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Developments and challenges of measuring M&A performance on a corporate and macroeconomic levels

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Abstract
Research background: This study presents the results of the research which aimed to identify and critically discuss existing methodologies in the merger and acquisition field. Value creation to merging and acquiring firms and national countries constitute the center of the research. This study distinguishes between specific methodologies employed to gauge M&A performance on a micro- (corporate) and macro- (economy and society) economic levels. The final section of the paper concludes with a theoretical methodological framework integrating methodologies employed to measure M&A performance on a firm level and methodologies measuring consequences and effects of M&A on the economy. The aim of the analysis described in the paper is to ascertain and evaluate theoretically existing methodologies used in empirical studies that would allow proper and critical understanding of the results of various findings in the holistic and global M&A area.
Purpose of the article: The purpose of the paper is to investigate and critically discuss the methodologies employed within the M&A performance framework with the focus on specific anticipated outcomes of the M&A deal and methodology measuring this outcome. The following objectives are being raised:

1) To identify recent developments in the M&A market and determine challenges and changes they encompass.
2) To identify and critically discuss anticipated outcomes of the M&A deal and existing methodologies measuring M&A performance on the corporate level;
3) To identify and critically discuss anticipated outcomes of the M&A deal on the economy and methodologies measuring consequences and effects of M&As on the macro- economic level;
4) To integrate methodologies measuring M&As performance on a micro- and macro- economic levels into theoretical methodological framework enabling scholars and practitioners to evaluate M&A performance from a holistic perspective.
Methods: Based on previous studies, the authors conduct a structured literature review aimed to critically discuss and evaluate developments and challenges of measuring M&A performance on corporate and macroeconomic levels. The research is carried out as a structured assessment of past literature. The findings from scientific articles and studies by various scholars are being categorized, grouped and summarized to discern a meta-analytic view of the work carried out to date. Finally, deep analysis of scientific literature, logical comparative analysis, systematization of scientific article and business cases are employed in the article.
Findings & Value added: The paper evidences developments and challenges of measuring M&A performance on corporate and macroeconomic levels. The re-search elaborates on several key developments in M&A methodology and performance studies carried out in empirical works during the last two decades. The findings help to independently and objectively assess performance of M&A from a holistic perspective.

Introduction

Caiazza and Volpe (2015) concludes cross-border M&A that have long been a strategy for international expansion of firms, are becoming an important alternative to respond quickly to challenges in the fast changing global economic environment. The magnitude and volume of cross-border M&A have increased significantly over the past decade in developed countries, developing countries and transition economies of southeast Europe and the Commonwealth of Independent States (CIS), reflecting relatively high economic growth and strong corporate performance in many parts of the world. This infers that strong strategic rationale in the M&A choice and well-implemented acquisition process can turn challenges of uncertain periods into opportunities for value creation. Over the last century there have been six M&A waves with the current wave being signified in terms of several dimensions:

– While market's confidence and industry concentration drove past mega-deals, most of current deals have been restructurings in the financial sector. The role of private equity has grown dramatically, expanding from 4 percent of the global M&A market in 2000 to 30 percent in 2013. M&A is increasingly a global phenomenon rather than one dominated by a few countries with little linkage among them. Sovereign wealth funds and companies from emerging markets have entered the M&A arena.

- In 2000 the USA and Europe dominated the M&A arena, but since 2010 emerging countries have played an important role instead. Opportunities in the developing economies of China, India and Southeast Asia and internationalization of emerging countries' companies cause new challenges that affect all stages of the entire M&A process.
- New global flow in cross-border M&A poses challenges of differences in multiple legal and regulatory regimes that require compliance with different rules. On the one hand, institutional uncertainty of emerging markets imposes a requirement of deep knowledge of the host country's implicit rules and behavior. On the other hand, the rigorous regulation of developed countries, such as the labor norms, requires a foreign firm to possess an advanced knowledge of these rules to successfully manage an acquired firm.

These challenges have increased the complexity of whole M&A process, from due diligence until the assessment, asking for a theoretical review of literature aimed to evidence main aspects of current studies and future development of research.

Considering prevalence and significance of the M&A deals, these corporate events have long attracted interest from academics trying to justify and foresee outcomes of the transactions. Meglio and Risberg (2010) remark that despite the existing research and existing studies, scholars and businessmen do not dispose solid foundations of the M&A's outcomes. Today, there is a large amount of existing empirical research analyzing M&A from the perspectives of different paradigms (although the functionalist one prevails), using different methods and studying different units of analysis. The ability to say anything meaningful about the profitability and expediency of M&A depends critically on confidence in the methods and measures from which insights are extracted (Bruner, 2004).

This paper reflects on the M&A field from the perspective of existing methodology used to determine M&A performance (i.e. how M&A affect shareholder wealth), to measure how M&As are affected by economic variables, to measure how M&As affect macroeconomic variables. On a microeconomic level, M&A represents massive asset reallocating within and across industries, often enabling firms to double in size in a matter of months. On the macroeconomic level, as mergers tend to occur in waves and cluster by industry, it is easily understood that such transactions may radically and swiftly change the competitive architecture of affected industries.

It is appropriate to consider the latest findings along with earlier studies to synthesize some insights from the literature. Over the years, several studies have been done by researchers and practitioners to understand the significance of adopting M&A strategy by organizations. The motivation was to understand whether the perceived benefits from this strategy have accrued or not. They have studied whether these acquisitions are value enhancing or destructive strategies for acquiring organizations.

The purpose of the paper is to investigate and critically discuss the methodologies employed within the M&A performance framework with the focus on specific anticipated outcome of the M&A deal and methodology measuring this outcome. Following objectives are being raised:

- Identify and critically discuss the anticipated outcome of the M&A deal and existing methodologies measuring M&As performance on a corporate level;
- Identify and critically discuss the anticipated outcomes of the M&A deal on the economy and methodologies measuring consequences and effects of M&As on the macro- economic level;
- Integrate methodologies measuring M&A performance on a micro- and macro- economic levels into theoretical methodological framework enabling scholars and practitioners to evaluate M&A performance from a holistic perspective.

The research has been carried out as a structured assessment of past literature. The findings from scientific articles and studies by various scholars have been categorized, grouped, and summarized to discern a meta-analytic view of the work carried out to date.

The research elaborates on several key developments in M&A methodology and performance studies carried out in empirical works during the last two decades. The findings help to independently and objectively assess the performance of M&A from a holistic perspective.

Research methodology

Based on previous studies, the authors conduct a structured literature review aimed at discussing critically and evaluate the developments and challenges of measuring M&A performance on corporate and macroeconomic levels. The research is carried out as a structured assessment of past literature. The findings from scientific articles and studies by various scholars are being categorized, grouped and summarized to discern a meta-analytic view of the work carried out to date.

Recent developments and trends in M&A playfield

Caiazza and Volpe (2015) observes new directions of global M&A flows. Historically cross-border M&A transactions have went from developed to other developed or developing countries. Currently firms from developing countries are competing for global dominance. It is observed that while North American and European companies have historically been the most active cross-border buyers, Asian companies are forecasted to lead the next cross-border M&A wave.

There are persevering country-, industry- and firm level challenges influencing global cross-border M&A arena. Institutional uncertainty of emerging markets contrasting rigorous regulation of developed countries, different level of political stability, competing national security interests, different policies on foreign investment, conflicting antitrust requirements, different labor rules and employment priorities, overseas protectionism and xenophobia altogether constitute the basis of *country level challenges*. Technological intensity, advertising intensity and sales force intensity constitute the basis of M&A *challenges on an industry level*. *Challenges on a firm level* comprise differences of values, religions and behaviors; lack of local knowledge to operate in foreign markets; retain local talent; inexperience with cross border investments and with integrating foreign business.

Changes in the global M&A flows and newly stimulated challenges circumstance new patters of M&A process. Firstly, multilevel due diligence shall be fostered trough foreign policy arena, cultural and human resources analysis, financial aspects and legal issues. Secondly, integration shall be fostered carefully trough identification of cultural and national differences, definition of the ideal future culture, assessment of the degree to which business and cultural integration are needed, definitions of the deal's context and desired outcomes; identification of the behavioral patterns needed to produce desirable outcomes and tracking progress toward the ideal culture. Finally, the definition of M&A performance has changed and currently moves from financial to strategic measures of M&A performance.

Assessment of M&A performance and employment of specific methodology is inseparably linked to the effect which is aimed to be analyzed or measured. Therefore, it is essential to simultaneously evaluate the specific anticipated outcome of the M&A deal and methodology measuring this outcome. Yaghoubi *et al*. (2016) ascertain that scientific articles and studies elaborating on the consequences of M&A mainly investigate economic impacts of M&A. Existing literature in this field is twofold. The first group assesses microeconomic, or corporate-level, impact of M&A on acquirers and targets. The second group of existing literature elaborates on the macroeconomic impact of M&A (e.g. overall productivity gains and possible impairment of market competition). Following this approach, paragraphs below continue the assessment of M&A performance and methodologies employed on the micro- and macro- economic levels.

Microeconomic outcomes of M&A deals on acquirers and targets and their measurement

Yaghoubi *et al.* (2016) summarize that the most empirically affirmed and significant theories clarifying microeconomic consequences of M&A are wealth effects, profitability, risk reduction, growth, excessive leverage effect and income tax reduction.

Wealth effects relate to cause of M&A inferring different predictions about post-acquisition performance of merged companies. Table 1 provides a summary of the most commonly referred theories explaining causes of M&A with the roots in wealth effects.

Mitchell and Mulherin (1996) criticize significance of wealth effects of M&A and propose that M&A are the messengers of the underlying economic changes happening in the industry rather than the actual source of performance changes. Subsequently M&A cannot be considered as the primary cause of changes in a firm's value. An important implication of the neoclassical theory for acquisition performance is, if industry shocks are a source of takeover activity, then post takeover performance should not necessarily be expected to improve, especially compared to a pre-shock benchmark or to industry cohorts.

The second important streamline of theories clarifying microeconomic consequences of M&A relate to profitability and operating synergies. To define, operational synergies include different types of reduction in production and distribution costs. Reduction in production and distribution costs can be achieved through realization of economies of scale and scope, using more efficient technologies and the benefits of changes in control (Wang & Xie, 2009). Extensive literature review performed by Yaghoubi *et al.* (2016) leads to the conclusion that there are no definitive findings about improvements in operating performance following mergers.

The third important streamline of theories clarifying microeconomic consequences of M&A relate to financial synergies. To define, financial synergies comprise the use of underutilized tax-shields, increased leverage, reduced risk of default and reduced agency costs because of higher debt.

Finally, the last broad streamline of theory clarifying microeconomic consequences of M&A relate to excessive leverage effect and income tax reduction. As depicted in details by Yaghoubi *et al.* (2016), M&A that increase debt capacity create opportunities for decreasing cost of capital and increasing tax benefits from leveraging up. Debt-holders gain profits from relatively safer debt, whereas tax benefits from increased leverage go to shareholders. Although shareholders benefit from bondholders by increasing financial leverage, there is a limit to this expropriation, as becoming overleveraged destroys value. Therefore, shareholders are only able to appropriate benefits from debt-holders to an optimum point where the value of the combined firm is maximized.

Sedláček *et al.* (2011) performed an analysis in order to theoretically and empirically investigate how the Czech market of mergers and acquisitions behaved in relation to the development of the global M&A market. Researchers conclude the well prevalent practice and remark that studies dealing with analyses of the development in the M&A market are predominantly based on global database systems, such as Mergerstat or Thomson Reuters, which largely contain data on combinations of enterprises traded in public markets. To measure activities in the M&A market, these studies use time series reflecting the number of company combinations implemented in the investigated period and the value of the total equity entering a combination.

Das and Kapil (2012) recognized that after five decades of M&A research, the findings on M&A performance are diverse and sometimes inconsistent with each other. Therefore, scholars conducted a systematic review of empirical M&A research on explaining M&A performance aiming to understand how previous researchers have measured M&A performance, what the gaps in existing work are and to identify the scope of future work. Researchers realized that no single universal definition of M&A performance exists. In contrast, for a value added analysis there is a need to categorize the multitude of performance measures as all the measures are not unidirectional though there are linkages among many and the objectives of M&A performance studies tend to be discipline specific. Figure 1 provides a classification of performance variables.

Broadly speaking, the empirical research on the performance of M&A has been conducted according to two major approaches: event studies and outcome studies. The first one is commonly found in the finance literature, whereas the second one is more frequently used by industrial organization economists. Industrial organization economists use outcome studies to examine the performance effect of M&A. Using the stock market response as a measure for M&A performance, outcome studies compare the pre- and post-acquisition performance, and compare the merging firms with matching firms or the base industry (Tichy, 2001). However, there are limitations with the outcome studies approach. First, for the before-and-after analyses, problems may occur when the target firm is quite small relative to the acquirer as the weighted average financial performance the target firm contributes to the M&A is likely to have no effect due to size differential. Second, there is difficulty in identifying similar firms as control groups when almost all firms are engaged in M&A. Event studies are used to analyze stock market reactions to the events that occur at the time of an M&A or in its aftermath. This approach assumes that the market is efficient and therefore changes in the share prices of the acquiring and target firms reflect the value of the economic impact of an acquisition, after controlling for the general market movements. The results from various event studies suggest that the impact of an acquisition on a target firm is positive. Within a several-week time "window" around the event date (i.e. the announcement of the M&A), the target's stock price rises sharply so that the stockholders of the target firm earn substantial positive abnormal returns.

As a part of the examination of the concept of acquisition performance, Zollo and Meier (2008) conducted a review of 88 empirical articles published in top management and finance journals during the period between 1970 and 2006 utilized in M&A research. Researchers identified 12 significantly different approaches to the problem of measuring M&A performance. Figure 2 identifies each approach and presents corresponding popularity measured in the total number and percentage of the sample. The results infer that the largest group of studies (35, or 40% of the total) used the short-term window event study method, whereas the use of long-term accounting measures, which is found almost entirely in strategic management and organization studies journals, comes in strong second, with 25 studies (28%). Long-term window event studies, a measure growing in popularity in finance journals, were used in 17 articles (19%).

Papadakis and Thanos (2010) developed further the study of Zollo and Meier (2008) and added to the discussion that the observance that vast majority of the published research on the performance of M&As can be classified into three research streamlines. Firstly, accounting-based measures for evaluating the performance of M&As (e.g. Kusewitt, 1985; Lu, 2004; Ramaswamy, 1997; Zollo & Singh, 2004) are relied upon by the researchers in the M&A field. Secondly, stock market based measures (e.g. Agrawal *et al.*, 1992; Haleblian & Finkelstein, 1999; Markides & Oyon, 1998; Sudarsanam & Mahate, 2006) are employed by scholars. Finally, researchers have relied on managers' personal assessments regarding the effective materialization of the original goals set before the M&A (e.g. Angwin, 2004; Homburg & Bucerius, 2006; Papadakis, 2005). Table 2 summarizes the approach, strengths, and weaknesses of the most popular and applicable methodologies measuring M&A performance on a corporate level, namely accounting based measure, short- and long term stock market based studies, managers' subjective assessments.

Macroeconomic outcomes of M&A deals on acquirers and targets and their measurement

Yaghoubi *et al*. (2016) conclude in their literature review that there are two most acknowledged macroeconomic outcomes of M&A deals.

Firstly, overall productivity gains are associated with M&A transactions. The question whether M&A deals really generate value and improve efficiency or only transfer and redistribute wealth from one from one group of stakeholder to another remain. Andrade et al. (2001a) explain, there are three challenges that make it difficult to conclude that the overall outcome of mergers for the economy is substantial. First, prior empirical studies find a negative long-term wealth effect on acquirers, which may imply that the gains from mergers are overstated or non-existent. Second, underlying sources of gains from mergers are still unknown. More popular large sample studies and in-depth case studies (Kaplan, 2000) have failed to discover such sources. Finally, most prior empirical findings suggest that all wealth gains from mergers seem to accrue to the target firms, and this casts doubt on the rationale behind such investment decisions by acquiring managers, and makes it hard to believe that mergers actually create value.

Secondly, impairment of market competition is associated with M&A transactions. Absence of anti-trust regulations can lead to mergers that build monopolies across industries, similar to what was experienced in the first merger wave at the beginning of the twentieth century. A major effect of a "merging for monopoly" pattern is impairment of market competition. Stigler (1950) reports that after the first merger wave, many industries were dominated by giant firms that had more than 50 per cent of the production share in their respective industries. However, anti-trust regulations, which were around even before the emergence of the first takeover wave, prevented industries from monopolistic powers and formed oligopolies in the long term.

At first sight, when assessing methodologies measuring consequences and effects of M&As on the economy, it shall be noticed that while there are numerous relatively well-established and examined methodologies to measure M&As performance on a corporate (e.g. micro-) level, a scarce and significantly lower amount of studies dispose the scope of analyzing and measuring consequences and effects of M&As on the economy and society. The reasons are twofold:

- M&A are corporate events significantly affected by macroeconomic developments and only the largest and only significant M&A impact economies on a considerable and measurable scale.
- M&A and Greenfield investments are entry modes of the foreign direct investment. Subsequently, it is being inferred throughout the literature that the effects and methodologies to measure effects of M&A on economy are similar to those of FDI.

Maček (2012) performed a comparative analysis of the economic effects of cross-border mergers and acquisitions in European countries and inferred that there are not many studies dealing with the effects of M&As on the economy level due to the problems with obtaining data. The researcher remarks that the existing studies mostly focus on the analysis of individual macroeconomic or financial consequences, or relate to a group of sectors or companies. Maček (2012) proposes to employ the total analysis (Walras) in her study in order to be able to recognize stylized facts and possible differences among groups of countries. Furthermore, the author joins empirical facts about the experiences of individual microeconomic units or countries. Finally, Maček (2012) acknowledges relevance of and performs questionnaire consisting of questions in the fields of effects of M&A, government reactions, and the media relation to these processes in the European countries. Employment of a questionnaire is not a new approach to measure M&A effects on the economy and society. For instance, Vaara *et al.* (2001); GFC/Net (2007) have also employed questionnaires in order to replace the lack of data on M&A with interviews of government officials or journalists from individual countries.

Morley and Ward (2009) utilized in-depth company case studies in 25 EU Member States and Norway in order to explore the consequences of M&A for the companies and employees involved. The authors acknowledge that M&As are a major feature of market economies which have potentially conflicting effects on competition. As a rationale according to the conventional economic theory, M&As tend to increase the degree of monopoly power and subsequently reduce competition and its beneficial effects on economic efficiency. However, in reality, in a monopolistic world, where size matters, they can increase the effective degree of competition. Morley and Ward (2009) examined particular M&A cases in different EU Member States that have occurred in recent years and considering these various aspects. The invoked case study approach enabled Morley and Ward (2009) to evaluate wider effects of M&A on the economy, with regard to the extent to which the merger led to an improvement of the performance of the sector concerned in the country, or region, in question, and to what extent this benefited the national or local economy.

Neto *et al.* (2008) utilized panel data of 53 countries over the period 1996-2006 and created a growth model, examined the contemporaneous correlation of FDI, cross border M&A, greenfields and GDP growth in order to determine whether aggregate FDI, cross border M&A and greenfield investments affect economic growth. Furthermore, the authors employed both Granger causality test between each of the three investment series and growth and single growth equation with the aim to examine this relationship. The retrieved evidence by Neto *et al.* (2008) suggests that there is bidirectional causality between FDI, M&A and growth. Furthermore, Neto *et al.* (2008) conclude that economic growth Granger causes greenfields, but the reverse is not true. The estimation of the growth equation enabled authors to conclude that FDI through M&A has a negative effect on the economic growth of developing countries, but insignificant on developed countries.

Theoretical framework integrating methodologies measuring M&A performance on micro- and macro- economic levels

Considering findings of the literature review and research presented in the first and second sections of this paper, a methodological framework integrating methodologies measuring M&A performance on a corporate level and methodologies measuring consequences and effects of M&As on the economy is created and presented in Figure 3.

From a microeconomic perspective, there are three levels of analysis (task, transaction and firm level) on the corporate level which are linked by a causal, unidirectional, logical chain. Similarly, it can be argued that task-, transaction- and firm-level analysis is a necessary, but not sufficient, condition to the following level of analysis. Task level integration process performance does positively influence the likelihood of creating value through the entire transaction. At the same time, the value created through the acquisition will have a positive effect on the overall firm performance, since the exploitation of synergies, cost and revenue improvements are clearly included in consolidated accounting statements, which in turn will be reflected in stock price movements and consequent returns. Short-term event studies allow to measure M&A performance during the event of M&A announcement. Continuing M&A performance measurement with professionally and methodologically performed accounting based studies, long term event studies and managers' subjective assessments allow to conduct a broad and valid M&A performance analysis on a corporate level.

When expanding the corporate M&A performance measurement model and introducing the dimension of national economies, methodological framework is supplemented with the recommendations to include total analysis (Walras), case study (questionnaire) and economic growth model (including Granger causality and single equations). The proposed methodologies allow for grasping and measuring bi-directional M&A performance on a corporate and national level. However, full awareness shall be raised that M&A are corporate events significantly affected by macroeconomic developments and only the largest and only significant M&A impact economies on a considerable and measurable scale.

Conclusions

This paper identified and critically assessed various theories, anticipated outcomes of the M&A deals on the micro- and macro- economic levels as well as numerous methodologies measuring these outcomes. Following conclusions can be drawn from the extensive literature review and structured assessment of past literature and studies:

- Currently firms from developing countries are competing for global dominance and are forecasted to lead the next cross-border M&A wave.
- There are persevering country-, industry- and firm-level challenges influencing global cross-border M&A arena. Changes in the global M&A flows and newly stimulated challenges circumstance new patters of M&A process. The definition of M&A performance has changed, and it currently moves from financial to strategic measures of M&A performance.
- Short-term and long-term event studies, accounting studies and surveys of executives (case studies) are most frequently used and best established methodologies measuring M&As performance on a corporate level.
- There are not many studies dealing with the effects of M&A on the economy level, due to the problems with obtaining data.
- Total analysis (Walras), case study (questionnaire), economic growth model (including Granger causality and single equations), panel regression technique, Generalized Method of Moments (GMM) estimator and neoclassical Solow-Swan, Ramsey-Coopmans-Kass growth model are

recommended to be invoked when measuring consequences and effects of M&As on the economy.

- The initiated methodological framework integrating M&A performance methodologies and methodologies measuring economic impact of M&As supports recommendations to consider holistic perspective when assessing determinants and impact of M&A.
- Each methodology measuring either M&A performance on a corporate level or effects of M&A on the economy level shall be interpreted and relied on with caution, as each of them demonstrate their limitations, whereas an application of these methodologies is subject to data availability and case specific.

Future research and further conceptualization shall be directed to empirical investigation in this field and direction. It is recommended to perform an actual and case-specific study elaborating on all the methodologies discussed in the paper. The findings regarding methodological limitations raise awareness of applicability of the publicly presented results of M&A performance and implications. Therefore, scholars, business practitioners and policy makers shall be careful when making decisions.

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Annex

Table 1. Key predictions of the theories that explain causes of M&A about their consequences

Theory	Key authors	Predictions
Agency costs theory (management entrenchment hypothesis)	Morck *et al.* (1990)	Self-interested managers undertake value-destroying acquisitions. Post-merger performance is expected to decline
Hubris theory	(Roll (1986)	Over confident managers pay too much premium to acquire a target. Therefore, post-merger performance is expected to decline
Envious managers hypothesis	(Goel and Thakor (2010)	Envious managers undertake value-destroying acquisitions. Post-merger performance is expected to decline
Economic disturbance theory	Gort (1969)	Takeover future is unpredictable. Makes no prediction about post-merger performance
Neoclassical theory (industry shocks hypothesis)	Harford (2005), Jensen (1993), Mitchell and Mulherin (1996)	Industry shocks that drive mergers might improve or deteriorate industry environment. Thus, post-merger performance should not necessarily be expected to improve or decline
Q theory of mergers	Lang *et al.* (1989), Jovanovic and Rousseau (2002, 2008), Servaes (1991)	Offers by well-governed (high-Q) bidders generate greater total gains from mergers and therefore higher bidder announcement returns
Dynamic model of takeover activity	Toxvaerd (2008)	Merger activity should be undertaken in beneficial economic conditions. Because of competition pressure, mergers occur earlier than suggested by pure profitability considerations Multiple-bid contests are expected to be concentrated at later stages of merger waves, when competition pressure becomes more important
Market-driven mergers (behavioural hypothesis)	Rhodes-Kropf *et al.* (2005), Rhodes-Kropf and Viswanathan (2004), Shleifer and Vishny (2003)	Combined long-term value of acquisitions is zero Long-term returns to acquirers are likely to be negative in stock acquisitions and positive in cash acquisitions Short-term returns to acquirers are negative, on average

Table 1. Continued

Theory	Key authors	Predictions
Eat-or-be-eaten theory (merger anticipation hypothesis	Gorton *et al.* (2009)	On average, acquirers' abnormal returns are negative. However, profitability of takeovers depends on size of the acquirer as well as the firm size distribution in industry Acquisition profitability is positively correlated with the ratio of the size of the largest firm in the industry to the size of the other firms in the industry Large-size acquirers destroy and small-size acquirers create value through acquisitions In industries with firms of similar size, self-interested managers undertake defensive mergers to reduce the probability that their firms be acquired. Therefore, consistent management entrenchment hypothesis, such acquisitions are expected to be value-destroying and cause a decline in post-acquisition performance In the industries with a high ratio of size of the largest firm to size of the other firms, acquisitions are profitable

Source: Yaghoubi *et al*. (2016).

Table 2. Classical methodologies measuring M&A performance

Measure	Definition of failure and methodology, metrics	Advantages	Disadvantages
Accounting based measures	Failure exists when the adjusted (for industry and size effects) post-merger returns of the combined firm are lower than the average size and industry adjusted pre-bid returns of each of the merging firms. Examples of accounting metrics include ROA, return on investment, cash flows etc.	Synergies obtained from an acquisition are reflected in long-term accounting measures. Measure direct effects as opposed to CARs which measure investors' expectations for the future.	Narrowest measure as they gauge only economic performance. Reflect past performance of the Firm. Aggregate data and not information for specific acquisitions. Should be avoided in cross-border acquisitions due to the different accounting standards from country to country.
Short term stock market based measures	Researchers compare the returns to shareholders of both bidders and targets during a period surrounding the takeover announcement (usually some days), to 'normal' returns from a period (e.g. from 120 to 30 days) unaffected by the event. The acquisition is considered to be successful if the CARs are positive.	Direct measure of stock-holder value. Data are easily accessible for all publicly traded firms.	Short-run studies they measure investors' expectations and not realized performance. Cannot be used for privately held firms. Fail to take into account that acquisitions have multiple motives.

Table 2. Continued

Measure	Definition of failure and methodology, metrics	Advantages	Disadvantages
Long term stock market based measures	In long-term studies, based on the premise that an acquisition may have a negative impact on the long-run wealth of shareholders researchers evaluate post-merger performance of acquirers usually some years after the deal closure (e.g. 5 years).	Direct measure of stock-holder value. Data are easily accessible for all publicly traded firms.	Cannot be used for privately held firms. Fail to take into account that acquisitions have multiple motives.
Managers subjective assessments	Executives of the acquiring firm are asked to rate the extent to which the original goals set before the acquisition are effectively materialized or not. Questions refer to both financial (e.g. ROA, return on investment, sales growth, growth in profits) and nonfinancial factors (e.g. managerial prestige, competitive position, personnel development possibilities). Failure exists when expectations are higher than their materialization.	Suitable when researchers encounter problems obtaining objective measures of performance. M&A performance is captured as a multidimensional phenomenon. Takes into consideration that M&As have multiple motives.	Responses may be subject to managerial bias. Need for multiple respondents.

Source: modified by authors based on Papadakis & Thanos (2010).

Figure 1. Classification of measures of M&A performance on a corporate level

Accounting measures of M&A performance

- Asset turnover
- Asset growth
- Industry weighted return on sales (ROS)
- Profit after tax (PAT)/sales
- Pre-tax operating margin
- Profit
- Profit after taxes
- Return on assets
- Return on common equity (ROE)
- Return on investments (ROI)
- ROS
- Sales
- Sales growth
- Total assets

Market measures of M&A performance

- Acquirer's lont-term market return
- Acquirer's short term market performance/cumulative abnormal return
- Alpha from Fama-French three factor model
- Total long-term return to shareholders
- Total short-term gain to acquirer and target

Other objective measures of M&A performance

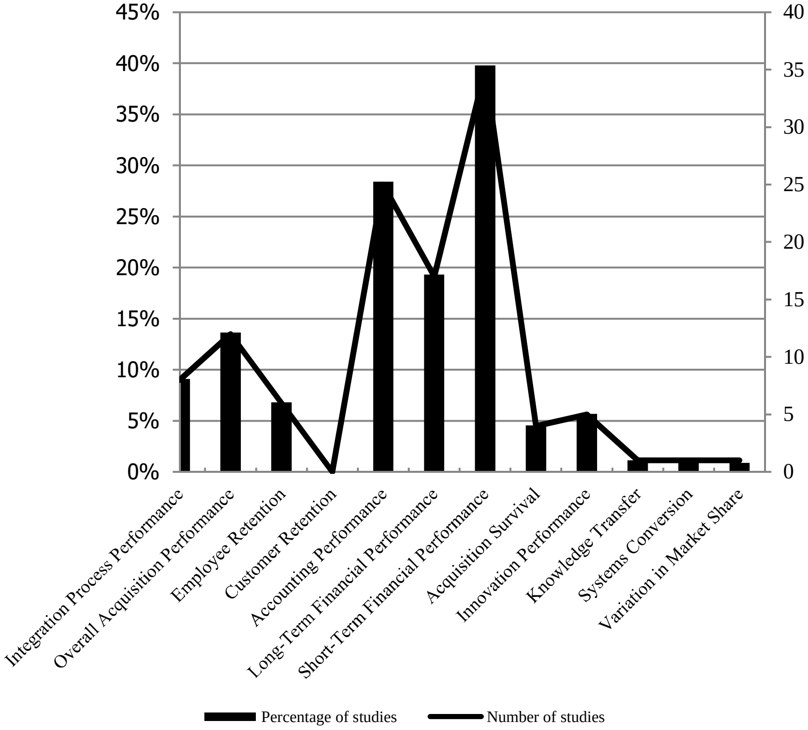
- Acquisition indicator/occurence of M&A
- Age of firm
- Asset sale rate
- Capital expenditure rate
- Deal value
- Employee growth rate
- Export intensity
- Financial leverage
- Market share
- Number of non-technology M&As
- Number of patents granted post-acquisition
- Pension expense per employee
- Proportion of entries by acquisition
- R&D rate
- Research intensity
- Research productivity
- Survival
- Tobin's Q
- Tobin's Q (three year moving average)

Subjective measures of M&A performance

- Acquisition performance-subjective assessment
- Learning
- Long-term corporate performance
- Quality of innovation
- Quantity of innovation
- Satisfaction
- Views of analysts on acquisition performance

Source: modified by authors, based on Das & Kapil (2012).

Figure 2. Approaches of measuring M&A performance



Source: modified by authors based on Zollo & Meier (2008).

Figure 3. Theoretical framework integrating methodologies measuring M&A performance on micro- and macro- economic levels