Mergers & Acquisitions in the European Union. Acquisition Activity & Economic Performance

Fúze a akvizice v Evropské unii. Akviziční aktivita a výkonnost ekonomiky

IVETA MACKENZIE

Abstract

The paper is focused on the relationship between the level of acquisition activity and the external conditions in which transactions occur or further develop. It deals with the dependence between acquisition activity and economic performance, and, at the same time, with the dependence between acquisition activity and the tax rate. Acquisition activity is presented by the indicator 3M: the M-total, indicator of the total number of transactions, M-score, indicator of the transaction frequency, and M-index, showing the position within a given unit. The paper surveys acquisition activity in individual EU countries, confirms the dependence between acquisition activity levels and economic performance, and maintains that the tax rate is a significant factor contributing to the given country´s acquisition activity level.

Keywords

acquisition activity, acquisition activity indicators, acquisition strategy, mergers & acquisitions, M-index, M-score, M-total

JEL Codes

F23, F63, G34, O52, O57

Abstrakt

Článek se zaměřuje na vztah mezi mírou akviziční aktivity a vnějšími podmínkami, ve kterých k transakcím a post-transakčnímu vývoji dochází. Zabývá se závislostí mezi akviziční aktivitou a výkonností ekonomiky a současně závislostí mezi akviziční aktivitou a daňovou kvótou země. Akviziční aktivita je prezentována ukazateli 3M: M-total, vyjadřující celkový počet transakcí, M-score, vyjadřující frekvenci transakcí, M-index, vyjadřující pozici v rámci hodnoceného celku. Studie předkládá přehled akviziční aktivity v jednotlivých zemích Evropské unie, potvrzuje závislost mezi mírou akviziční aktivity a výkonností ekonomiky, shledává daňovou kvótu jako významný faktor podílející se na síle akviziční aktivity dané země.

Klíčová slova

akviziční aktivita, ukazatele akviziční aktivity, akviziční strategie, fúze a akvizice, M-index, M-score, M-total

Introduction

Mergers and acquisitions, strategic management tools, are effective ways to quickly penetrate new markets, strengthen the position in the current market, restructure a holding structure, broaden a product portfolio, reduce operating costs, optimise the tax burden, or even obtain more favourable conditions for further capital injection. Decision-making concerning a transaction means decision-making at the level of managers or owners, who are limited by national laws and regulations on domestic transactions, and by the current applicable standards of European and international law in the case of international and intercontinental transactions. First, planning a transaction includes some decisions about its purpose and the expected benefits the transaction should bring. Second, it means understanding the current internal environment and identifying the particular business opportunities, or even potential synergy effects. Third, it is necessary to understand the external business environment in which the transaction will occur and will later further develop. With regard to mergers & acquisitions, transaction activity may be significantly influenced by a country's external conditions, i.e. its legal, economic, political and social environment. The aim of my research is to define acquisition activity, to measure and compare its intensity in different countries of the European Union, and to give an opinion on how a country's economic performance and tax rate affect the level of acquisition activities.

1 The theoretical basis

Studies presenting the issue of "mergers & acquisitions" mainly focus on cross-border transactions; in fact, national transactions are analysed considerably less often. Studies are mostly written by American and English authors as well as by authors from China, Germany, France, Canada, the Netherlands, Australia, Spain, and Italy. Issues of this kind are mostly published in the journals *Journal of Corporate Finance, Review of Industrial Organization and Journal of Competition Law and Economics*. Most studies concern developed economies (e.g. in 2014: the USA – 44%, Great Britain – 13%, Germany – 10%); studies of developing economies are rare (Achim 2015).

In scientific studies and reports produced by global consulting companies, acquisition activity is indirectly mentioned with reference to the total number or volume of transactions ($) in individual regions, countries or sectors and during different time periods. Assessing the number and volume of transactions, most authors are in agreement and confirm the long-term growth trend visible in acquisition waves in all market economies. Historically, mergers & acquisitions took place in several waves; initially, especially in the Americas, later in Asia and Europe. Each of these waves had its specifics and implications for the economy: the first wave – horizontal consolidation (1897–1904), the second wave – increasing concentration (1916–1929), the third wave – the conglomerate era (1965–1969), the fourth wave – the retrenchment era (1981–1989), the fifth merger wave – the age of the strategic mega-mergers (1992–1999), and the sixth wave – the rebirth of leverage (2003–2008).

Authors mention that acquisition activity changes in relation to a changing external economic environment. This is explained by two theories. One argues that merger waves occur when firms react to an industry "shock" (Martynova and Rennenboog 2008), such as that arising from deregulation, the emergence of new technologies, distribution channels, substitute products, or a sustained rise in commodity prices. The second argument is based on misvaluation and suggests that managers use overvalued stocks to buy the assets of lower-valued firms (DePamphilis 2014). For the second theory to be correct, the method of payment would normally be stock. In fact, the empirical evidence shows that less stock is used to finance takeovers during merger waves. Malmendier (2011) mentions that since M&A waves typically correspond to an improving economy, managers confident about their stocks' future appreciation are more inclined to use debt to finance takeovers. Thus, the shock argument seems to explain M&A waves better than the misevaluation theory (Garcia-Feijoo 2012). However, shocks alone, without sufficient liquidity to finance deals, may hardly initiate an acquisition wave. Moreover, readily available low-cost capital may cause a surge in M&A activity even if industry shocks are absent (Harford 2005). McNamara (2008) and Gell (2008) conclude that mergers & acquisitions generally take place when the economy is growing and interest rates are low or declining. Companies which monitor whether the environment is favourable and make the transaction early in an acquisition wave pay less for the target company than other companies that only follow suit. Later in the cycle, there is a price increase; other bidders appear and many buyers pay more than the optimal price. Duchin and Schmidt (2013) also make a similar conclusion: a transaction concluded at the end of an acquisition wave brings a lower yield for the acquirer than one that occurring in an acquisition boom. Ahern and Harford (2010) suggest that acquisition activity in one sector stimulates acquisition activity in other sectors as a result of supplier-customer relations. In addition, Netter (2011) offers interesting findings: he evaluates the progress of acquisition waves in connection with the number and size of transactions. He points out two important facts: first, the existence of acquisition waves is, due to changes in the external environment, more evident in large data samples than in small ones; second, acquisition activity involving small transactions of private purchasers is much smoother than acquisition activity involving only publicly traded companies, i.e. large volume transactions.

In summary, scientific studies focused on acquisition activity tackle the issue from a global perspective. At the regional level, studies of individual countries are produced mostly by multinational consulting companies publishing, usually quarterly or irregularly, short-term reports on the quantity of past transactions in selected regions or sectors. Predominantly, studies assess the acquisition activity in developed economies, while reports on the same issue in developing economies are rare. Studies comparing developed and developing economies, or individual countries, in the long term, are not available. This may be caused by the fact that it is difficult to objectively compare individual countries' data. Acquisition activity, expressed as the total number of transactions within a period in a particular country or an otherwise defined region, has limited explanatory power and is not objectively comparable for a group of countries. To compare acquisition activity in individual countries, it is crucial to be objective, i.e. to develop such indicators that eliminate all factors discriminating/favouring large or small economies. In economies with large populations, a higher number of companies operate – there are more potential subjects of transaction (mergers & acquisitions); conversely, in small economies, the

number is low. When using the acquisition activity indicator for the total amount of transactions, large economies with a higher number of firms are favoured as they have more potential players. A good indicator for the comparison of acquisition activity in individual countries should reflect the appetite for transactions: a situation in which the same number of companies would operate in a given region. To be able to answer the research questions, the presented methodology uses, in addition to mathematical and statistical methods, several special purpose indicators developed to meet the requirement for objective data comparison.

2 Methodology and data sources

The aim of the research is to determine whether economic performance and tax conditions have an impact on the strength of acquisition activity. To start the analysis, two basic hypotheses were stated: H_1 "*Acquisition activity grows with increasing economic performance*", and H_2 "*The level of acquisition activity is determined by the tax rate of the country*". First, concepts and indicators comparable within individual countries (economies) were defined:

- acquisition activity and economic performance,
- acquisition activity indicators (3M: M-total, M-score, M-index) and economic performance indicators (GDP, GDP/capita, TTR), in accordance with the intended use.

Then the relationship between the defined macroeconomic indicators and acquisition activity indicators in individual EU countries was determined.

Hypothesis H_1 "*Acquisition activity grows with increasing economic performance*" was based on the fact that:

- Stable legal, social, political and economic environment in developed economies is crucial for transactions such as mergers & acquisitions, and especially for positive post-transactional development.
- Studies on mergers & acquisitions show the positives associated with previous management experience (Huang 2014); senior managers are available especially in developed economies with a long transaction history and higher transaction potential.

Hypothesis H_2 "T*he lower the tax rate of the country, the higher the acquisition activity*" was based on the fact that:

- Mergers & acquisitions are a tool for creating holding structures that facilitate tax optimisation.
- Simultaneously, they are a tool for optimising costs within the holding.

To test hypotheses H_1 and H_2, the research was divided into two phases. The first phase (empirical economic analysis) included a detailed analysis of acquisition activities in different EU countries. The second phase (correlation analysis) dealt with the existence of a relationship between acquisition activity and macroeconomic indicators: GDP (gross

domestic product at current prices), GDP per capita (gross domestic product per capita in purchasing power parity), and TTR (total tax rate). The data for the research were obtained from three databases: Eurostat (Eurostat 2014), The World Bank (World Bank 2014), and Zephyr (Zephyr 2013). The survey included a large sample of 94,359 transactions that took place in the European Union in the period from 1 January 2001 to 31 December 2012. This was the sixth acquisition wave's extended period and the vastest global wave in history with reference to the total number of transactions as well as the volume of transactions. All mergers & acquisitions over 50% points, regardless of the transaction size, were included. The examined data came from the following 27 countries of the European Union, regardless of their membership span: Austria (AT), Belgium (BE), Bulgaria (BG), Cyprus (CY), the Czech Republic (CZ), Denmark (DK), Estonia (EE), Finland (FI), France (FR), Germany (DE), Greece (GR), Hungary (HU), Italy (IT), Ireland (IE), Latvia (LV), Lithuania (LT), Luxembourg (LU), the Netherlands (NL), Poland (PL), Portugal (PT), Romania (RO), Slovakia (SK), Slovenia (SI), Malta (MT), Spain (ES), Sweden (SE), Great Britain (GB).

2.1 Empirical economic analysis

To compare acquisition activities, economic indicators – "3M" acquisition activity indicators, were created: M-total, M-score, M-index (Mackenzie 2016).

M-total: indicator of the **total number of transactions in country x in period t**.

$$\text{M-total}(x)_n = \sum_{k=1}^{n} NT(x)_k \quad (1)$$

where $NT(x)_k$ number of transactions in country x in year k
x country
n number of years in period under review t

M-score: indicator of the **frequency of transactions in country x in period t**. It shows the number of firms per one completed transaction (merger or acquisition). This indicator shows the frequency of using this strategic management tool in a given country, i.e. measures "appetite for transactions". **The lower M-score, the higher the transaction appetite**.

$$\text{M-score}\ (x)_n = \frac{NF\ (x)}{\sum_{k=1}^{n} NT(x)_k} \quad (2)$$

where NF (x) number of active firms in country x in period t
$\sum_{k=1}^{n} NT(x)_k$ number of transactions in country x in period t (M-total)

In a simplified format, the M-score may be also expressed as NF(x) divided by M-total (x).

M-index: acquisition activity indicator in a given country expressed as a **multiple of the average acquisition activity in a given region**. The M-index has values higher than 0, and shows unlimited growth in positive numbers; M-index > 1 = acquisition activity in

country x is higher than the average in region r, M-index < 1 = acquisition activity in country x is lower than the average in region r.

Calculation of indicator M-index for indicator M-total, called M_T-index, also M-index$_{total}$:

$$M_T\text{-index } (x)_t = \frac{\sum_{k=1}^{n} NT(x)_k}{\Phi\,[\sum_{k=1}^{n} NT(x)_k(r)]} \quad (3)$$

where $\sum_{k=1}^{n} NT(x)_k$ value of M-total in country x in period t

$\Phi\,[\sum_{k=1}^{n} NT(x)_k]$ average value of M-total in region r in period t

In a simplified format, the M_T-index may be also expressed as an M-total in a given country divided by the average value of the M-total for the total under review. The **M_T-index in country x grows with the growing number of transactions in a surveyed country x in period t**.

Calculation of indicator M-index for indicator M-score, called M_S-index, also M-index$_{score}$:

$$M_S\text{-index } (x)_t = \frac{\Phi\,[\frac{NF\,(x)}{\sum_{k=1}^{n} NT(x)_k}(r)]}{\frac{NF\,(x)}{\sum_{k=1}^{n} NT(x)_k}} \quad (4)$$

where $\Phi\,[\frac{NF\,(x)}{\sum_{k=1}^{n} NT(x)_k}(r)]$ average value of M-score in region r in period t

$\frac{NF\,(x)}{\sum_{k=1}^{n} NT(x)_k}$ value of M-score in country x in period t

In a simplified format, the M_S-index may be also expressed as the average value M-score for the total under review divided by the M-score in a given country. **The higher the M_S-index in country x, the lower the number of firms per 1 transaction in a given country x in period t, or the higher the transaction frequency.**

2.2 Correlation analysis

Testing the relation between the acquisition activity indicators (M-total, M-score) and macroeconomic indicators (GDP, GDP/capita, TTR) was carried out using Spearman's rank correlation coefficient, which, for the characteristics of the available data, appears the most appropriate. The value of the correlation coefficient identifies the presence of a dependence relation between the level of economic development (macroeconomic indicators) and intensity of acquisition activity (acquisition activity indicators) in accordance with the following scale (Lynch 2013):

Table 1:

Correlation value interpretation of dependencies		
0.00 – 0.38 weak	0.39 – 0.70 moderate	0.71 – 1.00 strong

The input values of acquisition activity and macroeconomic indicators for calculating the correlation coefficient were always the average of the twelve-year period in each EU country (Table 2 and 3). The critical value of the correlation coefficient for correlation pairs n = 27 and the chosen significance level α = 0.05, is, according to table $r_s = 0.38$ (Anděl 2007).

Correlation analysis, by means of Spearman's rank correlation coefficient, measures the intensity of dependence between two economic phenomena in EU member states, namely:

- acquisition activity and economic performance,
- acquisition activity and total tax rate.

Acquisition activity, with regard to mergers & acquisitions, is determined by the indicators M-total (the total number of transactions in each EU country) and M-score (the frequency of transactions in each EU country). Economic performance, showing the country's level of economic development, is determined by the indicators GDP (gross domestic product at current prices) and GDP per capita (gross domestic product per capita in purchasing power parity). Tax burden is determined by the indicator TTR (total tax rate in a country). Correlation was used to show the relationship between:

- the total number of transactions (M-total) and macroeconomic indicators (GDP, TTR),
- the frequency of transactions (M-score) and macroeconomic indicators (GDP per capita, TTR).

Hypothesis H_1 "*Acquisition activity grows with increasing economic performance*" may be considered as confirmed if dependence is proved between:

- M-total and GDP, and simultaneously,
- M-score and GDP per capita.

Hypothesis H_2 "*The lower the tax rate of the country, the higher the acquisition activity*" may be considered as confirmed if dependence is proved between:

- M-total and the tax rate, and simultaneously,
- M-score and the tax rate.

3 Research results and interpretation

3.1 Acquisition activity in the European Union: empirical economic analysis

Acquisition activity, showing mergers & acquisitions in the European Union, is presented through three basic economic indicators (3M): the **M-total**, showing the total number of

transactions in each EU country, **M-score**, showing the frequency of transactions in each EU country, and **M-index**, showing the position of a particular country in the evaluation of acquisition activity in the EU.

In the European Union, an annual average of 8,000 mergers & acquisitions (M-total$_{(EU\Phi)}$ = 7,865) took place in the surveyed period; the frequency of transactions averaged 1 transaction per 5,000 firms annually (M-score$_{(EU\Phi)}$ = 4,735). Acquisition activity globally as well as in individual countries showed a growing trend in both the M-total and M-score. A detailed overview of acquisition activity in individual EU countries in the surveyed period is shown in Table 2.

The highest number of transactions (M-total) was reported in Great Britain (27%), then in France (10%), the Netherlands (9%), Germany (9%), Finland (8%), Spain (7%), Italy (5%), Sweden (5%), Belgium (3%), Poland (3%), Denmark (3%), Austria (1%), Estonia (1%), Ireland (1%), the Czech Republic (1%), and other countries with less than 1%. If we contrast the number and frequency of mergers & acquisitions in developed market economies and developing countries, the results are different; overall, in developed EU countries (GB, SE, ES, PT, NL, MT, LU, IT, IE, GR, DE, FR, FI, DK, CY, BE, AT) 85,185 transactions occurred, i.e. 89%, while in developing (emerging) economies (SI, SK, RO, PL, LT, LV, HU, EE, CZ, BG) only 9,175, i.e. 11% (Mackenzie 2016). The Visegrad Group countries (Czechia, Poland, Hungary, Slovakia) contributed 4,814 transactions (5.4%) to the total number. Within the Visegrad Group, Poland accounted for 52%, the Czech Republic for 24%, Hungary for 17%, and Slovakia for 7% (Mackenzie 2015). Thus mergers & acquisitions are still the domain of developed economies; in emerging economies, except for Estonia, they occur less often. Acquisition activity, expressed as the total number of transactions, or M-total, is highest in Great Britain, France and the Netherlands; by contrast, the lowest total number of transactions occurs in Luxembourg, Slovenia and Malta (Table 2).

The M-score$_{\Phi}$, showing the frequency of transactions in the European Union in the period under review, was 1 transaction per 4,735 firms. The highest frequency was reported in Finland (M-score 461), followed by Estonia (717), Great Britain (967), Denmark (1,090), Luxembourg (1,165), the Netherlands (1,361), and Cyprus (1,549). By contrast, the lowest frequency was seen in Slovakia (M-score 13,944), Portugal (10,506), and the Czech Republic (10,496). The transaction frequency, or appetite for mergers & acquisitions, was quite different in long-term market economies from that in developing countries. These, with the exception of the Baltic states (Estonia, Latvia, Lithuania) ranked at the bottom of the list. In the Visegrad Group countries (the Czech Republic, Poland, Hungary, Slovakia), the highest transaction frequency was reported in Hungary (M-score 7,616) and Poland (9,521), the lowest in the Czech Republic (10,496) and Slovakia (13,944) (Table 2).

The acquisition activity of the total number of transactions, the M-total, and the transaction frequency, M-score, may be simply expressed by comparative indicators M_T-index (M-index$_{total}$) and M_S-index (M-index$_{score}$). The total number of transactions in the EU in the analysed period was above average, especially in large economies. Compared to the EU average, in Great Britain it was more than seven-fold (M_T-index 7.31), in the following countries double or three-fold: France (2.69), the Netherlands (2.52), Germany (2.50), Finland (2.17). By contrast, the lowest number of transactions occurred in small

economies: Malta (M_T-index 0.02), Slovenia (0.07), Luxembourg (0.09), Slovakia (0.10), and Cyprus (0.11). The transaction frequency in the EU in the analysed period was above average mainly in the Nordic countries. Compared to the EU average, in Finland it was more than ten-fold (M_S-index 10.27), in Estonia more than six-fold (6.60), in Great Britain almost fivefold (4.90). In the following countries it was more than four-fold: Denmark (M_S-index 4.34) and Luxembourg (4.06). The poorest transaction appetite in the given period was reported in Slovakia (M_S-index 0.34), also the Czech Republic (0.45), Portugal (0.45), and Italy (0.46) (Table 2).

The analysis suggests several important points, which may be summarised in the following statements:

- **Countries with a high GDP also show high total numbers of transactions**, M-total (GB, FR, DE).
- **Countries classified as European tax havens and countries with tax rates lower than the EU average show the highest levels of transaction frequency**, M-score (LU, CY, NL, GB, DK).
- **Countries with low tax rates and, at the same time, high GDP per capita show the highest levels of transaction frequency**, M-score (LU, DK, GB).

Table 2: Average acquisition activity in EU countries in the period 2001–2012

2A: Countries in alphabetical order

Country	M-total	$M\text{-index}_{total}$	number of firms	M-score	$M\text{-index}_{score}$
AT	102	0.35	339,071	3,324	1.42
BE	220	0.76	560,222	2,546	1.86
BG	66	0.23	323,745	4,905	0.97
CY	33	0.11	51,127	1,549	3.06
CZ	94	0.32	987,609	10,506	0.45
DE	727	2.50	2,997,832	4,124	1.15
DK	200	0.69	218,078	1,090	4.34
EE	106	0.36	76,002	717	6.60
ES	515	1.77	3,012,443	5,849	0.81
FI	631	2.17	291,080	461	10.27
FR	783	2.69	3,039,203	3,881	1.22
GB	2,126	7.31	2,054,940	967	4.90
GR	78	0.27	-	-	-
HU	70	0.24	524,749	7,496	0.63
IE	96	0.33	185,530	1,933	2.45
IT	380	1.31	3,953,714	10,405	0.46

2B: Countries by indicators

Country	M-total
GB	2,126
FR	783
NL	732
DE	727
FI	631
ES	515
IT	380
SE	369
BE	220
PL	209
DK	200
EE	106
AT	102
IE	96
CZ	94
RO	85

Country	M-score
FI	461
EE	717
GB	967
DK	1,090
LU	1 165
NL	1,361
CY	1,549
IE	1,933
SE	1,995
LV	2,531
BE	2,546
LT	3,079
AT	3,324
FR	3,881
DE	4,124
BG	4,905

Country	M-total	$M\text{-index}_{total}$	number of firms	M-score	$M\text{-index}_{score}$	Country	M-total	Country	M-score
LT	49	0.17	150,855	3,079	1.54	**GR**	78	**MT**	5,238
LU	25	0.09	29,122	1,165	4.06	**PT**	77	**ES**	5,849
LV	37	0.13	93,664	2,531	1.87	**HU**	70	**SI**	6,404
MT	6	0.02	31,427	5,238	0.90	**BG**	66	**RO**	7,496
NL	732	2.52	996,384	1,361	3.48	**LT**	49	**HU**	7,616
PL	209	0.72	1,989,879	9,521	0.50	**LV**	37	**PL**	9,521
PT	77	0.26	808,221	10,496	0.45	**CY**	33	**IT**	10,405
RO	85	0.29	647,325	7,616	0.62	**SK**	29	**CZ**	10,496
SE	369	1.27	736,112	1,995	2.37	**LU**	25	**PT**	10,506
SI	20	0.07	128,088	6,404	0.74	**SI**	20	**SK**	13,944
SK	29	0.10	404,369	13,944	0.34	**MT**	6	**GR**	-

Source: authors' calculations based on data obtained from Zephyr databases (Mackenzie 2016)

Although acquisition activity shows an increasing trend in some EU countries as well as globally, and mergers & acquisitions take centre stage in the scientific community and the media, they seem to be a rather rare phenomenon in the economy, considering the number of companies, i.e. potential transaction subjects. Currently, there are 25 million active registered companies in the European Union, but, annually, on average "only" 7,865 transactions are made.

3.2 Acquisition activity in the European Union: correlation analysis

Table 3: GDP/capita, GDP, TTR, in EU countries in the period 2001–2012 (average value)
3A: Countries in alphabetical order 3B: Countries by indicators

Country	GDP/ capita	GDP	TTR	Country	GDP/ capita	Country	GDP	Country	TTR
AT	29,600	264 447	52.0	**LU**	60,600	**DE**	2,369 227	LU	20.2
BE	27,982	325,644	57.8	**IE**	31,927	**FR**	1,816,248	CY	23.2
BG	9,445	29,195	27.0	**NL**	30,573	**GB**	1,813,782	IE	25.9
CY	21,909	15,138	23.2	**AT**	29,600	**IT**	1,483,513	DK	26.0

Country	GDP/ capita	GDP	TTR	Country	GDP/ capita	Country	GDP	Country	TTR
CZ	18,664	124,477	48.2	**DK**	29,218	**ES**	959,752	BG	27.0
DE	27.436	2,369,227	48.8	**SE**	28,945	**NL**	546,512	SI	32.0
DK	29,218	218,613	26.0	**BE**	27,982	**BE**	325,644	GB	33.7
EE	14,936	13,205	49.3	**DE**	27,436	**SE**	323,700	LV	35.0
ES	23,664	959,752	58.2	**GB**	27,036	**PL**	292,165	PL	38.7
FI	26,982	169,298	40.0	**FI**	26,982	**AT**	264,447	NL	39.0
FR	25,573	1,816,248	66.6	**FR**	25,573	**DK**	218,613	FI	40.0
GB	27,036	1,813,782	33.7	**IT**	24,536	**GR**	202,496	MT	41.6
GR	20,873	202,496	47.2	**ES**	23,664	**FI**	169,298	PT	42.4
HU	14,964	90,302	48.0	**CY**	21,909	**IE**	161,697	LT	42.5
IE	31,927	161,697	25.9	**GR**	20,873	**PT**	160,673	RO	43.2
IT	24,536	1,483,513	65.4	**SI**	20,118	**CZ**	124,477	GR	47.2
LT	12,518	16,615	42.5	**MT**	19,300	**RO**	100,898	HU	48.0
LU	60,600	34,166	20.2	**CZ**	18,664	**HU**	90,302	CZ	48.2
LV	13,809	24,949	35.0	**PT**	18,382	**SK**	50,948	SK	48.6
MT	19,300	5,605	41.6	**SK**	15,609	**LU**	34,166	DE	48.8
NL	30,573	546,512	39.0	**HU**	14,964	**SI**	31,967	EE	49.3
PL	13,227	292,165	38.7	**EE**	14,936	**BG**	29,195	SE	49.4
PT	18,382	160,673	42.4	**LV**	13,809	**LV**	24.949	AT	52.0
RO	10,064	100,898	43.2	**PL**	13,227	**LT**	16,615	BE	57.8
SE	28,945	323,700	49.4	**LT**	12,518	**CY**	15,138	ES	58.2
SI	20,118	31,967	32.0	**RO**	10,064	**EE**	13,205	IT	65.4
SK	15,609	50,948	48.6	**BG**	9,445	**MT**	5,605	FR	66.6

Source: authors' calculations based on data obtained from Eurostat and The World Bank databases

Furthermore, a statistically significant relationship between acquisition activity, expressed as the total number of transactions, M-total, and the tax rate was demonstrated: a moderate correlation (Table 4). In contrast, a statistically significant relationship between the transaction frequency, M-score, and the tax rate was not proved: a weak correlation (Table 5). Given the critical value of the correlation coefficient, the dependence between the transaction frequency, M-score, and the overall tax rate cannot be considered significant. Based on these findings, hypothesis H_2 "*The lower the tax rate of the country, the higher the acquisition activity*", cannot be confirmed.

However, from a detailed analysis of the country rankings it may be implied that the tax burden, particularly the level of income tax, may be a factor contributing to the level of

acquisition activity. The basic research sample comprised 27 countries of the European Union and the 12-year period examined; causality was demonstrated between M-total and the total tax rate, but causality between M-score and the total tax rate was not demonstrated. To confirm/reject the hypothesis "*The lower the tax rate of the country, the higher the acquisition activity*" with certainty, it is desirable to extend the research sample in terms of countries and also the length of the period examined.

Table 4: Correlation value and interpretation of dependencies M-total and GDP, M-total and TTR

	GDP	TTR
M-total	0.88	-0.44
correlation	strong	moderate

Source: authors' calculations based on data obtained from Eurostat, The World Bank, Zephyr databases

Table 5: Correlation value and interpretation of dependencies M-score and GDP, M-score and TTR

	GDP/capita	TTR
M-score	0.50	-0.36
correlation	moderate	weak

Source: authors' calculations based on data obtained from Eurostat, The World Bank, Zephyr databases

4 Discussion

Studies that deals with acquisition activity and macroeconomic environment causality evaluates results at the global level as a course of time series. My study evaluates the results in a vertical manner by individual countries during the same time period. My results show compliance with studies that demonstrate a higher incidence of deals in periods of a growing economy (e.g. NcNamara 2008, Gell 2008, Malmendier 2011). Research into vertical causality between the economic performance of individual EU countries and acquisition activity in these countries gives similar results, i.e. the higher the economic performance, the higher the acquisition activity. They indicate that, for deals such as mergers & acquisitions as well as for the successful growth of companies, a stable economic environment with favourable external conditions is crucial. In countries with lower economic performance (vertical valuation) as well as in recession periods (horizontal valuation), the appetite for deals is reduced, while in countries with higher economic performance (vertical valuation) and during economic growth periods (horizontal valuation), the appetite for mergers & acquisitions is stronger.

Furthermore, the study shows a not entirely clear result concerning the causality between the total tax rate and acquisition activity. In this context, it is interesting to refer to a study by Netter (2011). His paper evaluates the progress of acquisition waves

in connection with the number and size of transactions, and points out an important fact: acquisition activity involving small transactions made by private purchasers is much smoother than acquisition activity involving only publicly traded companies, i.e. large volume transactions. Netter's findings about the differences between acquisition waves of publicly traded companies and private purchases may be inspirational for the further exploration of causality between acquisition activity and the total tax rate as well as acquisition activity and economic performance. It may be assumed that a separate exploration of causality between the acquisition activity of publicly traded companies and private companies would show that, in the case of private companies, the level of significant relationship between acquisition activity and the total tax rate will increase; in contrast, in the case of publicly traded companies, the level of significant relationship between acquisition activity and economic performance will increase. The forecast results are inferred from the deals' purpose; private companies may be more often expected to use tax optimisation and establish offshore firms, whereas publicly traded companies rather tend to expand and increase efficiency. By splitting the data sample, the ranking of countries (input parameters of the correlation coefficient) actually changes.

Conclusion

The aim of this paper was to provide a detailed picture of acquisition activity in EU countries, and, at the same time, to deal with the relationship between the strength of acquisition activity and external conditions reflected in the macroeconomic indicators of each particular country; in other words to give an opinion on how a country´s economic performance and its tax rate affect the level of acquisition activities. My research with its results and conclusions has tried to shape the current state of knowledge and offer new approaches. It presents special purpose economic indicators of acquisition activity: the M-total, M-score, M-index (abbreviated to **3M**), based on the requirement for data comparison. The indicators may be used with various modifications within a country, industry, or otherwise defined unit. Each indicator has its own use. **M-total**: indicator of the total number of transactions is used for expressing and comparing the total transaction quantity in a given unit, or a field, e.g. by industry or transaction size. **M-score**: indicator of the transaction frequency is used for expressing and comparing transaction frequency in individual countries, industries, or regions – where it is possible to determine the total number of firms operating in the particular parts of an analysed unit. **M-index**: multiple of average acquisition activity of a given unit. This indicator, to which the M-total and M-score indicators are related and subordinate, gives immediate information about a particular given subject's position within the whole group or unit. The research results shows that **the higher the country´s economic performance, the higher the acquisition activity** and suggests that the business climate in developed economies with a low tax burden is stimulating and leads to higher acquisition activity.

References

ACHIM, A. (2015) Recent trends in the study of mergers and acquisitions. *E&M Economics and Management*. 17(1), 123–133. doi: 10.15240/tul/001/2015-1-010.

AHERN, K. and J. HARFORD (2010) The importance of industry links in merger waves. *Ross School of Business Paper*, AFA. Available at: http://cefup.fep.up.pt/uploads/FIN%20 Seminars/2011/JarradHarford_17_Mar.pdf.

ANDĚL, J. (2007) *Statistické metody*. Praha: Matfyzpress.

DePAMPHILIS, D. (2014) *Mergers, Acquisitions, and Other Restructuring Activities*. Elsevier Inc.

DUCHIN, R. and B. SCHMIDT (2013) Riding the merger wave: Uncertainty, reduced monitoring, and bad acquisitions. *Journal of Financial Economics*. 107, 69–88.

EUROSTAT (2014) *Databases*. GDP. Available at: http://ec.europa.eu/eurostat/data/ database [Access: June30, 2014].

GARCIA-FEIJOO, L. et al. (2012). Impact of industry characteristics on the method of payment in mergers. *Journal of Economics and Business*. 64, 261–274.

GELL, J. et al. (2008) *The Return of the Strategist: Creating Value with M&A in Down-turns*. Boston Consulting Group.

HARFORD, J. (2005) What drive merger waves? *Journal of Financial Economics*. 77, 529–560. doi:10.1016/j.jfineco.2004.05.004.

HUANG, Q. et al. (2014) The role of investment banker directors in M & A. *Journal of Financial Economics*. 112(2), 269–286. doi: 10.1016/j.jfineco.2014.02.007.

LYNCH, S. M. (2013) *Using Statistics in Social Research*. 1st ed. Springer.

MACKENZIE, I. (2015) *Enterprise Management: Mergers & Acquisitions*. Hradecké ekonomické dny 2015. Available at: http://fim2.uhk.cz/hed/images/KOMPLET_2_CJ.pdf.

MACKENZIE, I. (2016) Mergers & Acquisitions in the European Union: acquisition activity analysis. *International Scientific Conference "Current Problems of the Corporate Sector 2016"*. Available at: https://appsconf.files.wordpress.com/2016/01/zbornik-apps-2016.pdf.

MALMENDIER, U. et al. (2011) Overconfidence and early-life experiences: The Impact of managerial traits on corporate financial policies. *Journal of Finance*. 66, 1687–1733.

MARTYNOVA, M. and L. RENNENBOOG (2008) A century of corporate takeovers: What have we learned and where do we stand? *Journal of Banking and Finance*. 32, 2148–2177.

McNAMARA, G. et al. (2008) The performance implication of participating in an acquisition wave. *Academy of Management Journal*. 51, 744–767.

NETTER, J. et al. (2011) Implications of data screens on merger and acquisition analysis: A large sample study of mergers and acquisitions. *Review of Financial Studies*. 24, 2316–2357. doi: 10.1093/rfs/hhr010.

WORLD BANK (2014) *Data*. Available at: https://data.worldbank.org/.

ZEPHYR (2013) *Databases. BUREAU van DIJK*. Available at: http://www.bvdinfo.com/ [Access: June 30, 2013].

Contact address

Ing. Iveta Mackenzie, Ph.D.
Technical University of Liberec, Faculty of Economics, Department of Business Administration and Management / Technická univerzita v Liberci, Ekonomická fakulta, Katedra podnikové ekonomiky a managementu
(iveta.mackenzie@vse.cz)