EMERGENCE AND EVOLUTION OF FINANCIAL ECONOMICS

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Abstract: *This paper aims to deliver a comprehensive analysis of the theories and concepts that have formed the foundational link between two separate academic fields: finance and economics, resulting in the emergent field of financial economics. The main schools of thought can be divided, with a considerable amount of simplification, into two categories: neoclassical and behavioural financial economics. Neoclassical economics is based on the assumption of rationality and uses normative mathematical models that predict how people should behave. Behavioural economics, on the other hand, is more descriptive and uses economic experiments to investigate how and why subjects behave in a certain way.*

Keywords: *financial economics, asset pricing, rational expectations, efficient markets hypothesis, behavioural finance.*

JEL Classification: B12, B26

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EKONOMICKÉ ROZHĽADY – ECONOMIC REVIEW, 2024, 54(1), 1 ─ 19
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1 Introduction

Financial economics is a subject that represents a nexus between two academic fields: finance and economics. The origins of financial economics can be traced back to antiquity. The assessment of financial transactions, including loan payments and profit distribution, is so historically entrenched that identifying the initial milestones of financial economics is unfeasible (Poitras, 2006). The inception of economic analysis and the beginning of classical economics is typically attributed to Adam Smith, whose work "The Wealth of Nations (1776)" is recognized as the first comprehensive and coherent theory that was distinctly separate from other related disciplines. Nonetheless, significant insights in critical domains of financial economics had already been developed prior to Smith. Some of this knowledge, including early mercantilist writings, was unjustly discredited by Smith. Other areas, such as the valuation of uncertain contracts, were not explored by Smith at all, or were related to various aspects of joint-stock companies but were mentioned only briefly (Poitras, 2000).

The subject of economics has seen significant evolution over time, from its inception in the political economy as presented by the classics. The twentieth century saw an intellectual evolution marked by the emergence of mathematicians, statisticians, and theory-oriented "economic scientists" – the successors of the neoclassical school - replacing the historical, qualitative, and measurement-focused approach (Yonay, 1994). Building on this development, new branches of economics emerged, such as econometrics, environmental economics, and financial economics, presenting compelling arguments for the potential of their field of research to address major challenges.

The relationship between finance and economics - the development of financial economics was thus conditioned by several factors. The fact remains that, despite the existing similarities in the subject matter of these two disciplines, their historical and philosophical foundations differ. These disparities generate internal conflicts within modern financial economics. This pressure influences the subjects examined, as well as the analytical methods used (Poitras, 2000).

2 The first connection between finance and economics

Prior to 1960, publications in financial economics were largely peripheral

within the scientific community. Milton Friedman's response to Markowitz's thesis serves as a clear example of the situation. This publication from 1952, which defines the relationship between risk and return, can today be considered the true beginning of the development of a relatively new field of economics - financial economics (Krištofík, 2010). Simultaneously, it is among the earliest studies that were not exclusively empirical and is now classified as part of the field of financial economics. At that time, however, studies in the field of finance mainly addressed the unpredictable behaviour of stock market prices. Friedman saw a problem in Markowitz's work at that time. Mathematically, it was adequate; however, according to him, it was not a dissertation in the field of economics, mathematics or even business administration (Bernstein, 1992).

Markowitz (1952), applying modern probability theory, regarded the returns for individual periods of various securities as random variables and assigned them expected values, standard deviations, and correlations. Building on this framework, he introduced the concept of calculating the expected return and risk (volatility) of a portfolio consisting of specific securities. Among all potential portfolios, certain ones achieve an optimal equilibrium between risk and return. This is the Markowitz efficient portfolio frontier, from which an investor should choose. Markowitz did not provide any theoretical proof of his mathematical results; he simply applied mathematical techniques to address a long-standing issue that had been examined by multiple scholars before him. For example, Ketchum suggested that one way to protect an investment from declining price fluctuations was to separate the portfolio into two sections: a defensive (low-volatility) section and an offensive (high-volatility) section (Ketchum, 1947). This proposal served as direct evidence of the unpredictability of changes in security prices at that time.

While Friedman's reaction to Markowitz's article appears inappropriate now, considering the significance of Markowitz's thesis, it serves as an accurate reflection of the situation in financial economics prior to 1960, particularly before the introduction of the Modigliani-Miller model in 1958. A limited number of works did not succeed in establishing financial economics as a scientific or academic discipline. Only applied mathematics and empirical research were utilized, lacking a theoretical foundation. The situation changed in the 1960s, with Markowitz's article marking the beginning of a transitional era that concluded with Modigliani and Miller's publication of "The Price of Capital, Corporate Finance, and the Theory of Investment" in

EKONOMICKÉ ROZHĽADY – ECONOMIC REVIEW, 2024, 54(1), 1 ─ 19
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1958 (Jovanic, 2008).

3 Development of the Theoretical Framework of Financial Economics

The challenge of the absence of theoretical justifications was overcome after 1958 due to the introduction of new tools, models, and research. An important step was the establishment of a theoretical basis that was acknowledged as scientific. This was accomplished by economists who were already considered scientists and academics (Stigler, 1965). This observation is indeed crucial, as Kuhn (1962) revealed that the popularity and acceptance of scientific concepts at the academic level are not determined solely by their inherent and objective veracity. The adoption and propagation of specific ideas are primarily governed by social dynamics. These processes involve a hierarchical structure of academic and social actors who compete for prestige, academic status, and control of the "space of intellectual attention." Since modern financial economics is an example of such behaviour, it is necessary to distinguish the substantive contributions from those that have gained attention through the technique described by Stigler (1965).

According to Stigler (1965), "opening the eyes to new ideas or new perspectives on old ideas" is how scientists measure progress. In most cases, acknowledgement of originality necessitates techniques of promotion, constant repetition, or excessive emphasis that have preceded nearly every new concept in economic theory.

From this perspective, for example, substantive contributions that preceded Smith's theory cannot be considered the starting point of the history of economics, as they failed to produce a discernible impact. In the realm of influence, Smith is without competition (Stigler, 1965). Furthermore, within the realm of financial economics' emergence, Markowitz's portfolio theory is insufficient on its own, partly due to Markowitz's status in academia in 1952, that is, as a young scientist without a PhD.

Accordingly, the second crucial milestone in the emergence of financial economics is the MM model, formulated by respected academics of the time, based on Markowitz's publication. In 1958, Modigliani and Miller applied a stochastic process, derived from modern probability theory, to revisit the

long-standing connection between the capital structure and firm value. Their primary hypothesis suggests that the company's value remains unchanged regardless of its capital structure. This can be regarded as an expansion of the separation theorem initially formulated by Irving Fisher, who proved that the profit-producing plan is independent of the owners' decisions related to lending and borrowing resources (Fisher, 1930). Modigliani and Miller extended this claim through a proof of arbitrage. They assumed that there were two otherwise identical companies (i.e., possessing equivalent total future cash returns from the assets), one leveraged and the other unleveraged. They further showed that if the aggregate present value of the stocks and bonds of the unleveraged company does not equate to the present value of the stocks of the leveraged company, then an arbitrage opportunity would exist. As a result, arbitrage requires that the valuation of companies remain identical, regardless of the composition of the company's structure. In line with the development of financial economics, the key contribution of Modigliani and Miller's work lies not in determining the impact of the firm's capital structure, but in utilising arbitrage as a tool to prove it. While Modigliani and Miller were not the first to apply the arbitrage principle as evidence in finance (Rubinstein, 2003), their paper popularised it in two ways: 1) it was one of the earliest works to use modern probability theory to address a financial issue, and 2) the authors had a strong academic background, having conducted their research at the Massachusetts Institute of Technology (MIT) and the University of Chicago - two leading universities that were developing financial economics as such at the time.

Building on this study, financial economists employed the arbitrage proof to investigate various other questions involving asset pricing models (e.g., efficient market theory, the Black-Scholes model, and others). Additionally, the arbitrage proof extends the economic principle of the law of one price within a perfect capital market: competition in the market ensures that any commodity will be sold at the same price. In this way, Modigliani and Miller's proof implies equality in a perfect capital market, which provides a direct link to economic equilibrium. Thus, Modigliani and Miller were the first to make the connection between economics and financial performance in their publication.

EKONOMICKÉ ROZHĽADY – ECONOMIC REVIEW, 2024, 54(1), 1 ─ 19
https://doi.org/10.53465/ER.2644-7185.2025.1.1-19

4 Capital Asset Pricing Model (CAPM)

The CAPM is regarded as another crucial landmark whose creation conditioned the existence of financial economics as a scientific discipline – as we know it today. The capital asset pricing model deals directly with equilibrium in financial markets. This enables the Markowitz portfolio selection model to be positioned on a scientific level (Poitras, 2007). In 1958, prior to the introduction of the CAPM, James Tobin extended Markowitz's approach by incorporating a risk-free asset into the analysis. This enabled investors to leverage or devalue a portfolio on the efficient frontier. Tobin introduced concepts such as the super-efficient portfolio and the capital market line. Due to leverage, portfolios on the capital market line can outperform portfolios on the efficient frontier (Tobin, 1958).

The CAPM was therefore a model that extended Markowitz's work while also using Tobin's insights. The model was derived independently by several authors - Treynor (1961), Sharpe (1964), and PhD students of Markowitz, Lintner (1965) and Mossin (1966). CAPM extended Markowitz's portfolio theory by introducing concepts such as systematic and specific risk. The CAPM model demonstrates that Tobin's super-efficient portfolio must align with the market portfolio. All investors will hold a market portfolio, using a combination with a risk-free asset if necessary to achieve the desired level of risk. In the CAPM model, the overall portfolio risk is decomposed into systematic and specific risk. Systematic risk is the volatility associated with holding a market portfolio. Every asset is more or less affected by market movements. Specific risk is the volatility associated with a particular asset. It reflects the part of the asset's return that is not correlated with market movements. If an investor holds a market portfolio, thanks to diversification, they are exposed only to systematic risk. Although it is necessary to note that the CAPM relies on flawed assumptions (perfect markets, accessible and homogeneous information, and investors' inclination to maximise profit), it has value in theory as a standard paradigm of finance for determining market equilibrium under conditions of uncertainty.

5 The emergence of the derivatives market as a new area within financial economics

Another model that significantly influenced and shaped financial economics is the Black-Merton-Scholes model, for which Professors Scholes and Merton won the Nobel Prize (Professor Black was ineligible for the honour, as the Nobel Prize cannot be awarded posthumously). The original idea for creating the model was initiated by Black, who wanted to apply the CAPM to the pricing of options in a continuous timeframe. In addition to the CAPM itself, this model was also influenced by several other scientific works.

The roots of modern option pricing theory can be traced back to Bachelier's dissertation on the theory of speculation. In this work, Bachelier derived an option pricing equation that is similar to the Black-Merton-Scholes equation (Bachelier, 1900). He also laid out the mathematical framework required for the diffusion process. This dissertation, despite its minor economic and mathematical errors, later influenced Samuelson's paper on option pricing as well as Itô's work on stochastic processes (Samuelson, 1965; Itô, 1951).

These works, without knowing the connection between them, influenced the resulting Black-Merton-Scholes model. Itô's research yielded a comprehensive theorem of stochastic calculus that provides the necessary steps for deriving the Black-Merton-Scholes equation. Samuelson's work was a catalyst for Merton's studies on option pricing and was also highly beneficial for the original option pricing formula developed by Black and Scholes.

Black (1989) and Bernstein (1992) accurately describe how the final Black-Merton-Scholes model was designed. Black began focusing on the issue personally in the late 1960s. His idea was to apply the CAPM, developed by Sharpe (1964) and Lintner (1965), to option pricing in a continuous time series. Building on this concept, he derived an implicit solution for option pricing, defined by a partial differential equation with boundary conditions. Nevertheless, he was unable to solve it. Later, he collaborated with M. Scholes, a CAPM expert, to assist in finding a solution. Together, they found a solution to the equation using economic intuition and earlier valuation models. Nevertheless, the given equation used the variable expected return on a stock, which complicated its application to real-world estimations. During that period, Robert Merton was Scholes' colleague at the Massachusetts Institute

EKONOMICKÉ ROZHĽADY – ECONOMIC REVIEW, 2024, 54(1), 1 ─ 19
https://doi.org/10.53465/ER.2644-7185.2025.1.1-19

of Technology (MIT), and Merton was using his mathematical expertise to address various finance-related problems, such as portfolio theory and option pricing. After several discussions, Merton demonstrated to Black and Scholes an alternative method for deriving their partial differential equation. His approach was based solely on the idea of continuously constructing a perfectly hedged portfolio consisting of stocks and call options, along with the observation that arbitrage opportunities do not exist.

The Black-Merton-Scholes model of option pricing established a new field in finance, specifically in the field of investment and asset pricing referred to as derivatives. Options provide a tool suitable for speculation as well as hedging. The model has had a lasting impact in many fields. In the social sciences, its contributions sparked the emergence of a new area of research - derivatives. In the economic sciences, this knowledge has illuminated corporate finance, financial markets and institutions, industrial organization, international economics, and general equilibrium. In the financial sector, its contributions have enabled the growth and expansion of derivatives, foreign exchange, interest rate, and commodity markets. They have also facilitated the creation of new companies and organizational structures within firms focused on options trading and risk management. The Black-Merton-Scholes model is considered by many economists to be one of the most successful applications of economic theory in history (Jarrow, 2007).

6 Theory of Rational Expectations and the Efficient Markets Hypothesis

The rational expectations theory complements the previously mentioned models - Markowitz's efficient portfolio, MM-model, the CAPM model and Black-Merton-Scholes model, and is considered the last key notion in the emergence of financial economics.

The concept of expectations was originally defined in the article by John Muth (1961) “The Theory of Rational Expectations and Price Movements”. Muth argues that due to the fact that expectations are intelligent predictions of future events, they do not differ from the predictions of analogous economic theories. Thus, expectations are fundamentally equivalent to predictions. Specifically,

he proposed a hypothesis stating that information is limited, and at the same time, expectations are shaped by the system that surrounds the functioning of the economy, so they are able to influence the functioning of the economy. His understanding of predictions and expectations differs that of Grunberg and Modigliani (1954), who distinguished between public and private predictions, concluding that public predictions cannot change the course of events because economic agents are indifferent to them or unable to react to them. In contrast, Muth (1961) argues that the basis for correct public predictions lies in situations where agents respond to public expectations and at the same time their reactions change the course of events. Muth formulated the principle of rational expectations in the context of microeconomics, but later it was associated with macroeconomics and the works of Lucas, Sargent, Prescott and others. The efficient markets hypothesis is therefore the last key theory that was created in the 1960s and connects the results of financial econometrics with economics. Recognizing the absence of a theoretical basis for random walk theory, Roberts and Working were the first to make connections with economic theory in order to provide a theoretical basis for stock market price fluctuations (Roberts, 1959; Working, 1956; Working, 1962). They did this by demonstrating arbitrage and the properties of economic equilibrium.

Roberts (1959) proposed connecting the randomness of stock prices to the lack of profits, stating: “If the stock market operated like a flawed roulette wheel, people would recognize the flaw and take action to correct it.” Cowles in 1960 was the first to refer to a competitive market and point out the possibility that there is no opportunity for arbitrage. This article marked the start of a link with conventional economic theory, which gradually led to the emergence of efficient market theory (Cowles, 1960). Two years later, Cootner (1962) proposed the concept of efficient market theory, though he did not use the term itself. This proposal, connecting the random walk model, information, and economic equilibrium, was used by several of Cootner's students. It also caught the attention of researchers at the University of Chicago, especially a young doctoral student, Eugene Fama. In his PhD thesis, written in 1964 and published the following year, Fama consolidated empirical research and created his first definition of efficient market theory: "An efficient market is defined as a market in which a large number of rational profit-maximizing investors are actively competing with each other, trying to predict the future market values of individual securities, and in which relevant and up-to-date information is almost freely available to all participants. In an efficient market,

EKONOMICKÉ ROZHĽADY – ECONOMIC REVIEW, 2024, 54(1), 1 ─ 19
https://doi.org/10.53465/ER.2644-7185.2025.1.1-19

competition among many intelligent participants leads to a situation where, at any given time, the current price of a security already incorporates the effects of situations that have already occurred, as well as expectations of events that may occur in the future. In other words, in an efficient market, at any point in time, the price of a security will be a good estimate of its intrinsic value" (Fama, 1965). Later in 1970, Fama formulated a definition in his article that is still used today: "a market in which prices always fully reflect available information is called an efficient market" (Fama, 1970). According to the law of efficient markets, if the equilibrium model does not use all available information to evaluate the value of a security, then arbitrage is possible. This implies that past information cannot be used to forecast future price changes: as current and future prices are independent of past ones. Therefore, in an efficient market, stock prices must behave as randomly as the arrival of new information. To put it differently, the random walk model can represent the dynamics of equilibrium price development in a competitive market. Through this connection with economic equilibrium, efficient market theory allows the integration of financial economics into the scientific field.

Rational expectations theory serves as a foundational component for several significant theories, including the permanent income hypothesis, the random walk theory, the efficient market theory, and the Phillips curve. Thomas Sargent and Robert Lucas (1981), two of the most important contributors to the development of rational expectations theory, defined this theory as follows: "The concept of rational expectations equilibrium allows the parameters describing the beliefs of agents to disappear as components of the model, leading to the emergence of cross-equations that give the rational expectations model empirical strength."

The following table summarizes the key ideas that had a fundamental influence on the birth of financial economics as a scientific discipline.

Table 1: Brief Overview of Main Ideas and Models That Influenced Emergence and Development of Financial Economics and Management

Year	Autors	Work	Main contribution
1952	Markowitz	Portfolio theory	The initial linkage between finance and economics – beginning of the development of financial economics

1958	Modigliani-Miller	M-M model	Creating a theoretical basis, using arbitrage law as evidence in finance
1958	Tobin	Capital market line, Super-efficient portfolio	Using a risk-free asset if necessary to achieve desired level of risk
1956-1962	Roberts, Working	Scientific papres in the field of stock valuation	An effort to create a theoretical basis for price movements on the stock market.
1960	Cowles	Competitive market and the possibility of no opportunity for arbitrage	The beginning of the connection between standard economic theory and the theory of efficient markets.
1961-1966	Treynor, Sharpe, Lintner, Mossin	Model CAPM	The standard paradigm of finance for determining market equilibrium under conditions of uncertainty.
1954	Grunberg, Modigliani	Predictability of public events	They divided expectations into public and private, with public expectations not having the ability to influence the behavior of economic entities.
1961	Muth	Rational Expectations Theory and Price Movements	He defined expectations as intelligent predictions.
1962	Cootner	Random and systematic changes in stock prices	The idea of efficient markets theory, but he did not use the term.
1965	Samuelson	Paper on option pricing	Inspiration for the Black-Merton-Scholes model.
1965	Fama	PhD thesis	The first definition of the efficient markets theory.
1973	Black, Merton, Scholes	Black-Merton-Scholes option pricing model	The emergence of a new area of finance – derivatives.

Source: own processing according to the authors listed in the table.

The basic milestones that conditioned the emergence of financial economics as a scientific field can therefore be considered to be Markowitz's efficient portfolio theory, the Modigliani-Miller model, and the capital asset pricing model (CAPM). The subsequent works mentioned above significantly shaped

EKONOMICKÉ ROZHĽADY – ECONOMIC REVIEW, 2024, 54(1), 1 ─ 19
https://doi.org/10.53465/ER.2644-7185.2025.1.1-19

financial economics and formed the basis for the emergence of the standard paradigm of corporate financial management.

7 Concurrent trajectory of financial economics development

With the emergence of financial economics during a period of intellectual evolution, characterized by the dominance of mathematicians and statisticians from the neoclassical school, the original historical and qualitative approach was replaced, focusing mainly on the creation of economic models. From the very definition of a model, i.e. a simplified scheme of a phenomenon, it is obvious that in a scientific discipline that is classified as a humanities science, simplification of reality will not be completely effective. The issue lies in the unpredictability of the behaviour of economic entities. Humans are not "homo economicus", i.e. their behaviour is not based on rational expectations. Likewise, many of the assumptions of the proposed models are not met in practice, which is why contemporary economics has also begun to focus on psychological and social aspects.

The predominance of rationality in the work of economists has not been constant. This perspective is clearly formulated in Friedman's rejection of destabilizing speculation. From this point on, the original assumption of rationality became the primary impetus for important theoretical developments, such as the theory of rational expectations, the theory of rational bubbles, and the efficient markets hypothesis. A substantial body of literature exists on the analysis of modern stock markets, where anomalies that contradict market efficiency have been uncovered and later explained in terms of the theory of rational behaviour.

The assumption that economic agents act rationally is one of the fundamental characteristics of classical economic theory. This assumption is even part of the most elementary economic statements. However, modern economics has elevated rationality to a higher degree. Kindleberger (1989) contends that rationality is more of an assumption than an accurate description of reality.

From the above, it is clear that economics is influenced by human behaviour, often driven by motivations beyond rationality. This fact has been previously acknowledged. The first work to emphasize the importance of psychology and human emotions in decision-making is considered to be Smith’s lesser-known

book from 1759 – The Theory of Moral Sentiments. In this book, Smith argues that human beings do not always act in order to maximise their own well-being. On the contrary, there are situations where their sole motive for action is the happiness of other people and their sole benefit is the pleasure of seeing it.

Later, in 1955, Simon introduced the term "bounded rationality". It is used to refer to rational choice that includes the cognitive limitations of the decision maker – limitations on knowledge and computational capacity (Simon, 1955). He argues that human beings are relatively simple in terms of systemic behaviour. The apparent complexity of our behaviour over time is largely a reflection of the complexity of the environment in which we find ourselves (Simon, 1996). Bounded rationality is a central theme of the behavioural approach to economics, which is deeply concerned with the actual decision-making process that influences decision-making (Fiske, 1991).

Another important milestone in the development of behavioural finance is prospect theory. It is a behavioural model that illustrates how individuals make decisions between alternatives that involve risk and uncertainty. It highlights flaws in human decision-making, namely, the fact that human beings focus on expected utility relative to a certain reference point (e.g., current wealth) rather than on absolute outcomes. The theory was developed by creating risky options and suggests that people are loss-averse because they fear loss more than they benefit from an equivalent gain, and are therefore willing to take more risks to avoid loss (Kahneman, Tversky, 1979).

Fama himself, who originally presented efficient market theory in 1970, contends in his 1991 publication: "the extreme version of this hypothesis is certainly wrong... market efficiency itself is not testable."

A further refutation of the extreme version of efficient market theory is provided by Haugen (1995), who, in describing his book, states: "I present here a comprehensive and organized collection of evidence and arguments that create a strong and convincing case for an overreacting market. Participants in today's stock market consistently make fundamental errors."

In 1997, La Porta et al. presented groundbreaking research that argued that the predictability of stock prices depends on psychological factors, social changes, trading noise, and the fashion trends of irrational investors in

EKONOMICKÉ ROZHĽADY – ECONOMIC REVIEW, 2024, 54(1), 1 ─ 19
https://doi.org/10.53465/ER.2644-7185.2025.1.1-19

speculative markets. The publication of this research formally began the entry of psychology and behavioural science into the field of finance. By 2000, the Institute of Behavioral Finance and the Journal of Behavioral Finance had been founded. At the same time, many existing academic journals had also devoted significant space to research in this new field in recent years.

The following table summarizes the main concepts that have shaped the emergence of an alternative field of economics—behavioral finance.

Table 2: Organized Overview of Main Concepts That Have Shaped Behavioural Finance

Year	Authors	Work	Main contribution
1759	Smith	The Theory of Moral Sentiments	Pointing out the role of emotions in human decision-making.
1955	Simon	Publication on the behavioral model of rational choice	The introduction of the concept of "bounded rationality", which was used later, with the acceptance of behavioral science in the field of economics.
1979	Kahneman, Tversky	Prospect theory	An important milestone in the development of behavioral economics. It illustrates how individulas make decisions between alternatives that involve risk and uncertainty.
1995	Haugen	The New Finance The Case against Efficient Markets	Evidence of an overreacting market.
1991	Fama	Efficient capital markets	The claim that the extreme Version of Market Efficiency is definitely wrong.
1997	La Porta	Groundbreaking research: “Good news for value stocks”	The formal entry of psychology and behavioral science into the field of finance.

Source: own processing according to the authors listed in the table.

Simon's "bounded rationality", Kahneman's prospect theory and the well-known groundbreaking research of La Porta (1997) can be considered to be the basic milestones of the emergence of an alternative school of thought

to neoclassical economics - behavioral economics. These works shaped the subsequent development of financial economics and were the basis for the emergence of a new paradigm of corporate financial management.

8 Discussion and conclusion

The relationship between finance and economics – and the development of financial economics was conditioned by several factors. The fact remains that despite the existing similarities in the subject matter of these two disciplines, their historical and philosophical foundations differ. These disparities generate internal conflicts within modern financial economics.

In order to understand the broader context, it is important to pay attention to the development of financial economics over time. Smith's works The Wealth of Nations (1776) and The Theory of Moral Sentiments (1759) can be simply described as the starting points for the development of two very different economic directions - neoclassical economics, based on mathematical modelling, and behavioural finance, with the imaginary scales strongly tilted in favour of mathematical modelling throughout. This fact is also reinforced by the fact that the work The Wealth of Nations is considered to be the foundation of economic analysis, marking the emergence of classical economics, and as the first book known for developing a complex and coherent theory clearly distinguished from other related subjects.

Since financial economics arose in a period of intellectual evolution characterized by the increase in the influence of mathematicians and statisticians - that is, the "descendants of the neoclassical school" in the 18th century, the original historical and qualitative approach was replaced by the creation of economic models. From this point on, the assumption of rationality became the primary impetus for the development of key theories of financial economics, such as the theory of rational expectations, the theory of rational bubbles, and the efficient markets hypothesis. However, these models and theories inspired by economic research usually have limited applicability beyond academic settings (Poitras, 2000).

The subsequent incorporation of financial economics into the scientific field was possible thanks to the synthesis of several aspects. It was necessary to establish a link between empirical and mathematical results in finance on the

EKONOMICKÉ ROZHĽADY – ECONOMIC REVIEW, 2024, 54(1), 1 ─ 19
https://doi.org/10.53465/ER.2644-7185.2025.1.1-19

one side and economic equilibrium on the other. Among the aspects that made this synthesis possible were the progressive development of three analytical components: 1) financial econometrics, 2) modern probability theory, and 3) economic equilibrium theory. Simultaneously, the efficient market hypothesis, the capital asset pricing model (CAPM), and the Modigliani-Miller theorem, which build on Markowitz's efficient portfolio theory, played a crucial role in this integration, significantly contributing to the formation of financial economics as a new scientific discipline (Jovanic, 2008).

The aforementioned neoclassical economics focused mainly on the creation of economic models. Given the definition of a model as a simplified representation of a phenomenon, it is evident that in a scientific field categorized as a humanities discipline, the simplification of reality will not be completely effective. The issue lies in the unpredictability of the behaviour of economic entities. Humans are not "homo economicus", i.e. their behaviour is not based on rational expectations. Likewise, the majority of the assumptions of the proposed models are not met in practice, which is why contemporary economics has also begun to focus on psychological and social aspects. Based on that, an alternative school of thought to neoclassical economics - behavioural economics emerged, with the theories of Simon's "bounded rationality", Kahneman's prospect theory and the well-known groundbreaking research of La Porta (1997) as its basic milestones.

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EKONOMICKÉ ROZHĽADY – ECONOMIC REVIEW, 2024, 54(1), 1 ─ 19
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