in unit labour costs, often show that the last ones might be attributed to the relatively high wage fluctuations.

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[2] The ULC's coefficient in average terms for this branch results relatively low. For 2007 its value for the sub-branch of the production of clothing and footwear (with a considerable weight in the group of exports of the country), was among the lowest compared to other countries taken in the analysis (World Bank, Report No. 47866 - Al, p. 15, Table 1.3)

Variance coefficients for both indicators for the economy stand at reasonable levels. It results that ULC faced higher volatility than LP, often due to administrative measurements. The ULC variance coefficients stand a few percentage points above that of LP, suggesting that higher fluctuations in ULC are generated mostly from the high fluctuations in wages.

At the economy level, LP variance coefficient for both measurements used fluctuates on average from 9.3% - 13.1%, suggesting that the analysis in average terms should be considered cautiously. An analysis by sub-periods would improve the degree of representation of the mean. The services branch faced the highest volatility, mainly generated from its NTR sub-branch, suggesting an appropriate analysis beyond the respective trends.

Table 1 Statistical indicators for LP (Q1'03-Q2'10)

LP in economy and by sectors	Standard deviation	Mean	Variance Coefficient (in %)	Average share of sectors to GDP
LP aggregate economy	0.10	1.02	9.80	1.00
LP economy (excl. agric.)	0.13	0.99	13.13	0.80
LP agriculture	0.11	1.15	9.57	0.20
LP industry	0.14	1.28	10.94	0.10
LP construction	0.17	0.92	18.48	0.14
LP total services	0.17	0.95	17.99	0.56
a.LP_transp.post-telecomm.	0.25	1.51	16.56	0.10
b.LP_trade, hotels, rest. and others	0.21	0.84	25.00	0.46
LP_TR	0.18	1.39	12.95	0.20
LP_NTR (excl. agric.)	0.20	0.86	23.26	0.60

Source: Authors' elaborations and calculations.

The ULC volatility profile breakdown by branches (Table 2) shows that the highest degree of fluctuation is noted in construction branch, versus a relatively moderate volatility of LP in the same branch. Such a view supports the presence of stronger shocks to ULC due to high volatility in wages in this branch, without excluding those caused by economic activity fluctuations.

The relatively high level of volatility for both indicators (LP and ULC) in the NTR sector of the economy is attributed mostly

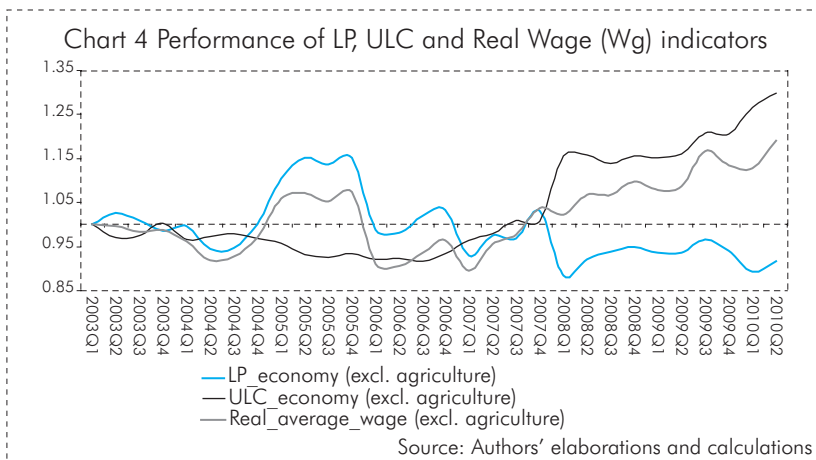to concerns related to construction branch, along with the high contribution from non-tradable services.

Table 2 Statistical indicators for ULC (Q1'03-Q2'10)

ULC in economy and by sectors	Standard deviation	Mean	Variance Coefficient (in %)	Average share of sectors
ULC economy (excl. agricult.)	0.18	1.03	17.48	0.80
ULC industry	0.13	0.96	13.54	0.10
ULC construction	0.27	1.11	24.32	0.14
ULC services	0.14	1.06	13.21	0.56
a. ULC_transp.post-telecomm.	0.10	0.76	13.16	0.10
b. ULC_trade, hotels, rest. and others	0.22	1.13	19.47	0.46
ULC_T	0.09	0.86	10.47	0.20
ULC_NT	0.22	1.13	19.50	0.60

Source: Authors' elaborations and calculations.

ULC, LP and average wage in real terms (Wg) trends the in economy (excluding agriculture), faced shocks during the period in analyze. The latter is relatively short to conduct a stability analysis of the trend equations. Chow breakpoint test results indicate that the trend equation for LP and ULC have structural breaks in 2005 and 2008, respectively (Appendix 1).

As a consequence of these structural breaks the gap between the trends of these two indicators has expanded (Chart 4). It is

Chart 4 Performance of LP, ULC and Real Wage (Wg) indicators

— LP_economy (excl. agriculture)
— ULC_economy (excl. agriculture)
— Real_average_wage (excl. agriculture)

Source: Authors' elaborations and calculations

generated mostly by some imbalances between the developments in the labour market, wages and in the economic activity. According to these indicators' analysis, it results that shocks in (increase) ULC originate mainly from wages' shocks, failing to be absorbed by increases in LP. This phenomenon seems to be more evident after Q1'08.

5. UNIT LABOUR COST VERSUS LABOUR PRODUCTIVITY

Graphic presentations show that by the end of 2005, the sectoral volatility of LPs and ULCs was concentrated in a narrower range than in subsequent years, where the volatility amplitude of LPs and ULCs was enlarged considerably (Appendix 2). During the time period 2003 - 2010 and the sub-periods 2003-2005 and 2006-2010, the LP and ULC annual average growth rates have been computed for the economy (excluding agriculture) for branches and sectors.

Based on average annual changes of LP and ULC a new indicator was constructed, the gap indicator, which measures the gap between annual changes of LP and ULC. It tries to shed light on how much ULC changes are supported by LP changes throughout the observed periods. Economic theory suggests that ULC increases should be supported by increase in LP, moreover, be preceded by the latter. This is a way to ensure compliance with the macroeconomic balances and increase in spaces to gain competitive advantages at branches and economy level. They would contribute to ensuring medium and long-term economic growth.

Given the above considerations, the gap values should meet two conditions simultaneously: (i) be positive, (ii) be close to zero. Fulfilling the first condition indicates that on average the ULC increases are offset in economic terms (from a descriptive point of view) by LP growths or by increased labour efficiency. The narrower this positive gap, the more reasonable is the compatibility between average growth rate of ULC and LP. Hence, the second condition might be met at a reasonable gap level.

The results presented below show that the gap for economy is negative throughout the period subject to this study. The average annual change of ULC is markedly positive versus the negative one of LP. The negative gap (-7.6 p.p.) shows that encouragement of labour force efficiency by the wage's instrument has occurred obviously during Q1'03- Q2'10. This behaviour was driven mostly by the indicators' values over the period 2006 - 2010, where the

gap level is quite wide (-17.5 p.p.). NTR sector of the economy developments have determined this phenomenon throughout the period, while the gap has turned out deeply negative (-23.9 p.p.) for the second sub-period. Endeavours for improvement are noted in the TR services sub-sector during the same time period. More positive developments in the TR rather than in the NTR sector throughout the last three years have impacted modestly on the improving gap level in the economy, due to high dominance of the NTR sector.

Compared to other branches and sub-branches of the economy, industry has recorded the lowest positive gap value for the entire period. Construction's branch has recorded the deepest negative gap value during the observed period. In this branch there are significant differences (negative) between average annual changes of LP and ULC during the second sub-period. They are the deepest in all observed branches and sectors.

The elaborations' results presented in the table often reveal the reverse movement as well: marked increases in LPs responded slight increases (or even decreases) in ULCs in average terms. This phenomenon appears to have characterized the economy (excluding agriculture) and the observed branches over the first sub-period (2003-2005). Industry and the sub-branch "trade, hotels and restaurants" exhibit the highest positive difference.

Table 3 Average annual changes in LP and ULC (in %), the gap between them (in p.p.)

	Time periods		
	Q1'03-Q2'10	Q1'03–Q4'05	Q1'06–Q2'10
LP economy (excl. agricult.)	-1.3	10.8	-6.7
ULC economy (excl. agricult.)	6.3	-3.8	10.8
Gap economy (excl. agricult.) (pp)	-7.6	14.6	-17.5
LP industry	4.7	11.7	1.5
ULC industry	2.8	-6.6	7.0
Gap industry (pp)	1.9**	18.3	-5.4
LP construction	-3.9	13.0	-11.5
ULC construction	10.6	1.8	14.5
Gap construction (pp)	-14.5	11.2	-25.9
LP transp.post-telecomm.	9.6	19.0	5.5
ULC transp.post-telecomm.	-0.5	-9.5	3.5

Gap transp.post-telecomm. (pp)	10.1	28.5	1.9**
LP trade, hotels, rest. others.	-4.7	9.7	-11.2
ULC trade, hotels, rest. others.	7.3	-3.5	12.1
Gap trade, hotels, rest. others.	-12.1	13.1	-23.3
LP TR	-4.7	10.4	-11.4
ULC TR	-8.2	4.9	0.8
Gap TR	3.5**	5.5**	-12.2
LP NTR	-4.7	10.4	-11.4
ULC NTR	7.9	-2.4	12.4
Gap NTR	-12.6	12.8	-23.9

Source: Authors' elaborations and calculations.
Note: (*) Gap (LP-ULC) is a difference between the average annual change of LP and ULC. **) The estimates indicate the relatively reasonable response of annual ULC growth to average LP growth, according economic activity of the sectors and in the economy (excluding agriculture).

In terms of inter-sectoral competitiveness and in those generating inflationary pressures, such behaviour is assessed relatively more positive compared to the presence of a large negative gap in economy. However, in terms of promoting a sustainable economic activity, this phenomenon indicates the lack of financial incentives to employees, despite the presence of marked increases in LP. The situation featuring the first sub-period at least does not stimulate further LP growth in the medium run.

6. GRANGER – CAUSALITY TEST RESULTS

Granger-Causality (GC) test for LP and Wg time series indicators is applied in order to identify the presence of causality in terms of their quarterly changes according the main sectors (TR and NTR). Empirical evidence from this test doesn't clarify the causality direction between quarterly changes of LP and Wg in the TR sector. Changes in LP would lead to changes in Wg with a two-quarter lag and vice versa: changes in Wg lead to LP changes (Table 4). This relationship between the above indicators over time is in line with the "gap" values between annual changes of LP and ULC for the TR sector (+3.5 pp), significantly influenced by the positive gap in industry (+1.9 pp).

Table 4 GC test results LP and Wg in TR sector (q-o-q changes)

Pairwise Granger Causality Tests			
Sample: 2003 Q1 - 2010 Q4			
Lags: 2			
Null Hypothesis:	Obs.	F-Statistic	Prob.
Wg_TR does not Granger Cause. LP_TR	27	3.6	0.04
LP_ TR does not Granger Cause Wg_TR.		2.8	0.08

Source: Authors' elaborations and estimations.

Table 5 GC test results LP and Wg in NTR sector (q-o-q changes)

Pairwise Granger Causality Tests			
Sample: 2003 Q1- 2010 Q4			
Lags: 8			
Null Hypothesis:	Obs.	F-Statistic	Prob.
Wg_NTR does not Granger Cause LP_ NTR	21	0.4	0.86
LP_NTR_ does not Granger Cause W_ NTR.		7.2	0.04

Source: Authors' elaborations and estimations.

The same test related to NTR sector has verified the presence of causality from LP to Wg quarterly changes, but with a considerable time lag (2-year) (Table 5). The high gap indicator for this sector (-12.6 p.p.) supports the marked differences in LP and ULC dynamics of the respective sector. The results presented in tables 6 and 7

indicate that changes in Wg index in the NTR sector are indirectly driven by changes in LP of the other sector of the economy, four quarters ahead. LP of the TR sector leads the Wg of the same sector with 2 quarters and the latter ones influences Wg in NTR sector with 4 quarters lag. This pass-through is highly significant. From the economic viewpoint, this relationship might be explained by the Balassa-Samuelson effect (BS) in the case of an economy, nevertheless, the empirical evidence (Çeliku and Hoxholli, 2009), shows that it has had a weak intensity on the Albanian economy until end of 2006.

Table 6 GC test results LP in TR sector and Wg in NTR sector (q-o-q changes)

Pairwse Granger Causality Tests			
Sample: 2003 Q1 2010 Q2			
Lags: 4			
Null Hypothesis:	Obs.	F-Statistic	Prob.
Wg_NTR does not Granger Cause LP_TR	25	1.4	0.30
LP_TR does not Granger Cause Wg_NTR		3.0	0.05

Source: Authors' elaborations and estimations.

Table 7 GC test results Wg in TR sector and Wg in NTR sector (q-o-q changes)

Pairwise Granger Causality Tests			
Sample: 2003 Q1 2010 Q2			
Lags: 4			
Null Hypothesis:	Obs.	F-Statistic	Prob.
Wg_NTR does not Granger Cause Wg_TR	25	0.1	0.96
Wg_TR does not Granger Cause W_NT		2.8	0.06

Source: Authors' elaborations and estimations.

The above channel is carried out through the driving role that the Wg level/change in the most competitive sector of the economy (TR sector) plays in the Wg in the NTR sector. Such a phenomenon finds a convenient ground in a flexible labour market: the labour forces can move freely from one sector to another, inducing pressures to employers for higher wages in branches of the NRT sector, a pre-condition for the BS effect in an economy. The GC test results

concerning the relationship between quarterly changes of Wg in TR and NTR sectors strongly support the fact that the above-cited pre-condition is verified over the time period 2003 Q1 - 2010 Q2, with a 4-quarters lag (Table 7).

GC test's results are cautiously considered in the light of restrictions arising from short time series. One of the conclusions drawn in this section is that LP in the TR sector of the economy has stimulated the Wg developments in this sector and vice-versa. This relationship holds true even for the NTR sector, but with a high time - lag. Such behaviour would imply an increase in production and services costs and higher inflationary pressures in the economy. However, the fact that net non-traded inflation and headline inflation (excluding administered prices) have resulted moderate and close to Bank of Albania's objective under the period in analysis, supports simultaneously the presence of a slight effect of the BS in the Albanian economy. Corrections, derived from the long appreciating exchange rate trend until end-2008, have played a primary role in the moderate values of the BS effect (Çeliku and Hoxholli, 2009).

7. RELATIVE PRODUCTIVITY, RELATIVE UNIT LABOUR COSTS AND COMPETITIVENESS

The international comparison on the basis of individual ULCs identifies the competitive profiles of certain economies. If a country's ULC is lower than another country's, or relative ULC coefficient (RULC) is less than 1, it is considered to have a potential competitive advantage in terms of production costs in the economy, compared to the other country. Sources of differences among the ULCs of an economy compared to other ones might derive from several factors, often difficult to identify measure and analyze separately.

In transition economies and those that have just left beyond this stage, where the size of ULC indicator is difficult to be measured with accuracy and its impact might have been declining over time, its values remain still relatively high. According to Papademo (2007), these values and their high volatility might be an outcome of several factors, which in their essence have: (i) efforts made by respective countries in their economic catching-up process. This phenomenon is more evident in countries where the Balassa-Samuelson effect could have been significant; (ii) changes occurring in different economies during the adjustment process toward equilibrium, smoothing of persistent or temporary shock's effects. These phenomena cause high volatility in ULC indicators; (iii) presence of structural factors constraining productivity growth often in reflection of inappropriate national policies related to product markets. Structural changes frequently cause significant differences in ULC's dynamics across economies. When the consequences of structural changes persist and lead to deepening of the differences between ULCs or RULCs, their prudent monitoring is required.

The challenge of the monitoring process consists in the fact that economic policies should measure and analyze short-term losses versus long-term benefits. In the short run, an improvement in cost competitiveness may lead to employment losses in particular industries. Meanwhile, in the long run higher job opportunities can be created, enhancing a countries economy chances to gain larger shares of the world market relating to this indicator and to this industry.

As mentioned in the section on approaches for measuring LP and ULC, these indicators must be "unified" to ensure the comparison across countries, in order to analyze the competitive advantages/ disadvantages of economies related to these indicators. The approach of Van Ark et. al., (2005) applied to explore the international competitiveness in terms of LPs and ULCs across different countries, is pursued in this study. They have corrected the above-mentioned indicators of observed countries, respectively, for the purchasing power parity (PPP to USD) and the exchange rate of each country's currency against the USD (ER). This procedure is necessary because ULC is measured as a ratio of two indicators, expressed in nominal and real terms and therefore the correction involves the use of ER and PPP indicators.

From the methodological and economic point of view, the data base is selected so that the indicators are as approximate as possible across countries, to ensure an appropriate comparability among them. Given that PPP for Albania is a yearly indicator (IMF), in this study the LP and ULC indicators have been expressed in the same frequency as well. These indicators are also available for the other countries in the OECD statistics. In this database, the ULC series for the panel of foreign countries are corrected with the exchange rate (ER) of domestic currencies against the USD, while the series of the LP are corrected with (PPP to USD). Series are seasonally adjusted. The corrected LPs and ULCs cover almost the same economic sectors - business activity excluding agriculture. The base year in the respective OECD data is 2005, as well as in the database constructed for Albania.

LPs and ULCs "unified" according to the above methodology are used to construct relative indicators, the RLP and RULC respectively. They are calculated as a ratio of the unified LP and ULC for Albania to respective indicators of foreign country or countries group in comparison. Among them, RULC is the indicator that synthesizes the comparative process more clearly. According to above-cited studies, RULC between a country - Albania (AL) - and another country (X), including all the explained corrections may be written as follows:

$$RULC^{Al/X} = [(ULC^{AL}/ER^{all/usd})/ULC^X] / [LP^{AL}/PPP^{all/usd}/LP^X] \qquad (1)$$
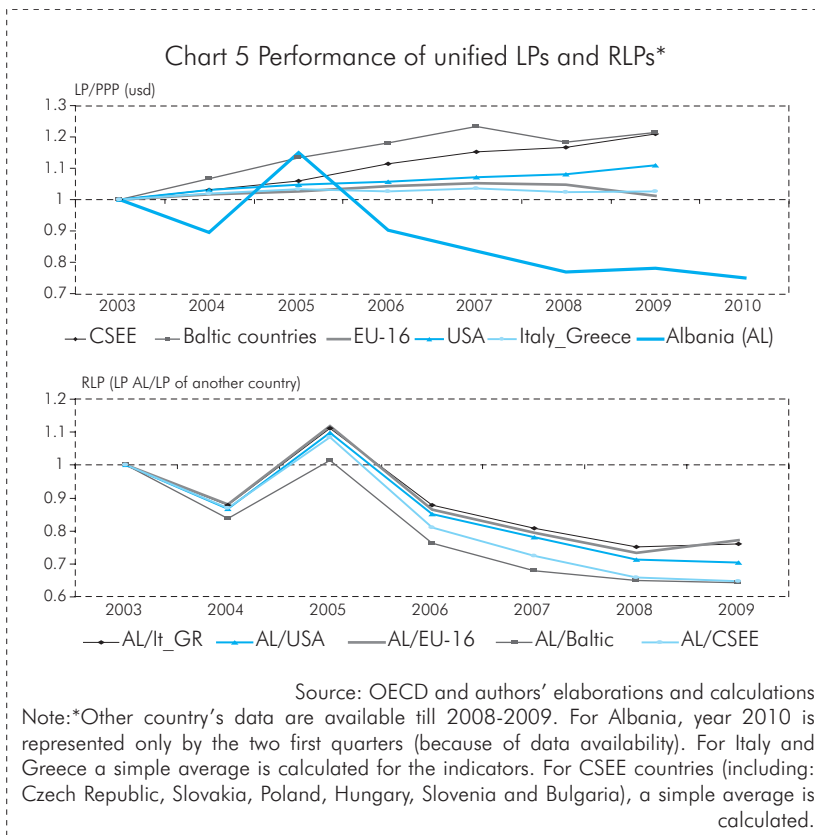
where Al stands for Albania, X for the comparative country, ER for the exchange rate of the Albanian currency against the American one (all/usd).

The expression (1) can be rewritten in terms of logarithms and also decompose into 3 components, as follows:

$$\log (ULC^{Al} - ULC^X) = \log (ULC^{AL}/ER^{all/usd} - ULC^X) - \log (LP^{AL}/ER^{all/usd} \_ LP^X)$$
$$- \log (ER^{all/us}d - PPP^{all/usd}). \qquad (2)$$

Each component contributes separately to create the competitiveness differences in terms of costs between two countries. The first and the second components indicate the difference in terms of ULC and LP, respectively, and the last one gives the difference in terms of ER.
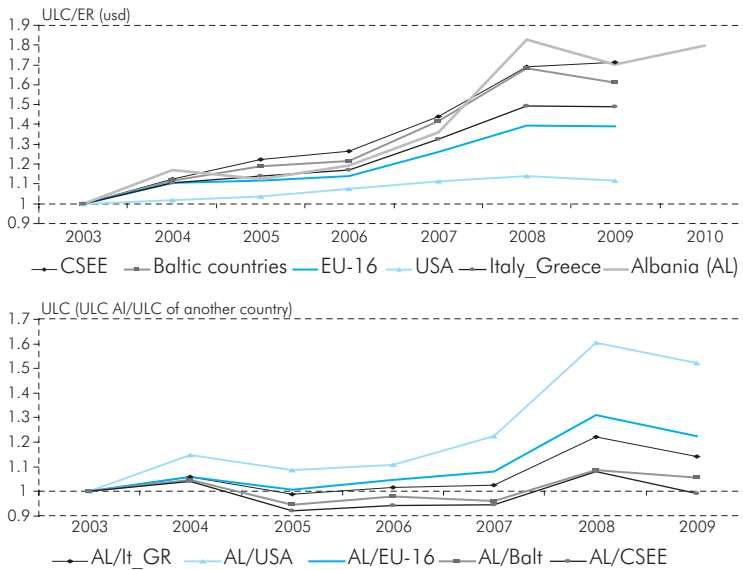
It is clearly demonstrated (charts 5) that in terms of LP the country's economy have remained throughout the observed period below the other economies. Approximation and positive growth rates, but at very short terms identified during 2005. The LP's performance shows that output growth rates have been lower than employment rate in the Albanian economy relative to that of EU economies - early EU member states (EU-16) and new ones (CSEE) - as well as the U.S.A economy. A substantial reason behind these developments might be related to the presence of still low level of the new technologies and innovation in the production and services branches. It is an essential element in LP growth and in expanding the TR sector of the economy. The low share of exports to the economy supports the high vulnerability in exports developments, increasing the weakness of competitiveness in terms of labour utilization efficiency in the economy.

Chart 5 Performance of unified LPs and RLPs*

LP/PPP (usd)

— CSEE — Baltic countries — EU-16 — USA — Italy_Greece — Albania (AL)

RLP (LP AL/LP of another country)

— AL/It_GR — AL/USA — AL/EU-16 — AL/Baltic — AL/CSEE

Source: OECD and authors' elaborations and calculations

Note:*Other country's data are available till 2008-2009. For Albania, year 2010 is represented only by the two first quarters (because of data availability). For Italy and Greece a simple average is calculated for the indicators. For CSEE countries (including: Czech Republic, Slovakia, Poland, Hungary, Slovenia and Bulgaria), a simple average is calculated.

Charts 6 show that there are enough rooms for improvements for the Albanian economy in terms of labour costs approximation in comparison to the U.S. economy, EU-16 and the main trading partners. Their ULCs remain significantly below that of Albania. The most obvious approximation results to average ULC of the CSEE countries group. Moreover, during the period 2004 - 2007, RULC has shown a tendency towards gaining slight competitive advantages of the Albanian economy against this countries group.

The results of the decomposition of the formula (2) and the performance analysis of the relative indicators of LP and ULC (RLP and RULC) highlights that high LP differences between Albanian economy and USA, the euro area and the most important trading

Chart 6 Performance of unified ULCs and RULCs*

ULC/ER (usd)

CSEE — Baltic countries — EU-16 — USA — Italy_Greece — Albania (AL)

ULC (ULC Al/ULC of another country)

AL/It_GR — AL/USA — AL/EU-16 — AL/Balt — AL/CSEE

Source: OECD and authors' elaborations and calculations
Note:*Other country's data are available till 2008-2009. For Albania, year 2010 is represented only by the two first quarters (because of data availability). For Italy and Greece a simple average is calculated for the indicators. For CSEE countries (including: Czech Republic, Slovakia, Poland, Hungary, Slovenia and Bulgaria), a simple average is calculated.

partners economies, are the main sources creating competitive disadvantages for the Albanian economy.

This situation requires, above all, improving the country's competitiveness position in the international markets by increasing the LP, as a positive precondition for expanding exports. LP growth, primarily in the TR sector, would impact on its enlargement, gaining ground in the international good, industries and particular services markets. In a second step, or parallel to the first one, a cautious monitoring of the wages performance should take place. Wage's increase must be supported by LP growth and be simultaneously used as an incentive instrument to LP increase. This way, inflationary pressures from this cost factor would be kept under control.

8. CONCLUSIONS AND RECOMMENDATIONS

The measurement of LP of the Albanian economy for the period 2003-2010 indicates a downward trend of this indicator. LP indicator performance varies among sectors, highlighting a higher productivity on average term in industry and service activities classified as tradable. LP trend in construction's branch reflects, among others, the high degree of informality, while in agriculture it identifies the need for a broad and cautious monitoring of labour market. Regarding the division of the economy into two sectors - tradable and non-tradable - the latter has mostly contributed to the downward trend of LP for the economy due to its higher weight compared to the first sector. Whereas, LP in the tradable sector is assessed to demonstrate an upward trend.

ULC indicator exhibited an upward trend, impacted by administrative measures on wages declaration. ULC's performance for the aggregate economy has been driven by developments in the non-tradable activities (trade, hotels, restaurants and other services, as well as construction). In relation to this indicator, tradable activities (industry, transport, post and telecommunication) have exhibited different trends from those of other sectors.

The study of volatility of LP and ULC indicators, based on their variance coefficients sheds light on the degree of wage variation. At the economy level, although variance coefficients values have been relatively acceptable, ULC has reflected a higher volatility compared to LP, mainly affected by fluctuations and wages' shocks. According the branches, the highest volatility for the LP indicator was exhibited by the services activities, while the maximum volatility for ULC indicator was reached by the construction branch.

The gap indicator between annual changes of LP and ULC at economy and branches levels was computed to shed light on how much ULC changes are supported by LP changes. Negative values of this indicator obtained for the economy reflect the increasing efficiency's lack on average terms, largely influenced by the developments in the non-tradable sector, respectively for the period 2006-2009. The tradable sector, which reflects positive

developments, is assessed contributed modestly on improving the gap level in the economy.

By applying the Granger – Causality procedure the above results were empirically verified. The relationship between quarterly changes in wages and labour productivity in the tradable sector is revealed in both directions. Meanwhile, the test results support the presence of such relationship for the non-tradable sector of the economy, but indirectly.

The comparative analysis of these indicators through relative LP and ULC indicators between the Albanian economy and other economies reveals the vulnerability even the lack of the competitive advantages of our economy. In terms of RLP, throughout the observed period, the economy has remained below the other economies, in spite of short-term efforts for improvement. The output growth has been lower than employment rates in Albanian economy compared to EU economies – early and new EU member states - as well as to the U.S. economy. The relative backwardness in terms of new technologies implementation, innovation and the low export share to the economy have made the tradable sector suffer from low efficiency of labour force utilization, hence damaging the aggregate LP and RLP indicators.

Results show that in terms of labour costs there is an evident gap between the Albanian economy and that of the U.S.A, of EU-16 and of the most important trading partners. The above-mentioned foreign economies operate with a lower unit labour cost than in our country does creating a significant competitive disadvantage for the Albanian economy compared to them. Related to the CSEE group countries and Baltic economies, there is an obvious convergence as regards the ULC indicators. Moreover, from 2005 onwards, Albania's economy has gained ground in terms of competitive advantages.

Combining the information from relative indicators (RLP and RULC), it shows that behind the relatively deep competitive disadvantages of the Albanian economy versus the economies of the USA, the Euro area, the most important trading partners and the CSEE, high LP differences are in place. Continuous LP growth

could help in the creation of substantial competitive advantages of the economy in terms of labour costs, helping both to control inflationary pressures from increased wages and unit labour costs.

The improvement of Albania's competitive image in international markets would require the continued increase of the LP, modern technologies implementation and efficient labour force utilization in the production process in our economy. Such a strategy would create positive ground for strengthening exports, a precondition for enlarging the tradable sector of the economy. This strategy should also incorporate cautious monitoring of wages. Wages increase should be supported by the labour productivity growth, in order to ensure an equilibrated impact to the monetary policy. Meanwhile, the wage increases should serve, among other, as a driver to labour productivity growth.

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APPENDICES

1. STABILITY TEST RESULTS (CHOW BREAKPOINT TEST):

The equation of LP

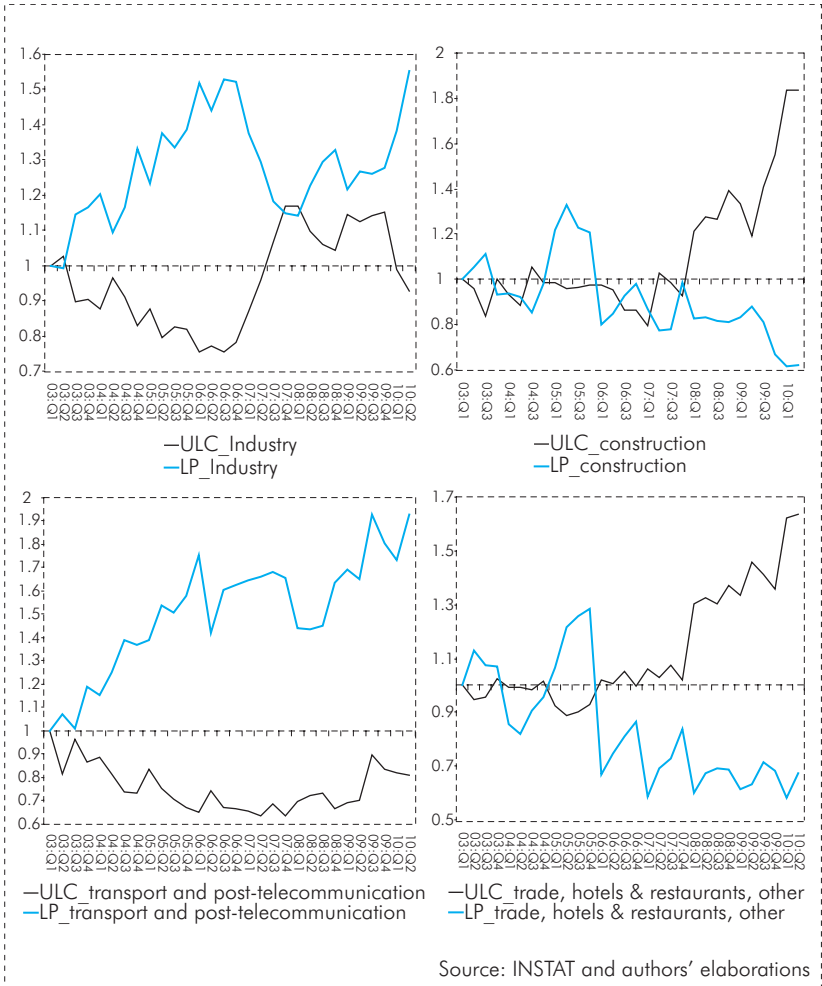| Chow Breakpoint Test: 2005Q1 2005Q4			
Null Hypothesis: No breaks at specified breakpoints			
Varying regressors: All equation variables			
Equation Sample: 2003Q1 2010Q2			
F-statistic	9.772937	Prob. F(4,24)	0.0001
Log likelihood ratio	28.99608	Prob. Chi-Square(4)	0.0000
Wald Statistic	39.09175	Prob. Chi-Square(4)	0.0000

The equation of ULC

Chow Breakpoint Test: 2005Q1 2005Q4 2008Q1			
Null Hypothesis: No breaks at specified breakpoints			
Varying regressors: All equation variables			
Equation Sample: 2003Q1 2010Q2			
F-statistic	39.14478	Prob. F(6,22)	0.0000
Log likelihood ratio	73.72568	Prob. Chi-Square(6)	0.0000
Wald Statistic	234.8687	Prob. Chi-Square(6)	0.0000

Source: INSTAT and authors' elaborations

2. LP VERSUS ULC – ACCORDING TO ECONOMY AND BY SECTORS

LP_economy (excluding agriculture) ——ULC_economy (excluding agriculture)

LP_TR ——ULC_TR

——ULC_NTR ——LP_NTR (excluding agriculture)

Source: INSTAT and authors' elaborations

Source: INSTAT and authors' elaborations