

Josipa Visic<sup>1</sup>

## LABOUR PRODUCTIVITY AND EMPLOYMENT EFFECTS OF TAKEOVERS IN CROATIA

*This paper focuses on takeover effects on labour productivity and employment of target companies. The empirical analysis is performed on Croatian companies which have taken over in the period from 2003 to 2008. The results indicate that these companies have improved their labour productivity 3 years after the takeover but their labour productivity still has remained lower than that of peer companies. Regarding the number of employees, takeovers haven't significantly changed the level of employment for targets, i.e. these companies employed more workers than the peer companies in each observed year.*

*Keywords:* takeover; labour productivity; employment; Croatia.

*JEL:* D24, G34, J24.

Йосипа Вішич

## ВПЛИВ ПОГЛИНАНЬ НА ПРОДУКТИВНІСТЬ ПРАЦІ ТА ЗАЙНЯТІСТЬ: ЗА ДАНИМИ ХОРВАТІЇ

*У статті досліджено вплив поглинань на продуктивність праці та загальні показники зайнятості на підприємствах, що поглинаються. Для аналізу використано дані щодо хорватських підприємств у 2003–2008 роках. Результати аналізу даних вказують на суттєве підвищення продуктивності праці на підприємствах, що зазнали поглинання, протягом 3 років після поглинання. Однак даний показник все одно вище на підприємствах аналогічних галузей, які не вдалось поглинути через їх значну конкурентоспроможність. Відносно кількості персоналу поглинання не змінили суттєво статистику. У середньому, підприємства після поглинання працевлаштували більше людей, ніж ті, що не стали об'єктами поглинань.*

*Ключові слова:* поглинання; продуктивність праці; зайнятість; Хорватія.

*Табл. 4. Літ. 34.*

Йосипа Вишич

## ВЛИЯНИЕ ПОГЛОЩЕНИЙ НА ПРОИЗВОДИТЕЛЬНОСТЬ ТРУДА И ЗАНЯТОСТЬ: ПО ДАННЫМ ХОРВАТИИ

*В статье исследовано влияние поглощений на производительность труда и общий показатель занятости на поглощённых предприятиях. Для анализа использованы данные по хорватским предприятиям за 2003–2008 годы. Результаты анализа данных указывают на существенное повышение производительности труда на поглощённых предприятиях в течение 3 лет после поглощения. Однако данный показатель всё равно выше на предприятиях аналогичных отраслей, которые не поглотили из-за более высокой конкурентоспособности. Что касается количества персонала, поглощения не изменили существенно статистику. В среднем, поглощённые предприятия трудоустроили больше человек, чем те, которые не становились объектами поглощений.*

*Ключевые слова:* поглощение; продуктивность труда; занятость; Хорватия.

**1. Introduction.** For decades takeovers have been an interesting research topic. Their impact on company's performance, measured by profitability ratios, shareholders wealth etc., has often been theoretically and empirically analysed, yet their influence on productivity has not received as much attention. Productivity can imply multifactor or single-factor productivity and the focus of this paper is solely on labour

<sup>1</sup> University of Split, Croatia.

productivity due to growing importance of employees for companies. Although capital importance is indisputable, employees are the source of intangible assets which create wealth and distinguish companies among their competitors. Consequently, investing in R&D, marketing and training is becoming more important (Bryan, 2007). Hence, the aim of this research is to provide an insight into influence of takeovers on labour, i.e. labour productivity and employment.

Impact of takeovers on labour can be observed from three perspectives – employees', company's and country's standpoints. At the employee level, research can be directed towards the analysis of wages, promotion possibilities, workplace stability and employee satisfaction. At the company level it could also include the number of employees, their educational level, labour costs and productivity, while at the country level the aggregate productivity could be a fruitful research path.

Takeovers are complex business processes affecting both acquirers and targets and their influence on involved companies is surely correlated with company's motives to participate in this form of investment. Literature dealing with takeovers often points out that a company in distress is more likely to be overtaken. If an acquirer seeks to exploit target's unfavourable position there is a high probability that a takeover will result in divestiture of target's asset, layoffs of employees and wage cuts. Therefore, takeovers are often regarded as a tool for breaking existing implicit and explicit employment contracts and this possible scenario provides an explanation why employees in target companies often regard takeovers as a threat. However, it is possible that companies avoid dismissing their employees even when business is going slow as it is the case with large Japanese firms. They tend to adjust labour costs by freezing new recruitment, reducing working hours, transferring employees to other firms or reducing the number of non-regular workers in order to protect implicit contract of long-term employment with their regular employees (Kubo and Saito, 2012). On the other hand, it is possible that a takeover has a positive impact on both an acquirer and a target thus resulting in better working conditions, higher wages and employment growth rate due to exploitation of new technologies, economies of scale and scope etc.

As stated, takeovers' influence is complex and Mylonakis (2006) in his paper detects several important quantitative and qualitative consequences of takeovers on employment such as a decrease in the employment of less specialised categories, significant changes in the role of enterprise senior staff towards more complex and more flexible duties, a relative increase in the employment of specialised and younger staff etc.

In addition to these changes, it is important to emphasize the impact of takeovers on company's funds for staff training and outsourcing. Namely, an increase of electronically performed tasks and the pressure to cut down costs often force companies transfer duties and replace staff instead of investing in education of the existing one. Although de Boyer et al. (2000) observed a change in the nature and quality of employment in the financial services sector, the abovementioned negative impacts of takeovers on employment are not characteristic solely for this sector, yet they affect economy as a whole. Women, older and low-skilled employees seem to have additional disadvantage regarding employment issues.

Employment issues are delicate when it comes to deciding whether policy-makers should intervene during ownership changes (Amess et al., 2008). From the

employee perspective it might seem justified to provide strong employee protection, but in order to optimally use resources there should be a balance between employer's business goals and rationalization of costs on the one side and exploitation of employees on the other. Additionally, it is necessary to find the right ratio of intangible and tangible assets since rapid economic progress makes both financial resources and innovative individuals an important source of market power.

Considering the impact takeovers have on employment and labour productivity, this paper will hopefully add to better understanding of this complex research question. In that manner, the main aim of this research is to analyse takeover effects for Croatian target companies.

Following the introductory motive, the paper has a four section structure. The second section provides the literature review, while data description, estimation procedure and results are presented in the third section. Finally, the conclusion is given in the last section.

**2. Literature review.** There is no unified standpoint on takeover effects on labour and probably only a case analysis could provide a clear answer on each aspect of takeover influence on employees of involved companies. However, previous studies on the subject, presented in Table 1, provide a valid theoretical framework for this research.

*Table 1. Studies of the effect of takeovers on labour, wages and labour productivity, summarized by the author*

Authors and date	Performance measure(s)	Country and analysed period	The most important empirical results
Conyon (2001)	Employment Wage Labour productivity	UK (1983–1996)	There is no evidence for distinguishing between friendly and hostile acquisitions in terms of their negative impact on labour demand. Hostile transactions are associated with immediate substantial falls in output and employment, which are not present after friendly transactions.
McGuckin and Nguyen (2001)	Employment Wage Plant closing	US (1977–1987)	Ownership changes are not a primary vehicle for cuts in employment and wages, or closing plants. Instead, typical ownership change increases jobs and their quality as measured by wages. However, some ownership changes, particularly those in bigger plants, are associated with job loss, and typical worker fares much worse than the typical plant.
Gugler and Burcin Yurtoglu (2004)	Employment Labour productivity	US UK Continental Europe (1987–1998)	There is no adverse effect of mergers on labour demand in the USA, however a negative effect in Europe has been found.
Sung and Gort (2006)	Total Factor Productivity (TFP) Labour productivity Total cost Economies of scale and scope Average capital gains	US (1991–2000)	There is no significant increase in TFP for merged companies when the pre- and post merger experience is compared and also no systematic difference in TFP between merged and non merged companies.

Continuation of Table 1

Authors and date	Performance measure(s)	Country and analysed period	The most important empirical results
Girma (2006)	TFP Labour productivity	UK (1981–1996)	TFP increases post merger compared to premerger performance and companies that don't undertake any merger. Performance increase of related mergers and in smaller companies is more prominent than for unrelated mergers.
Mylonakis (2006)	Employment Staff effectiveness	Greece (1998–2003)	M&A results for the bank market have been negative in terms of employment.
Amess et al. (2008)	Employment Wage	UK (1996–2006)	A decline in employment is found whether the acquisition occurs within the same industry or not. Only acquisitions within the same industry cause wage increase.
Lehto and Bockerman (2008)	Employment	Finland (1989–2003)	Cross-border M&As lead to downsizing in manufacturing employment. The effects of cross-border M&As on employment in nonmanufacturing are much weaker. Changes in ownership associated with domestic M&As and internal restructurings also typically cause employment losses, but they exhibit a sectoral variation.
Siegel and Simons (2010)	Real wage growth of employees Earnings Employment Status	Sweden (1985–1988)	Employee outcomes are more favourable when only a part of a company is bought or sold or when a firm engages in unrelated acquisition.
Hosono et al. (2009)	TFP R&D intensity	Japan (1995–1999)	Acquirer's TFP decreases immediately after merger and does not significantly recover to the premerger level within 3 years after. R&D intensity does not significantly change after merger in spite of a significant increase in debt-to-asset ratio.
Yamada and Taguchi (2010)	Employment	Japan (1999–2007)	The immediate effects of acquisition on target company's employment proved to be significantly negative presumably due to labour restructuring intended by an acquiring company, while negative effects do not appear to last as the subsequent dynamic impacts on target company's employment.
Ebner (2011)	Labour productivity	Germany (1993–2006)	There is no sufficient evidence for a clear causal effect of M&A on labour productivity growth. If estimations are statistically significant, they are mostly positive, and this mostly applies to the subgroups of buyer plants and horizontal mergers.
Oberhofer (2012)	Employment	European countries (1994–2007)	In comparison with firms of the same size and age, targets of acquisitions increase their post-acquisition employment growth rates.
Kubo and Saito (2012)	Employment Employees' wages	Japan (1990–2003)	The number of employees decreases 3 years after a merger. Wages increased following a merger.

Beside the studies presented in Table 1, it is also interesting to mention Marshall and Hergeth's (2008) paper in which they: a) discuss productivity measurement issues in textile industry as companies engage in outsourcing and merger activities, and

b) link productivity measures to competitiveness. They state that mergers have significant influence on productivity of capital and knowledge resources, while productivity of knowledge resources is considered to be the most important contributor to competitiveness. Their results of the interview analysis indicated a need for productivity measures to be coupled with profitability measures in order to gain more accurate indicators of competitiveness.

Since this paper is directed towards the analysis of takeover effects on Croatian target companies, it is necessary to mention studies that belong to scarce empirical analysis of the respective research topic. In that manner, to the author's knowledge only Vretenar (2012) provided an insight into the influence of takeovers on performance of Croatian target companies. Using the sample of 40 publicly listed companies, among other performance indicators, he analysed the change in employees' number and labour productivity. However, Vretenar used a descriptive methodology while analysing labour productivity which makes this research substantially different.

There are several studies dealing with labour productivity in Croatia, but without considering the takeover effects. These studies focused on the influence of employment protection to job creation (Rutkowski, 2003), defining and measuring aggregate productivity (Nestic, 2004), factors that influence labour productivity in hotel industry (Holjevac and Vrtodusic Hrgovic, 2012) etc. Further, Sohinger et al. (2007) analysed the impact of FDI on Croatian economy, and among other macroeconomic effects provided data on labour productivity in manufacturing.

Although it is evident that there is an abundance of general comments on the takeover effects on labour, there is very little systematic empirical evidence on the respective subject dealing with Croatian companies. Therefore, this paper seeks to address this gap in literature.

### **3. Data description, estimation procedure and results.**

**3.1. Data description and estimation procedure.** The research includes the companies involved in takeovers. It is necessary to point out that this analysis made no distinction between mergers and acquisitions which is in accordance with the approach adopted by many authors, especially in the studies that use a similar methodology to analyze the impact of takeovers on company's performance (e.g. Gugler et al., 2003; Kamerbeek, 2010). Considering the fact that takeovers are processes used to buy a part or the whole company and inconsistent use of terms "acquisition" and "merger" in business and scientific literature (e.g. Capron, 1999; Martin, 1996) a term "takeover" has been used as a superior term to the concepts of merger and acquisition which is also in line with the relevant scientific theory and the OECD definition.

Since takeovers include acquirers and target companies, it should be emphasized that the analysis included only target companies, i.e. joint stock companies registered in Croatia that continued to operate after takeovers while acquirers were both domestic and foreign companies and individuals. Due to differences in classification of expenses in income statements, companies dealing with financial and insurance activities were not included in the sample despite their high takeover values. Taking into account that the empirical analysis has been made solely on the data covering relatively small number of Croatian target companies the sample has not been divided by industries.

The research methodology required the availability of target company's data for a year before and 3 years after the takeover. Therefore, the empirical analysis included takeovers performed in period from 2003 to 2008. Although in the period 1998–2001 there were 153 takeovers, due to changes in the format of financial statements, and in order to maintain data comparability, the sample did not include the takeovers that occurred before the year 2002.

The analysis of takeovers in the period 2003–2008 showed that some target companies were taken over twice or often during the observed period, some of them declared bankruptcy and for some companies there was a lack of data for a year before the takeover. Therefore, a certain number of companies has been excluded from the sample which led to the final sample of 70 companies. The sample was formed using: a) the list of completed takeovers of Croatian JSC companies with the amounts paid for shares available in the CFSSA's annual reports (the list is available upon request) and b) secondary data on Croatian companies obtained from the Amadeus database (Bureau van Dijk).

**3.2. Estimation procedure.** Takeovers are processes that may show results after a certain time, so the observation period included 3 years after a takeover in order to reduce the possibility of making wrong conclusions about the impact of a takeover on performance. This approach is common in scientific literature on the subject (Gugler and Siebert, 2007; Martynova et al., 2006; Ghosh, 2001) since it leaves enough time for a company to adjust but at the same time it minimizes possible influence of other changes in company's business environment that might occur over a longer period of time and thus make it difficult to extract the effect of takeover. In order to explore the impact of takeover on labour, i.e. labour productivity and employment the analysis also included a control group consisting of peer companies which have been selected among all Croatian companies whose data were available in the Amadeus database, regardless whether they were registered as a Ltd or a JSC, i.e. peer companies were selected among 12321 companies.

Ghosh's paper (2001) has been used as a guideline while forming peer group selection criteria, so each of the observed 70 target companies was assigned with a peer company which was the most suitable for the selected company in the year  $t - 1$  in 3 segments: a) industry classification; b) company size; c) company's performance. As well as in similar studies on takeover effects (Gugler et al. 2003; Ghosh, 2001) each target company was paired with a peer selected from the group of companies that belong to the same industry at the two-digit level according to the NACE Rev. 2 classification. Further, after detecting companies whose size fell into the interval with boundaries formed at level of 25% and 200% of total assets of a target company in the year  $t - 1$ <sup>2</sup>, a company with the most similar performance measured by cash flow value was selected as a peer company. Year  $t - 1$  was chosen as the base year for selecting peer companies in order to avoid a strong effect of a takeover in the year  $t$ . Although majority of similar empirical studies control involvement of peer companies in takeovers over the same period used for observing the impact of takeovers, a stricter criteria has been used in this research. Namely, peer companies were included in the analysis only if they have not been involved in a takeover in period from year  $t - 3$  to

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<sup>2</sup> Same criteria was used by Ghosh (2001) and Gugler and Siebert (2007).

$t + 3$  in order to lessen the possible influence of a takeover on peer company's performance. Therefore, it was necessary to form a dataset which provided a control period for each year  $t$ . Consequently, peer companies have been selected manually in 4 steps. First, a dataset containing all companies (12321 companies) have been sorted according to their two-digit level of industrial classification. Second, an interval with boundaries formed at the level of 25% and 200% of total assets of a target company in year  $t - 1$  has been calculated for each target company. Third, a company with the most similar performance measured by cash flow value was selected as a peer. Finally, it was necessary to check whether the selected peer company has been involved in takeovers during the control period.

Given the numerical form of the used data, t-test for paired samples has been used as a statistical method in two ways. First, the difference between values of labour indicators for target and peer companies has been separately tested for each observed year ( $t - 1, t, t + 1, t + 2, t + 3$ ). Secondly, t-test for paired samples has been used according to its primary definition, i.e. it was used to test significance of the difference between the value of labour indicators in the year  $t + 3$  and their value in the year  $t - 1$ .

The analysis of the influence of takeovers on labour productivity and employment has been performed by providing an insight into changes in two indicators of labour productivity and number of employees. Methodology for calculating these indicators corresponds to those in similar empirical studies (Ebner, 2011; Ospina and Schiffbauer, 2010; Girma, 2006 etc.) and is presented in Table 2.

*Table 2. Performance indicators, made by the author*

Variable	Denotement	Methodology for calculating performance indicator
Labour productivity	LnSales.N	natural logarithm(Sales/Number of employees)
	LnTR.N	natural logarithm (Total revenue/Number of employees)
Labour	LnNumber	natural logarithm(Number of employees)

Note: Total revenue was calculated by summing the data on operating, financial and extraordinary revenues.

Two indicators of labour productivity have been used since previous empirical studies (Visic, 2012; 2013) showed that even when there is a high correlation between two indicators sometimes they may demonstrate a different impact of takeovers on company's performance. Additionally, t-test has been used in two ways to test whether different methodology would lead to conflicting results. The absolute value of a number of employees may not be an appropriate measure considering large variations in this value among the observed companies. Therefore, a logarithm of employees number has been used in the analysis. Descriptive statistics for each variable which includes mean, standard deviation, minimum and maximum values and the number of observations is available at request.

Due to incomplete data set for all observed companies the analysis has been made by using the unbalanced data. Although this has caused differences in the number of observations depending on the used indicator and methodology, missing data were not obtained from any other source than the Amadeus data base in order to maintain their consistency. SPSS Statistics 17.0 was used for data processing.

**3.3. Results.** The influence of takeovers on labour productivity and employment tested separately for each observed year is presented in Table 3. The analysis showed

that peer companies had statistically significant higher labour productivity in each observed year (in the period from  $t - 1$  to  $t + 3$ ) regardless the used performance indicator. In accordance to the results on labour productivity, target companies had higher employment level than their peer companies in each observed year.

**Table 3. Paired samples test performed separately for each observed year, author's calculations**

Pairs	Paired Differences					t	df	Sig.
	Mean	Std. Dev.	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
LnSales.N.3 – X.LnSales.N.3	-0.5227	1.4290	0.1927	-0.9090	-0.1364	-2.713	54	.009
LnSales.N.2 – X.LnSales.N.2	-0.5885	1.4821	0.1838	-0.9558	-0.2213	-3.201	64	.002
LnSales.N.1 – X.LnSales.N.1	-0.7168	2.0358	0.2506	-1.2173	-0.2164	-2.861	65	.006
LnSales.N – X.LnSales.N	-0.5550	1.2461	0.1522	-0.8590	-0.2511	-3.646	66	.001
LnSales.N.0 – X.LnSales.N.0	-0.6667	1.3049	0.1606	-0.9875	-0.3459	-4.151	65	.000
LnTR.N.3 – XLnTR.N.3	-0.4634	1.2546	0.1692	-0.8026	-0.1242	-2.739	54	.008
LnTR.N.2 – XLnTR.N.2	-0.5292	1.2572	0.1559	-0.8407	-0.2176	-3.393	64	.001
LnTR.N.1 – XLnTR.N.1	-0.5966	1.5916	0.1959	-0.9879	-0.2054	-3.045	65	.003
LnTR.N – XLnTR.N	-0.5556	1.3086	0.1599	-0.8748	-0.2364	-3.476	66	.001
LnTR.N.0 – XLnTR.N.0	-0.6060	1.2882	0.1586	-0.9227	-0.2893	-3.822	65	.000
LnNumber.3 – X.LnNumber.3	0.5505	1.6581	0.2369	0.0743	1.0268	2.324	48	.024
LnNumber.2 – X.LnNumber.2	0.6252	1.7980	0.2341	0.1566	1.0938	2.671	58	.010
LnNumber.1 – X.LnNumber.1	0.6591	1.6659	0.2151	0.2288	1.0895	3.065	59	.003
LnNumber – X.LnNumber	0.8369	1.6325	0.2090	0.4188	1.2550	4.004	60	.000
LnNumber.0 – X.LnNumber.0	0.9563	1.6435	0.2104	0.5354	1.3772	4.545	60	.000

Note: In order to separate data for target and peer companies, peer companies have been marked with letter X placed in front of the observed indicator and the observed years were marked at the end of the indicator's name were 3, 2 and 1 are marks for years  $t - 3$ ,  $t - 2$ ,  $t - 1$ . Year  $t - 1$  was marked with 0, and in year  $t$  indicators haven't changed their original names.

Although a comparison of labour productivity indicators for target and peer companies demonstrated that targets performed worse than peers, the results presented in Table 4 exhibit a certain improvement in labour productivity for target companies. Both labour indicators showed a statistically significant increase in labour productivity for target companies 3 years after the takeover. In the same period the employment level did not show a statistically significant change. Labour productivity of peer companies, on the other hand, hasn't significantly changed and their employment level significantly increased.

Taking into consideration the results presented in Tables 3 and 4 it is evident that target companies have increased their labour productivity 3 years after takeovers but

it has still remained lower than the labour productivity of peer companies. Regarding the number of employees, although target companies decreased their employment level, it stayed at a higher level than employment at peer companies. The presented here results are in line with expectations and are in accordance with those obtained by Vretenar (2012), even though he used a different methodology for analysis of change in labour productivity of target companies as a consequence of takeovers. Namely, Croatian companies have often been taken over due to poor performance which allowed acquirers exploit their market position. Also, it is important to mention strict employment protection legislation in Croatia which makes dismissals difficult and costly and limits flexible forms of employment. Employment protection is even stronger if targets are larger companies since they are more likely to have labour unions and in such case a takeover often involves negotiations with government which constrains layoffs. As well as previously mentioned explanations, one should also take into consideration a high portion of targets from the hotel industry. Regarding numerous competitiveness problems of large portion of Croatian target companies and characteristically high level of employment for the hotel industry it is understandable why takeovers had a weak positive impact on labour productivity.

**Table 4. Paired samples test performed by using the data for the year  $t - 1$  and  $t + 3$ , author's calculations**

Pairs	Paired Differences					t	df	Sig.
	Mean	Std. Dev.	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Target companies								
LnSales.N.3 – LnSales.N.0	0.2918	0.9055	0.1210	0.0493	0.5343	2.412	55	.019
LnTR.N.3 – LnTR.N.0	0.2097	0.7084	0.0947	0.0200	0.3994	2.215	55	.031
LnNumber.3 – LnNumber.0	-0.1873	0.7266	0.0971	-0.3819	0.0073	-1.929	55	.059
Peer companies								
X.LnSales.N.3 – X.LnSales.N.0	0.1610	0.6213	0.0809	-0.0009	0.3229	1.990	58	.051
XLnTR.N.3 – XLnTR.N.0	0.0399	0.5804	0.0756	-0.1114	0.1911	.528	58	.600
X.LnNumber.3 – X.LnNumber.0	0.2052	0.5440	0.0734	0.0581	0.3523	2.797	54	.007

**4. Conclusion.** The influence of takeovers on employment has often been a subject for public debate. Although many studies show a negative trend concerning the number of employees, from the strictly economic viewpoint it is important to take a broader perspective. A decrease in number of employees may also be seen as a company's effort to restructure and increase efficiency and this standpoint has been adopted in the paper. The analysis of post-takeover changes in Croatian targets companies showed that these companies have improved their labour productivity but it still remained lower than those of peer companies. Regarding the number of employees, takeovers haven't significantly changed the level of employment for targets so these companies employed more workers than peer companies in each observed year. Moderately favourable takeover effects could be explained with: a) exploitation of target's unfavourable market position; b) high level of employment protection in the

form of strict legislation, government pressures on acquirers to retain most employees and strong labour unions; c) a significant number of takeovers in the hotel industry characterised with labour productivity issues.

Empirical research on takeover effects on labour and labour productivity have not been performed as often as those considering other performance indicators such as profitability, especially when it comes to analysis of Croatian companies. For that matter, this paper hopefully adds to a better understanding of this important issue on Croatian level and provides guidelines for future research regardless the used sample since the results have indicated that two different approaches to empirical analysis lead to a more accurate conclusion on takeover effects on labour productivity of target companies. Future research on the subject aims to expand the sample in order to explore differences of takeover influence between industries and countries. Additionally, further studies will include analysis of changes in wages, growth of employment and labour productivity.

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