

## INDUSTRIAL DIFFERENTIATION OF LABOUR COSTS ADJUSTMENT TO THE BUSINESS CYCLE

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### **Abstract:**

The article refers to the problem of the adjustments in costs (esp. labour costs) to the scope of activity having business cycle fluctuations taken into consideration. The literature overview allows us to state that there are some delays in adjusting the costs to the changes in the scope of activity. Since the costs of adjusting capacity are likely to vary depending on the nature of the inputs, we expect to see sectoral differences in the time and the scope of labour costs adjustment around the business cycle.

The subject of this article is important for the company's owners, managers, investors, and financial analysts. The main hypothesis is that there are some industrial differences in labour costs adjustments since some industries are more vulnerable to fluctuations around business cycle. The research covers a 10-year period (2005-2014) including the period of economic slowdown and economic revival. We applied two basic measures- the growth rate of sales revenue and the growth rate of labour costs. The sample consists of two industries – retail trade and construction. Our research findings support our hypothesis. For the construction industry the changes in sales revenue are much higher than for retail trade industry. Subsequently, the changes in labour costs are much higher in construction industry than in retail trade industry. The originality of this article lies in the applied method. We carried out our research taking into account labour costs in relation to sales revenues. Sales revenues are deemed to be a measure of the scope of activity. We carried out our research for two industries. Our research is based on individual data not aggregated ones. The article is organized as follows: we start with an overview of the literature on business cycle and strategies of firm restructuring, then we present some empirical findings from different countries; we conduct the analysis and present conclusions.

*Keywords: business cycle, fluctuations, labour costs adjustment, industrial differences*

## 1. STRATEGIES OF RESTRUCTURING BUSINESS AGAINST THE BUSINESS CYCLE

Business cycles are a type of fluctuation found in the aggregate economic activity of countries and in business enterprises. A cycle consists of expansions followed by similarly general recessions, contractions, and revivals which merge into the expansion phase of the next cycle. The structure of business enterprises (eg. organizational, financial) is aligned with the economic environment at every phase of the business cycle. This creates a need for structural changes – restructuring. Restructuring is the deliberate modification of a firm's structure, resources or operations to improve alignment with a radically altered external environment. (Singh & Mahmood & Zhu, 2003). There are different strategies for companies restructuring to be implemented in a boom time and a crisis time. The ways of adjusting capacity are also likely to vary depending on the nature of the business cycle phase. But most literature refers to those measures taken at the time of recession and contraction.

Recessions present businesses with a dilemma whether to cut costs to preserve resources, or to invest in new products and processes to exploit competitor weakness. In general terms, the literature identifies three broad categories of strategy in the conditions of a recession: retrenchment, investment, and 'ambidextrous' strategies (Kitching & Blackburn & Smallbone & Dixon, 2009).

Retrenchment strategies involve cutting operating costs and divestment of non-core assets. These appear to be the most common approaches adopted by businesses to deal with recession conditions, especially in the short-term (Rones 1981 pp.3-11; Shama 1993, pp.62-72; Geroski & Gregg 1997; Michael & Robbins 1998, pp.35-45; DeDee and Vorhies 1998).

Investment strategies involve expenditure on innovation and market diversification. Recession is regarded as an opportunity to implement a strategic change that would otherwise not have occurred (Kitching & Blackburn & Smallbone & Dixon, 2009).

'Ambidextrous' strategies combine retrenchment and investment. It is likely that most firms adapt under recession conditions through judicious cost/asset cutting behavior and through investment in product innovation and market development (Kitching & Blackburn & Smallbone & Dixon, 2009).

Another classification of restructuring strategies distinguishes the following: asset contraction actions, expansion actions, internal reorganization actions, changes in internal control, miscellaneous actions (Kang & Shivdasani, 1997, pp 29-65).

Restructuring (regardless the phase of business cycle) is always costly, requiring firms to invest resources in undertaking transactions that alter the financial, operational and organizational structure of the firm or its base of assets and activities (Chakrabarti, 2009; Bowman & Singh, 1990, pp.8-22; Bowman & Singh, 1993, pp. 5-14; Mitchell & Singh, 1996, pp.169-195). Even efforts to reduce the asset or cost structure of a firm may incur costs for disposing assets, laying off employees, writing-off facilities, transferring resources and executing transactions. Restructuring is also difficult, as it requires companies to have the managerial capabilities to undertake major changes while minimizing disruption to assets, operations, structures and people.

In the study of the US oil-drilling industry, Mascarenhas and Aaker found that, initially, businesses continue business as usual, retaining current assets, employment levels, investment, overhead and activities. As recession deepens, many businesses decide to implement major cost- and asset-cutting responses with the aim of refocusing on core business. If such measures fail to revive performance, more drastic action will be taken. (Mascarenhas & Aaker, 1989, pp.199-210).

Geroski and Gregg's study of 600 mainly large UK manufacturing and service companies during the early-1990s recession found that most firms adapted by refocusing the business, understood largely in terms of controlling costs, particularly by laying off labour and closing establishments. Expanding or reducing product lines was much less common. (Geroski & Gregg, 1997).

Firms are more likely to achieve strong performance during the time of crisis through the stable deployment of resources, supported by capabilities that commit firms to consistent strategies (Barney, 1991, pp. 99-120). But rapid or radical restructuring that disrupts the deployment of resources, capabilities and routines may harm firm performance (Kraatz & Zajac, 2001, pp. 632-657; Newman,

2000, pp.602-619). More broadly, the literature on the strategic change warns that organizational and managerial disruption following restructuring may offset the benefits of improved resource alignment with the environment (Haveman, 1992, pp. 48-75; Rajagopalan & Spreitzer, 1997, pp. 48-79). Restructuring thus poses a dilemma: firms that do not restructure in response to major environmental change risk poorer performance from misalignment, while firms that restructure bear the costs of disruption following major internal change (Singh & Mahmood & Zhu, 2003).

The ability of firms to respond to a decline in performance, and the nature of these responses, are important factors that affect their performance and organizational efficiency.

## **2. THE ADJUSTMENT OF LABOUR COSTS TO BUSINESS CYCLE**

The supply of some raw materials may be immediately adjusted, and the adjustment decision may be subsequently reversed without friction. But employment law and labour contracts cause lags in the adjustment of labour on the downside, so that the labour-cost response may be observed significantly later than a fall in revenue. Skilled labour has specific character and it may be costly to acquire or reacquire, as it needs both time and expenditure to equip it with organization-specific knowledge.

It seems that there are some delays in cutting the level of employment while restructuring (in the crisis time and the boom time). Firms can use different ways of reducing labour costs when faced by negative external shocks, for example by cutting eliminating bonus payments, reducing non-pay benefits, shift premia, changing shift assignments, slowing or freezing rate at which promotions are filled, recruiting new employees at lower wage level than those who left voluntarily, or encouraging early retirement to replace high wage employees by entrants with lower wages (Babecký & Du Caju & Kosma & Lawless & Messina & Rößm, 2009).

In the booms after the 1991 and 2001 recessions, which have become known as 'jobless recoveries', it took 14 and 29 months respectively for employment to return to its previous the level from the end of the recession. Some research found that the employment is slow to recover after a recession by providing an explanation why it may not be optimal for firms to start hiring immediately after an increase in productivity (van Rens, 2004).

Sometimes firms have an incentive to postpone employment adjustments. Because organizational tasks generate lasting benefits, these tasks can be postponed when the productivity of current production is relatively high. Faced with temporarily high productivity or product demand, hiring more workers may therefore not be the only or even the first thing a firm does. Instead, it may postpone the replacement of an old machine, cancel a training session for its employees, or ask its workers to work longer hours for a few months. Conversely, a period of relatively low productivity is a good opportunity to catch up with all of these things or to complete a reorganization of the production line rather than an immediate reason to let some employees go.

If adjustment costs in employment are non-convex, as in Bentolila and Bertola or Caballero, Engel and Haltiwanger, it is optimal for firms not to respond to small shocks in the desired labor force, but to 'hoard' labor as long as the actual number of workers does not deviate too much from the desired level. (Bentolila & Bertola. 1990, pp.381-402; Caballero & Engel & Haltiwanger, 1997, pp. 115-137). Thus, the firm prevents making irreversible adjustments in case the shock is reversed. In response to a large shock (or a sequence of small shocks) workers are hired or fired to keep the difference between actual and desired employment within certain bounds. In the model with organizational capital, this type of adjustment costs may make it optimal to postpone rather than forego employment adjustments. Firms face a trade-off between postponing the adjustment costs and postponing employment adjustment. The gains from adjusting employment are initially small because the firm can absorb part of the shock by reallocating workers within the firm, focusing on tasks directly related to production and postponing organizational tasks. But these gains increase as workers spend less time doing organizational tasks which leads to a reduction in their productivity in the long run. Unlike in most models with non-convex adjustment costs, the gist of this result carries over to the case when adjustment costs are convex. With convex adjustment costs small adjustments are not irreversible and there is no reason to postpone employment adjustments. There is, however, an incentive to adjust employment slowly because large adjustments fast become very costly. Because slow adjustments are basically costless, in the long run the model with convex adjustment costs reaches the frictionless optimal allocation of labor. But in the short run, if the adjustment costs are sufficiently high, the model

behaves essentially as if employment is fixed. In response to an increase in productivity, firms use the intensive margin of adjustment. As the stock of organizational capital is gradually depleted, the need to hire more workers becomes more urgent and hiring increases. The higher urgency justifies the higher adjustment costs necessary to adjust employment at a faster rate. Eventually, after the level of employment has been sufficiently increased, the need for more workers becomes less urgent again, and hiring falls back to zero. But because hiring is initially increasing, it reaches its highest level a while after productivity increased (van Rens, 2004).

### 3. METHODOLOGY AND RESEARCH FINDINGS

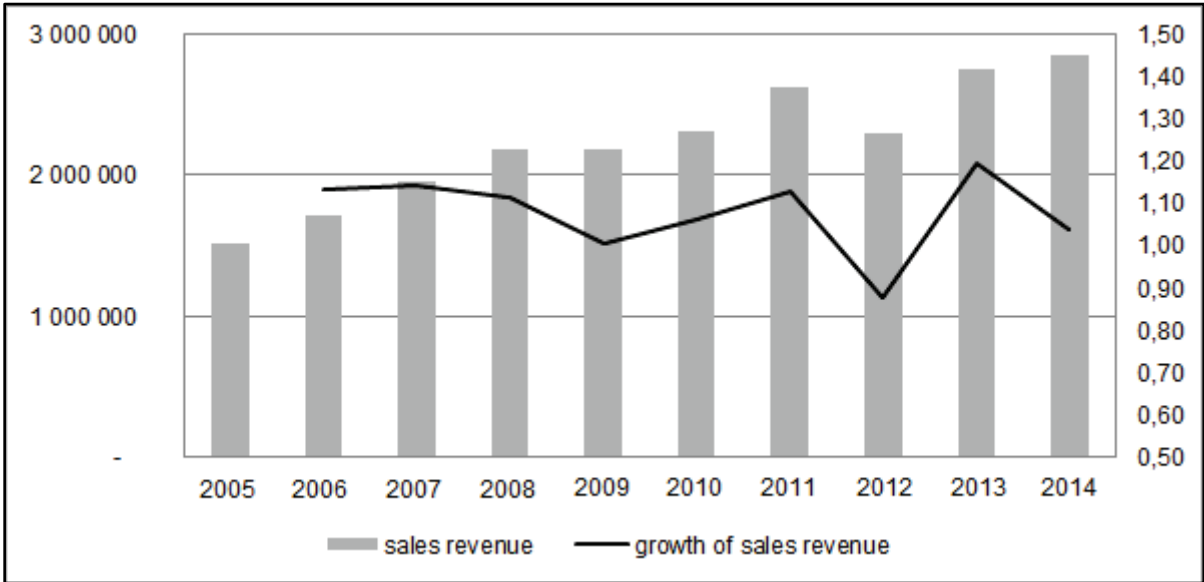
The research covers a 10-year period (2005-2014) including the period of economic slowdown and economic revival.

The financial data (sales revenue and labour costs) were collected from financial statement (for companies) and from statistical yearbook (for the Polish economy). We applied two basic measures- the growth rate of sales revenue and the growth rate of labour costs.

The sample consists of two industries – retail trade and construction. The retail trade industry sample includes 5 public companies (LPP, Alma Market, Eurocash, Emperia Holding and Vistula), while the construction industry sample includes 5 public companies (Budimex, Mostostal Zabrze, Mostostal Plock, Elektrobudowa, Projprzem). These companies were chosen as they provide us with complete financial statements for the whole analysed period.

We examine the changes in the labour costs in relation to changes in the business activity (changes in sales revenue). Since the costs of adjusting capacity are likely to vary depending on the nature of the inputs, we expect to see sectoral differences in the time and the scope of labour costs adjusting around the business cycle. We expect to see dramatic changes in sales revenue for construction industry for it is a more sensitive industry, while the changes in sales revenue for retail trade industry seem to be smoother. The less significant changes in sales revenue the smoother changes in labour costs.

**Picture 1:** Sales revenue and the rate of growth for sales revenue for the whole economy



Source: authors' own work

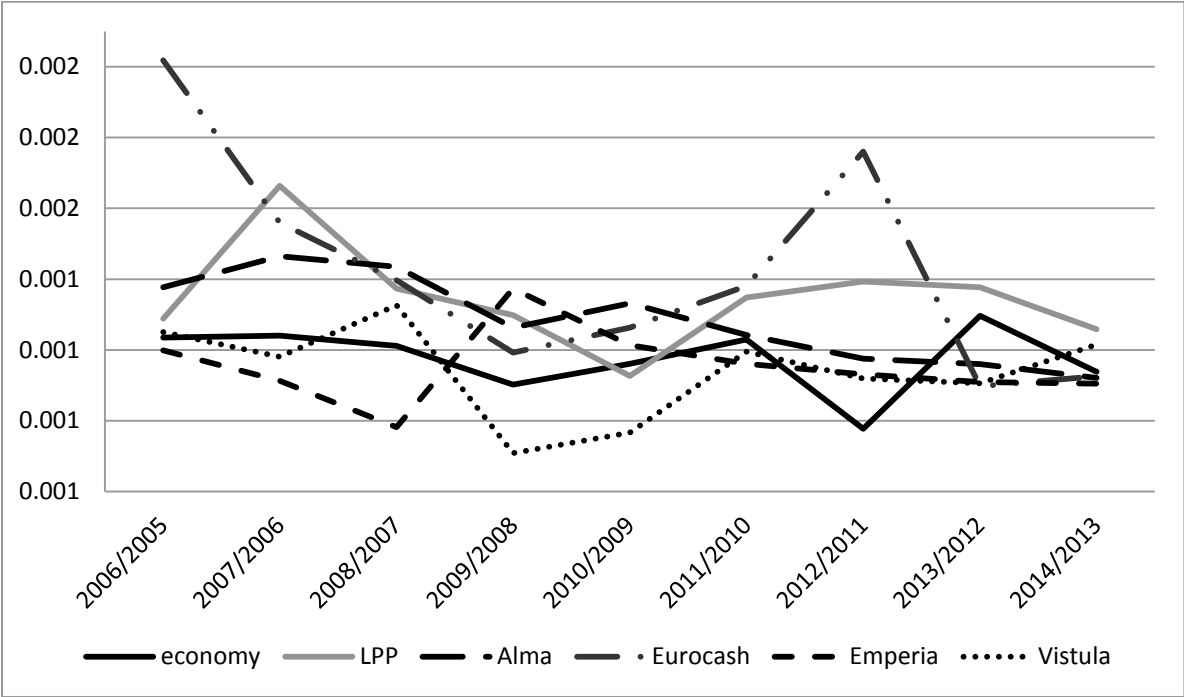
For the whole economy, we can see only two years of decline – 2009 and 2012 (the rate of growth is lower than 1,0), while for the rest of the analysed years we can see a growth. But there is a different rate of this growth; for the years of 2006, 2007, 2010 and 2013 the rate of growth is higher than 10 per cent, and for the years 2008, 2011 and 2014 it is lower than 10 per cent.

The rate of growth was quite stable for the years of 2005-2008, while the period of 2009-2014 is characterized by strong fluctuations.

While the data in picture 1 are aggregated for the whole economy we expect to see the differences in the growth for analyzed industries (Pictures: 2-3).

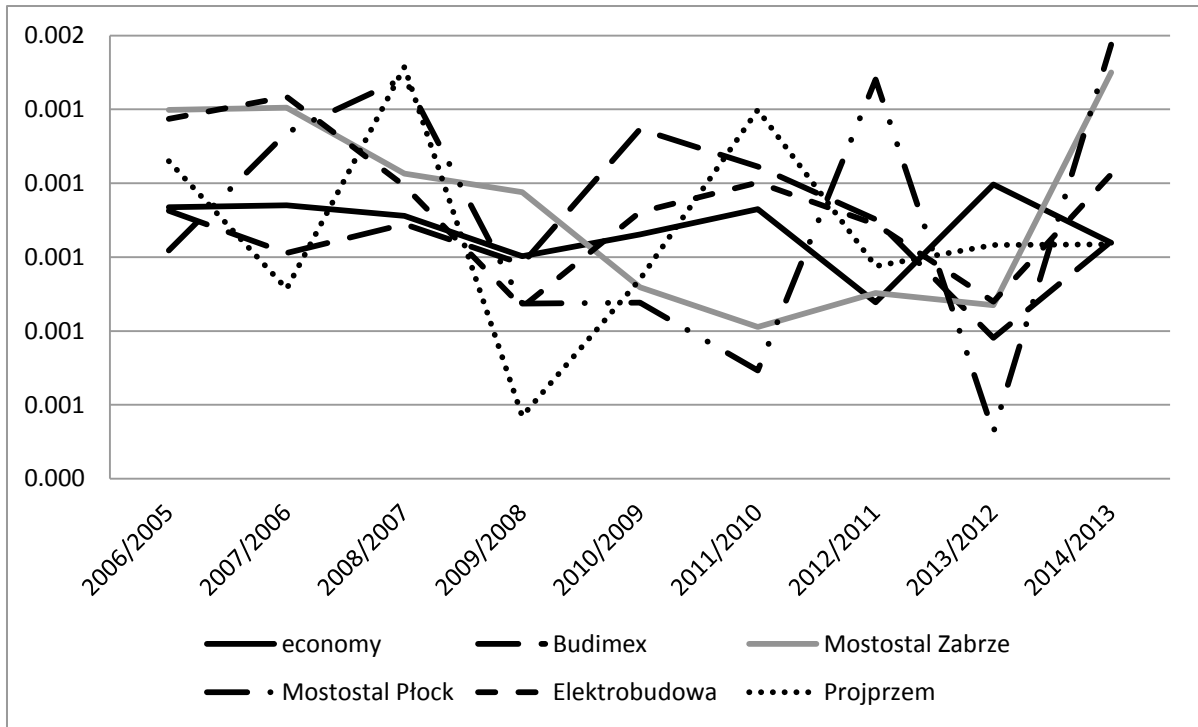
There are smaller changes between the rate of growth for the retail trade industry and economy than between the rate of growth for the construction industry and economy. The correlation coefficient is higher for the retail trade industry (0.43) than for construction industry (-0.25). The changes for the retail trade industry are smooth while the changes for the construction industry are significant. The standard deviation is lower for retail trade industry (0.18) than for construction industry (0.26). All these support the observation and presentation in picture 2 and 3 that construction industry is more changeable and vulnerable to the economic fluctuations than retail trade industry.

**Picture 2:** The rate of growth of sales revenue for retail trade industry



Source: authors' own work

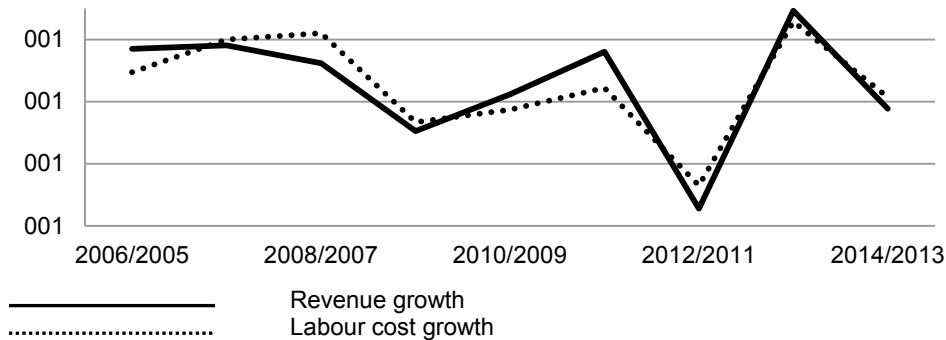
**Picture 3:** The rate of growth of sales revenue for construction industry



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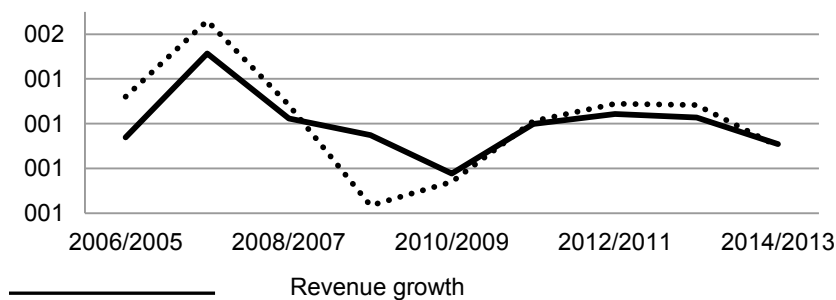
Because the retail industry shows smoother changes in sales revenue we expect to see similar changes in the labour costs. We can think that the industry showing small fluctuations in economic activity is able to adjust labour costs to the scope of activity quite fast. The relation between the growth rate of sales revenue and labour costs for retail trade industry are presented in pictures 4-9.

**Picture 4:** The rate of growth for sales revenue and labour costs (economy)



Source: authors' own work

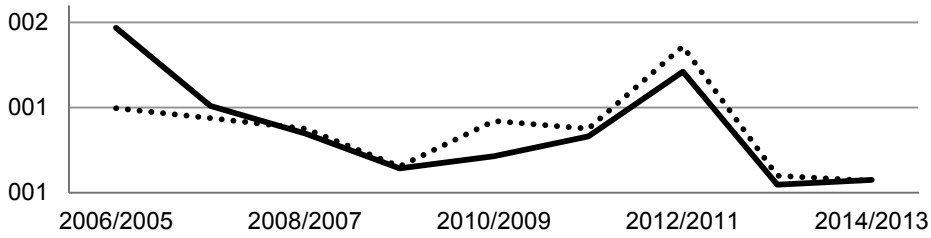
**Picture 5:** The rate of growth for sales revenue and labour costs (LPP)



..... Labour cost growth

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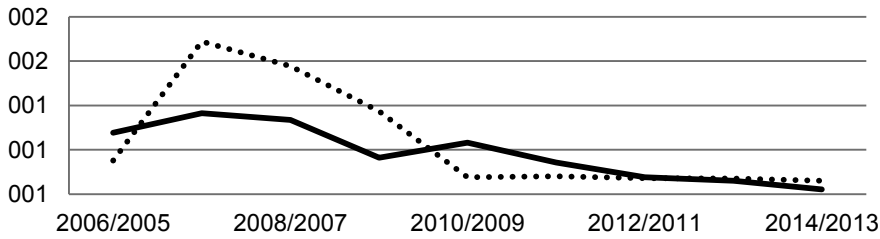
**Picture 6:** The rate of growth for sales revenue and labour costs (Eurocash)



\_\_\_\_\_ Revenue growth  
..... Labour cost growth

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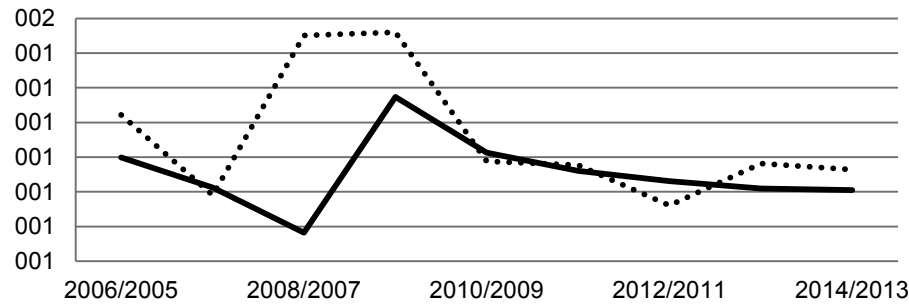
**Picture 7:** The rate of growth for sales revenue and labour costs (Alma)



\_\_\_\_\_ Revenue growth  
..... Labour cost growth

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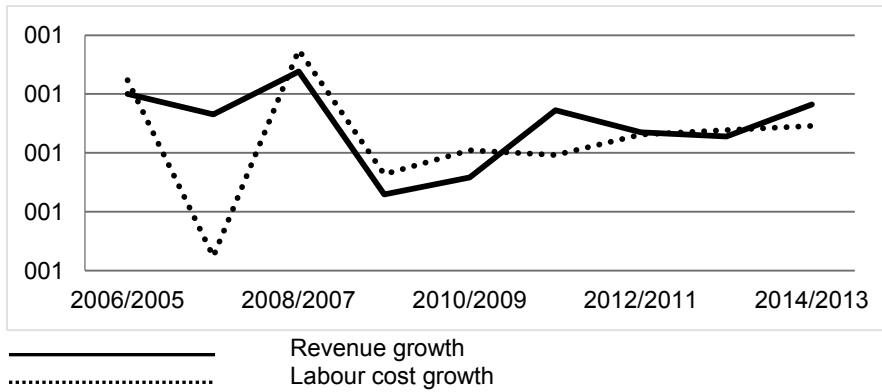
**Picture 8:** The rate of growth for sales revenue and labour costs (Emperia)



\_\_\_\_\_ Revenue growth  
..... Labour cost growth

Source: authors' own work

**Picture 9:** The rate of growth for sales revenue and labour costs (Vistula)



Source: authors' own work

From the picture 4 we can see that for the whole economy there is close relation between the rate of growth in sales revenue and labour costs. From pictures 5-9 we can see that there are two groups of companies. One group (LPP and Eurocash) shows close relation between the rate of growth in sales revenue and labour costs in the period 2004-2014. The second group (Alma, Emperia, Vistula) shows close relation between the rate of growth in sales revenue and labour costs in the period 2009-2014, while in the period 2004-2009 the rate of growth for labour costs is significantly different than the rate of growth in sales revenue.

The above observation is supported by correlation coefficient analysis. The correlation coefficient between changes in sales revenue and labour costs for the whole economy is 0.93, so the coefficient of determination is 86%. It implies that 86% of the variability between the two variables have been accounted for and only the remaining 14% is still unaccounted for. The correlation coefficient between changes in sales revenue and labour costs for the retail trade industry is 0.7, so the coefficient of determination is 49%. It implies that only 49% of the variability between the two variables have been accounted and only the remaining 51% is still unaccounted for.

The elasticity (relation between the rate of growth of labour costs to the rate of growth of sales revenue) for the whole economy and 2004-2014 period is 1,0. It means almost perfect adjustment in the changes of labour costs to the scope of activity. For the companies from retail industry the elasticity is respectively: 1.008; 1.040; 1.009; 1.104; and 0.962. The elasticity for the whole retail trade industry is 1.025. If the elasticity is higher than 1.0 it means that the changes in labour costs are higher than changes in sales revenue.

Because the construction industry shows bigger changes in sales revenue we expect to see much smaller changes in labour costs. We think that because construction industry is more changeable and more risky the companies will postpone making any changes in labour costs to mitigate risk. The relation between the growth rate of sales revenue and labour costs for construction industry are presented in pictures 10-15.

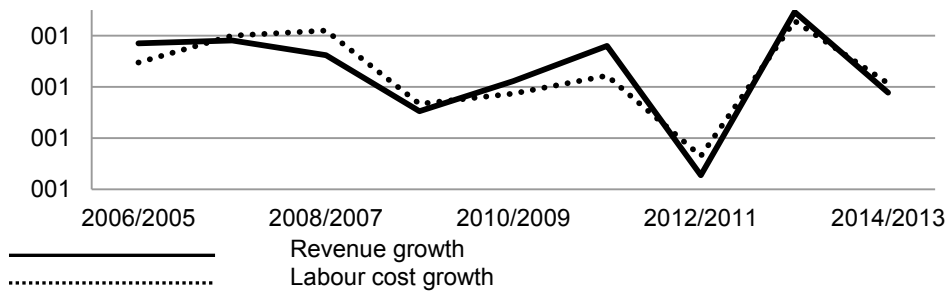
From pictures 10-15 we can see that the rate of growth for labour costs is significantly different than the rate of growth in sales revenue for the whole group of companies from construction industry for the period of 2004-2014. But it seems that the growth rate of labour costs is smoother than growth rate of sales revenue. It means that in the time of growth, the growth of labour costs is lower than sales revenue, and in the time of decline, the rate of decrease is lower for labour costs than sales revenue.

The correlation coefficient between changes in sales revenue and labour costs for the retail trade industry is 0.53, so the coefficient of determination is 28%. It implies that only 28% of the variability between the two variables have been accounted and only the remaining 72% is still unaccounted for.

The elasticity (relation between the rate of growth of labour costs to the rate of growth of sales revenue) for the companies from the construction is respectively: 0.996; 1.000; 1.021; 1.005; 1.069; and 0.962. The elasticity for the construction industry is 1.018. The elasticity for the construction industry is lower than for the retail trade industry but still higher than 1.0.

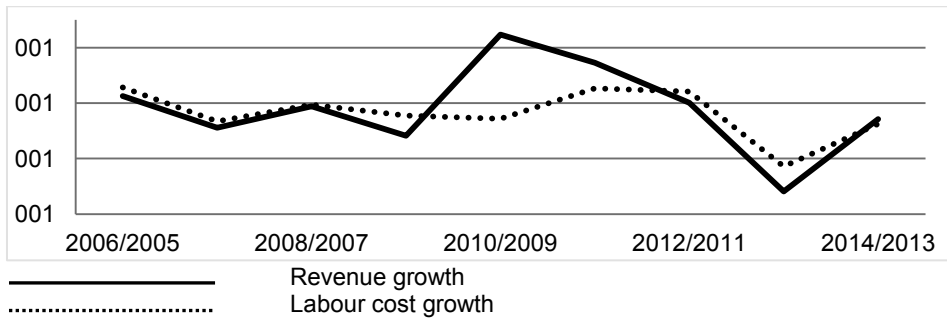
**Picture 10:** The rate of growth for sales revenue and labour costs (economy)





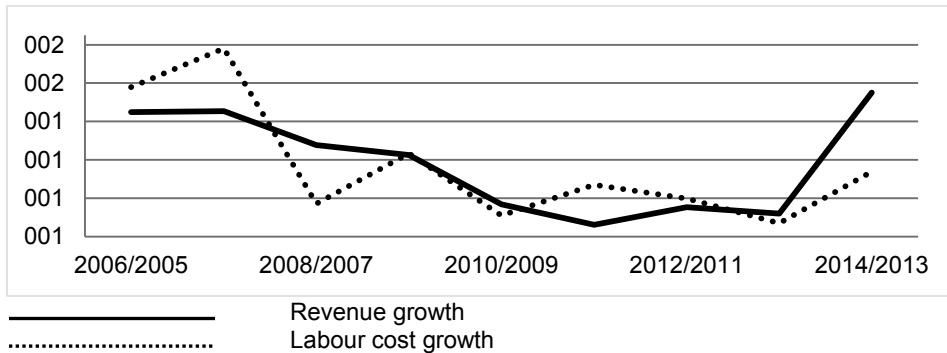
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**Picture 11:** The rate of growth for sales revenue and labour costs (Budimex)



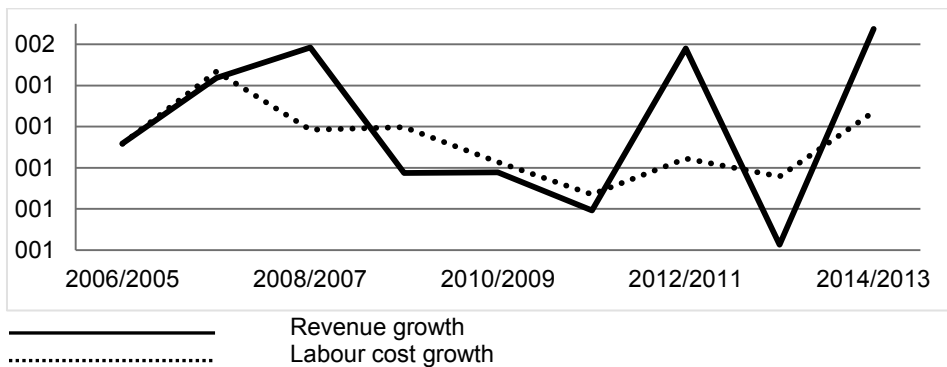
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**Picture 12:** The rate of growth for sales revenue and labour costs (Mostostal Zabrze)



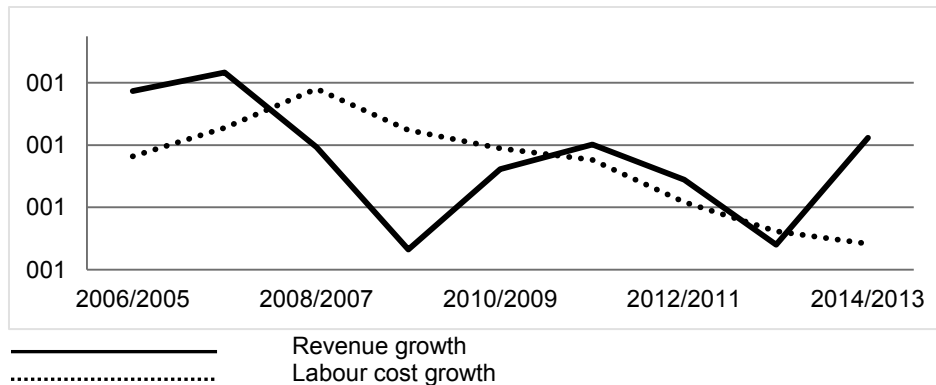
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**Picture 13:** The rate of growth for sales revenue and labour costs (Mostostal Plock)



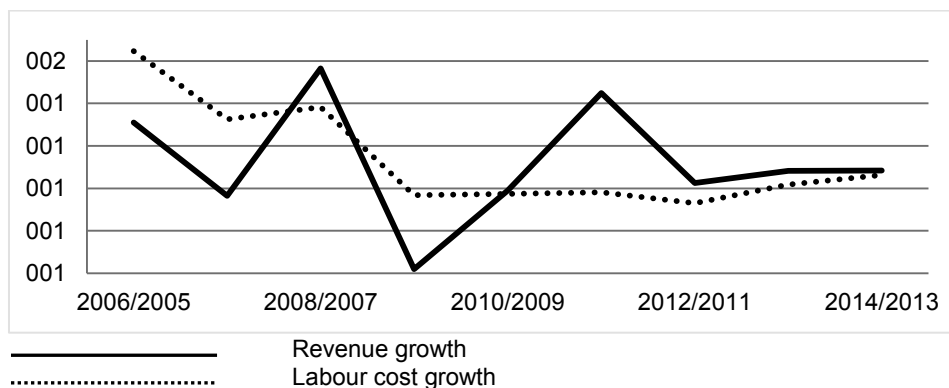
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**Picture 14:** The rate of growth for sales revenue and labour costs (Elektrobudowa)



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**Picture 15:** The rate of growth for sales revenue and labour costs (Przejrzem)



Source: authors' own work

## 4. CONCLUSIONS

The aim of the paper was to compare the changes in sales revenue and labour costs. The economic life cycle poses a need for adjustments in the structure of business, including labour. We expect to see some industrial differences in adjustments since some industries are more vulnerable to fluctuations. We analysed a ten-year period, 2004-2014. This period is characterized by strong fluctuations in economic activity without any visible trends. It makes any adjustments more difficult. For the whole economy the adjustment in labour costs follows the changes in sales revenue. For the construction industry the changes in sales revenue are much higher than for retail trade industry. We find closer relation between changes in the scope of activity and labour costs in retail trade industry than construction industry. Our research supports this hypothesis.

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