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HOW RESEARCH CONTRIBUTES TO HIGHER LIQUIDITY?

Market efficiency has been in the spotlight for more than 50 years, since Fama introduced the Efficient Market Hypothesis. This is especially important from the point of view of information asymmetry, as stock market investors have information disadvantage compared to insiders which may result in higher financing costs for companies and lower IPO prices.
However, a wide analyst base, the presence of local analysts and transparency decreases funding costs for the companies, which also leads to higher interest from investors in companies' financial assets. Companies which have low research coverage face excess funding costs compared to companies with wider analyst coverage.

1. THEORIES ON MARKET EFFICIENCY

1.1. Efficient Market Hypothesis

The efficient market hypothesis, EMH [Fama, 1970] states that the stock prices or movements fully reflect all available information; hence, an investor cannot beat the market consistently on a risk adjusted basis. There are three forms of EMH: weak, semi-strong and strong.

The weak form claims that stock prices reflect all past publicly available information. According to the semi-strong form, all past publicly available information and new information is reflected in the stock price. The strong form of EMH states that the stock price reflects even the most sensitive insider information. In the weak form of EMH, an investor can not earn excess return in the long run using historical technical pattern, also known as technical analysis; but fundamental analysis may still provide excess return. According to the semi-strong form, no excess return can be earned by trading on technical patterns or fundamental analysis.

1.2. Behavioural Finance

The EMH assumes full rationality of investors, instant distribution of information across the market; however, empirical and statistical evidence suggest these do not hold in practice. Behavioural finance focuses on the psychological

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factors, which may affect the decision-making process and result in irrational behaviour like overconfidence [Frydman-Camerer, 2016], overreaction [DeBondt-Thaler, 1986], loss aversion [Kahneman-Tversky, 1979], mental accounting [Tversky-Kahneman, 1981] and regret aversion [Bell, 1982].

[Yildirim, 2017] contrasted EMH to behavioural Finance and suggested both were very important in order to understand financial market developments and to avoid financial crises, such as the 2007-2008 global financial crisis. Behavioural finance accepted the principles of EMH as all information and news were available, but suggested people understood news and information differently due to different experience, culture, judgment, needs and effects of emotion. After the economic abnormality, crisis and depressions, new concept took place and it led to questions about EMH. The problem is behavioural finance has neither long history, not track record. It is obvious that behavioural finance has various models and assumptions; however, it can be only accepted as a new suggestion and dimension.

Although [Yazdipour, 2011] primarily studied the financing of entrepreneurs and SMEs, the research also focused on the three main sources of uncertainties: incomplete information; inadequate understanding of the situation under consideration and undifferentiated (or undifferentiable) alternatives due to the complexity surrounding a given decision problem. There are consistent with the general approach of behavioural finance and its aspects on information processing and decision-making processes.

1.3. Adaptive Market Hypothesis

[Lo, 2004] proposed a new framework that reconciled market efficiency with behavioural alternatives by applying the principles of evolution - competition, adaptation, and natural selection - to financial interactions. This was consistent with an evolutionary model of individuals adapting to a changing environment via simple heuristics, as financial markets were more driven by the laws of biology than the laws of physics. Hence, people learn from their mistakes and adapt to changes in the environment. This evolutionary process determined financial market dynamics, according to this theory.

This is in line with [Urquhart-McGroarty, 2016], their findings suggested that return predictability in stock markets varied over time in a manner matching the adaptive market hypothesis and that each investor adapted differently to certain market conditions. This means that investment strategies differ in time, in region, in asset class and in market; hence, there is no single and unique strategy, which may provide excess returns in a long term. This is consistent with the Adaptive Market Hypothesis.

2. INFORMATION ASYMMETRY

Market hypotheses focus on the processing of information. However, considering market efficiency, both lack of information and information processing errors may result in biased decisions.

Asymmetric information [Do, 2003] as the adjective indicates, refers to situations, in which some agent in a trade possesses information while other agents involved in the same trade do not. This rather self-evident premise has revolutionised modern economic thought since the 1970s. The acknowledgment of asymmetric information within organizations shifted the debate on optimal financial structures from fiscal considerations to the provision of incentives to align the interests of managers and workers with the interests of stakeholders.

Lack of data on creditworthiness, financial performance and track record of companies contribute to information asymmetries which restrain the development of capital market financing instruments. The importance of information for credit markets has been demonstrated by [Stiglitz-Weiss, 1981], arguing that the asymmetric information between provider and receiver of financing was a fundamental characteristic of credit markets, and led to adverse selection and moral hazard on behalf of the borrower. The same principles apply to market-based financing and the corresponding instruments, and it can be argued that better availability and sharing of information can positively influence the attitude of both provider and receiver of financing, avoiding adverse selection and risks of moral hazard.

Since the capital structure irrelevance theory [Modigliani–Miller, 1958], finance theories try to explain the phenomenon of trade-off between cost of debt and equity financing. However, there isn't a theory which would explain appropriately the choice between the two forms of financing [Abeywardhana, 2017]. Meanwhile, there are some correlation between certain factors: firm-specific variables (size, tangible assets, etc.), operating and market performance, national environment, corporate governance, market timing and additionally firms limit themselves to an upper barrier to leverage [Gaud et al., 2007]. Information asymmetry is also an important element by evaluating a firm (overvalued or perceived inferior) [Narayanan, 1988]. Generally, debt is not a suitable form of financing for firms with value-enhancing investment projects or for firms perceived overvalued. These companies are more likely to plan equity financing. In contrast, for companies that are perceived inferior or there is a lack of profitable projects, debt is preferable [Gaud et al., 2007]. Another benefit of bank financing, in similar cases that debt disciplines managers, as firms prefer issuing debt and increasing dividends [Narayanan, 1988].

In 1931 the Macmillan Report drew attention to the 'financing gap', because it was harder for small firms to get bank credit [Balog, 2018]. Banks are less active in

the field of financing SMEs both in developed and developing markets, which can also be attributed to the fact that getting right information about a firm is a costly and difficult process. This arises from the information asymmetry, where different information is available to the borrower and the lender. In efficient markets the information is costless and perfect. Getting accurate information is difficult and, in some cases, carries high costs. Moreover, there is a lot of soft information (alternative data), which are difficult to quantify. What the borrower knows can remain hidden from the lender many times; hence, the information flow could be asymmetric between the borrower and the lender.

During the financing process it is costly for the banks to monitor the projects and investments, which leads to moral hazard, where the firm's management takes extra risks because someone else bears the cost of these risks. Local banks have stronger ties to local SMEs; therefore, the necessary information can be obtained more swiftly and cheaply. Capital markets and the securitization could support the participants, but it is a costly form of financing and there is a need of an effective secondary market.

[Martins-Paulo, 2014] suggested that the informational asymmetry (driven by insider trading) in the stock trading was positively related to the risk, return and liquidity of the shares as well as the cost of equity and the size of the companies out of 13 variables. In addition, the asymmetry was negatively related to the abnormal return of shares. In case of liquidity and size, the high index of issuance and negotiation of preferred shares may have influenced the results.

[Ajina et al., 2015] pointed out the positive relationship between the extent of corporate disclosure and market liquidity suggesting that a rich-informational environment was likely to improve stock market liquidity resulting from increased trading volumes. The findings also showed a positive effect of corporate disclosure on information asymmetry through a decrease in the adverse selection component of the spread. This finding suggested that information is crucial to help reducing adverse selection and the gap between investors. Reduction of information asymmetry affected the interest from investors: non-financial and financial information were important in trading decisions while strategic information may be attractive only for long-term positions.

[Chung-Wang, 2016] signalled that on the Korean stock market, which was driven by retail investors; there was a correlation between individual investor trading volume and bid-ask spread in a short investment horizon. Hence, stocks which were heavily traded by uninformed and unsophisticated individual investors faced a higher degree of information asymmetry and wider spreads as other investors avoided such investments.

There are many differences between individual (amateur) investors and institutional (professional) investors in terms of information and information

processing. Individual investors generally rely on information that is widely available (e.g. news, press releases) [Statman, 2019]. Other research shows that individual investors do not usually deal with accounting indicators but rely on fundamental analysis or news. The reason for this is, that individual investors in many cases, do not understand the data or do not know how to use it in valuation and may prone to behavioural biases or face both problems [Blankespoor et al., 2019].

3. TECHNICAL ANALYSIS

There is no single official definition available for technical analysis, but there are similarities among the competing frameworks. [Murphy, 1999] and [Kirkpatrick-Dahlquist, 2016] suggest technical analysis is the way of studying historical price movements, volume figures and changes in open interest in order to make a prediction for future possible price movements. It depends on graphical charts and trading data. [Gençay, 1998] suggested technical analysis might work as history trends repeat themselves but gave no apparent reasoning.

Empirical studies found the returns and reliability of technical analysis and its patterns depended on the asset class, time horizon, geographical factors, size of the company and was related to the efficiency of specific markets. Considering emerging markets, [Bessembinder-Chan, 1995] pointed out markets in Thailand, Malaysia and Taiwan were not effective enough; hence, technical analysis provided higher returns than in Japan and Hong Kong. [Ratner-Leal, 1999] examined ten emerging markets in Asia and Latin America. The results indicated that technical analysis was profitable in Mexico, Thailand and Taiwan, while there were not any significant results in other markets.

[Kung-Wong, 2009] examined the profitability of technical analysis in Singapore before and after the 1997 Asian financial crisis. They underlined that effectiveness of this method improved substantially after the crisis; hence, strategies based on technical analysis performed worse after the local regulator introduced new transparency measures on the market.

[Wafi et al., 2015] tested technical analysis in order to forecast prices of 37 non-financial firms in the Egyptian market and found technical analysis rules could predict stock returns due to the lack of financial efficiency in the Egyptian market; while [Masry, 2017] found that 67% of technical analysis rules achieved abnormal returns, more than Buy and hold strategy during the specific research period (2008-2015).

Studies on developed market strategies suggested there were periods during which technical analysis provided excess returns: [Brock et al., 1992] signalled moving average and support level patterns between 1897 and 1986 were effective tools. However, [Kwon-Kish, 2002] extended this study and found out market

effectiveness improved substantially during the 1970s; hence, technical analysis became less efficient. In addition, they pointed out technical trading rules were much more important in smaller stocks than in larger stocks.

[Ekman, 2017] pointed out that improvements in technical analysis between 2000 and 2016 resulted in poor performance in terms of profitability and predictive power of four technical analysis tools (moving averages with fix and variable holding periods, moving average convergence divergence and relative strength index) when three asset classes (equity, commodity and currency) and two market types (developed and developing) were considered. These empirical results are consistent with theory of weak market efficiency.

4. FUNDAMENTAL ANALYSIS

Fundamental analysis is an understanding of a company, the health of its business and its prospects, according to [Rahman, 2019]. It includes reading and analysing annual reports and financial statements to figure out the company's comparative advantages, competitors and its market environment. Fundamental analysis is built on the idea that the stock market may price a company wrong from time to time.

Over- and undervaluation may arise from difference in price-to-book ratios (share price compared to historical or anticipated book value in financial statements), P/E ratios (share price compared to historical or estimated earnings per share), EV/EBITDA ratios (enterprise value compared to historical or estimated EBITDA - earnings before interest, taxes, depreciation and amortization). Enterprise value reflects the theoretical value of total market capitalization of a stock plus the value of preference stocks plus total interest-bearing debt of the company minus cash and cash equivalent items.

Profits can be made by finding under-priced stocks and waiting for the market to adjust the valuation of the company. By analysing the financial reports from companies, one would get an understanding of the value of different companies and understand the pricing in the stock market. After analysing these factors, one may have a better understanding of whether the price of the stock is undervalued or overvalued at the current market price.

[Yan-Zheng, 2017] examined a collection of over 18,000 fundamental signals from financial statements and used a bootstrap approach to evaluate the impact of data mining on fundamental-based anomalies. They found that many fundamental signals are significant predictors of cross-sectional stock returns even after accounting for data mining. They suggested fundamental-based anomalies can be explained by mispricing, confirming the method of fundamental analysis.

5. IMPORTANCE OF RESEARCH

[Derrien-Kecskés, 2013] stated that analyst coverage affected a firm's investment decisions (like CapEx, R&D and M&A), financing (equity and debt issuance) and pay-out policies (which contains share buyback and dividend pay-out.) Decreasing the analyst base means increasing the information asymmetry, which also increases the cost of capital. This affects the profitability of the projects; hence, decreasing the pay-outs. The authors examined US traded companies excluding the financial and utility sectors. The results showed that compared to the control sample, firm's investments (CapEx, R&D and M&A) decreased by 2.37% [in absolute terms USD 230 million in average]. Equity and debt issuance decreased by 2.13% or USD 207 million. Furthermore, a decrease in analyst coverage is more costly for firms that are more financially constrained (more product competition and more information asymmetry.)

[Shiller, 2000] pointed to the US stock market boom of the 1990s as a result of a psychological contagion [bandwagon effect], that led to irrational exuberance. This is driven by investors' tendency to underreact to new information in the trading. Shiller describes these tendencies mostly driven by cultural influences and behavioural biases.

[Demiroglu-Ryngaert, 2010] ran thorough tests on a sample of 549 stocks that had been publicly traded without analyst coverage. They used the Institutional Brokers' Estimate System [I/B/E/S] to find stocks that received no analyst coverage for at least one year within the 1997-2005 periods. These stocks have been put into two groups: the first group contained stocks where I/B/E/S reflected no prior history of recommendations, and the second one included stocks which have had coverage earlier but received no recommendations in the previous year. They found that large positive returns were driven by the fact the stocks received favourable investment opinions and not just because of initiating coverage. 89% of the recommendations were buy/strong buy, which was consistent with the view a stock is more likely to be covered if it was undervalued.

6. IPO PROCESS

Regarding fundamental analysis, [Bouzouita et al., 2015] suggested under-priced stocks in an IPO were more actively traded and carried lower liquidity costs. This underlined the importance of analysts' activity around IPOs not only for aftermarket prices, but also for the liquidity of the secondary market in the months following the IPO. This reflected information asymmetry as informed trading were lower for more under-priced IPO stocks suggesting that more public information was produced for these stocks.

[Brau et al., 2016] examined 2,298 IPO documents in the United States between 1996 and 2008 in terms of strategic wording and price performance after the IPO process. They found that investors appeared to initially misprice the soft information, thus adding to the inefficiency of the IPO process. As an IPO document's strategic tone correlated positively with the stock's first-day return; more frequent usage of positive and/or less frequent usage of negative strategic words led to more IPO under-pricing. An IPO document's strategic tone was negatively correlated with the stock's long-run return. These findings implied that investors initially mispriced soft information in registration statements, however, this mispricing was eventually corrected later.

[Jiao et al., 2016] studied the impact of traditional news media and social media coverage on stock market volatility and trading volume and developed a theoretical model of asset pricing and information processing, They found that stocks with high news media coverage experience low volatility and low trading volume in the following month. The empirical evidence on news media is consistent with a market in which some investors are overconfident when interpreting new information.

In addition, [Bradshaw et al., 2006] pointed out that strong relation between analysts' excess optimism and net external financing supports allegations that sell-side analysts usually generated overly optimistic stock research for firms that are issuing new securities. Moreover, they found that the nature of the excess optimism was tailored to the type of security being issued.

6.1. Research providers

[Grossman-Stiglitz, 1980] stated that because information is a costly thing to acquire, a market cannot be perfectly efficient as there would be no incentive for professionals to uncover the information that gets quickly reflected in the share prices. Those who spend massive resources to gather and analyse huge amounts of data, may get no reward for their operation. This would result in the absence of such investors in the market. In addition, abnormal returns may exist, if there are costs of gathering and processing information.

The flaw of the system is that investors usually don't want to pay for the equity research because they don't know what they are paying until well after the purchase. The stricter MiFIDII regulation from 2018 in the EU forced asset managers to fund researches from their own profit, which led to billing clients for research and trading separately.

Investors put less weigh on recommendations if it came from investment banks providing services to covered companies. In other words, investment returns in these cases were significantly lower compared to recommendations from independent investment banks. This may be due to conflict of interest: positive

recommendation for a stock may be viewed as a reward in the context of compensation for investment banking services. Evidence from the tests showed that fee-based research documents also triggered positive reaction from the investor base, even though these analyses may be biased towards optimism in order to extend the contract between the research company and the covered entity.

Fee-based research increased market efficiency and bridged the gap between investors who want research for free and companies who are not covered by huge research firms. This research provides information to the widest possible audience and the research is funded by the subject company. But we must differentiate between objective and promotional fee-based research.

This persistent mismatch has been widely analysed, thus treated in different ways worldwide. New Zealand Stock Exchange (NXZ) reached an agreement with Edison Investment Research an international investment intelligence firm, to become the foundation research provider for NXT, a new market designed for small and mid-sized (SME) businesses. NXZ management found out that there was a lack of research on many NXZ listed SMEs, limiting the information available to investors. Financial advisors were also limited in their ability to advise on listed companies without independent research coverage. In order to treat this issue, NXZ and Edison aim to provide high-quality and frequent information to investors - these reports were available to view publicly and download for free on the webpage of NXT. The cost of research is incorporated into the annual listing fee charged by NXT.

In 2016 the Tel Aviv Stock Exchange (TASE) and Edison Investment Research announced an agreement for providing analyses of high-tech and biomedical companies traded on the stock exchange. The goal was to encourage investment in these companies by removing the barrier of a lack of understanding and information asymmetry in the market. The published analyses from the intelligence firm would help examine information released by high-tech and biomedical companies and assists the pricing of securities. The listed companies had to sign a two-year agreement with the TASE for the service and under this period they were not able to leave this program. The companies paid for the analysis while the TASE and the Ministry of Finance by the Chief Scientist contributed a proportion of the cost for small and medium-sized enterprises.

[Edison, 2006] a London-based independent investment research company surveyed UK-based institutional investors, private client brokers and traditional brokers for their views on the importance of equity research and the credibility and prospects for independent research. 90% of the respondent found these researches either important or invaluable, and the majority considered access to research a prerequisite to investing in a company. Overall, company

commissioned research was regarded as credible, regardless of the size of the company.

Brokerages/independent research companies; whose key service is to provide research to their clients; triggered less intense market reactions compared to investment banks, which were not involved in any related deals. Evidence showed investors have less confidence in brokerage/independent research reports due to their smaller size, restricted resources, smaller client base and less skilled analyst base. Different motivation of fee-based and non-fee-based research companies: non-fee-based analysts may pick stocks based on investment attractiveness, while the other may focus on marginally attractive names in exchange for regular fees.

Differences in price impact: market reactions tend to be in line with the strength of the recommendation. Hence, a strong buy recommendation triggered the highest returns, except for independent/brokerage research companies. Returns are lower if the analyst's company has business relationship with the covered company. In addition, the appeal of fee-based recommendations may be greater among retail investors.

Budapest Stock Exchange's (BSE) started a program in 2017 in order to increase attractiveness of 10 local medium cap stocks. Investment service providers and banks provided simultaneous research coverage and market-making, where the aim was to increase awareness and investment activity in these stocks. [BSE, 2019] suggested the average trading volume increased by an average of 20% during the first year considering the 10 stocks involved.

6.2. Global and local analysts

Many studies investigate the role of the distance between the decision maker and the investment object. Some papers conclude that local investors have advantage over foreign market participants, but others find that global investors are better informed than local ones. These effects are moderated by other market characteristics that were not analysed and yet to be further investigated to prove either concept.

[Chan, 2003] found that smaller stocks with little analyst coverage experience the highest momentum [change in share price], unless they have support from research coverage from investment banking analysts. Chan also found that stocks with public news tend to have larger capitalization and probably have more analyst coverage.

From this point of view, the under-reaction to news and slow movement of share prices thereafter may be driven by the lack of understanding instead of the lack of availability of the relevant and important news. Hence, information gathering, processing and research coverage are key elements of a stock market's day-to-day operation and attractiveness.

[Malloy, 2005] stated that U.S. analysts, who were closer to a firm headquarter, had an information advantage. There was evidence that local analysts had an information advantage in a large sample of countries. One might say that local analysts had better information; hence, they could predict earnings more accurate. One could measure the error of these earnings predictions by subtracting the accuracy of local analyst earnings forecast from the accuracy of foreign analysts' aggregate predictions (such data may be extracted from Bloomberg or Reuters databases).

Using a unique analyst-location data that covered 11,436 analysts located in 41 countries [Bradshaw et al., 2012] found that analyst optimism in target prices was exacerbated by conflicts of interest but this was mitigated by good country-level institutional infrastructure. The result of their research, while confirming the classic conflicts of interests, argued that analysts tend to be overly optimistic when biased research carried potential benefits, but there were channels that mitigated analyst bias. The authors demonstrated that analysts in countries with good institutional infrastructure as characterised by strong investor protection, transparent financial environment and strong cultural forces showed less optimism in target equity prices.

[Bae et al., 2007] suggested that local analysts have better information than their foreign competitors. For example, local analysts' advantage is high where companies share less information with investors and where there are huge insider stakes. Nevertheless, the advantage is negatively correlated with the activity of foreign investors; hence, some US investors tend to underweight markets, where significant local analyst advantages existed.

Local analysts may observe the daily operation of a company directly. In case of a mining company, the local analysts can observe their operation personally, or in the case of the retail sector the analysts can examine the customers' behaviour in the local market for a longer period. But there are sectors where the local analyst base does not have advantage: companies in the information technology sector are operating through software, cloud-based computing or if they are manufacturing hardware abroad, mainly in China. Meanwhile, companies are investing more and more into R&D, patents, information systems, brands, media content, business processes (intangible assets.)

As a result, financial earnings' usefulness to investors declines sharply for companies that increasingly rely on intangible value-creating assets, which questions the usefulness of traditional stock analysis frameworks [Lev-Gu, 2016].

CONCLUSION

The role of the analyst and existing research beneficial not only for the country's investors (retail and institutional), but it is valuable for the foreign market participants and the companies themselves. Being listed on a stock exchange carries several advantages like the financial benefit to raise capital, higher transparency, increased public awareness; hence, the products or the services of the company can become known for the wide range of the costumers.

The banks and investment firms must invest more in the analyst base, because empirical studies reflected that a local research base had more information and made better forecasts given certain market structure. It is important not only for the investors, but for the companies to have a wider coverage from multiple angles, in order to adjust for a more competitive future.

However, the cost of gathering and processing information should be covered by some or more players; mainly in Europe after the introduction of the MiFIDII regulation. Smaller countries with less advanced or emerging markets should introduce measures fostering and supporting a wider analyst base. Governments, central banks and/or local stock exchanges may also need to fund research activity which may lower funding costs and improve market efficiency.

Individual analyst performance and track record should be measured via real portfolio decisions and share price forecasts, so that their recognition and trustworthiness is established also in the ranks of investors. This information can raise the investors' attention and help reduce information asymmetries; hence, increase liquidity of the traded companies.

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