Chapter 4
International Capital Markets and the Global Real Economy

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Abstract This text focuses on two aspects of the relations between the financial sector and the global real economy. First, it discusses the impact of quantitative easing programs (QE) on the situation on global capital markets. The efficiency of such programs as tools to stimulate economic growth is analyzed and compared across different countries. The author puts forward a hypothesis that the efficiency of QE depends on the capital market model in a given country and the different channels of transferring capital between the financial sector and the real economy. The second aspect of the relations between capital markets and the economy discussed in this article is the problem of market efficiency. The thesis advanced here is that capital market inefficiency not only leads to wrong asset pricing and wealth transfer between investors, but also contributes to the wrong allocation of resources and underinvestment or overinvestment in given real sectors, bringing about significant losses for the entire economy.

Keywords Quantitative easing (QE) · Capital market models · Capital market efficiency · Asset pricing

4.1 Introduction

There are different opinions in the literature about the relationship between financial markets and the real economy. The former are considered as both ancillary and superior to the real sphere. Some researchers also admit that there are mutual relations between the two. Moreover, it is often mentioned that the mutual influence of both spheres is changing and, specifically, that the financial sector tends to become more and more autonomous of the real economy.

This text focuses on two aspects of the relations between the real economy and the financial sector. First, it shows the impact of quantitative easing programs on

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the situation on global capital markets and analyzes the efficiency of such programs as tools to stimulate economic growth in different countries. The author claims that quantitative easing programs implemented by central banks by means of asset purchasing contributed to a significant drop in bond profitability and a spectacular boom on global stock exchanges over the last decade. However, how efficient such programs are in achieving economic objectives differs across countries, which may be related, among others, to the differences in financial market models and the different channels of transferring capital between the financial sector and the real economy.

The other aspect of the relations between capital markets and the economy discussed in this article is the problem of market efficiency. The thesis advanced here is that inefficiency of financial markets not only leads to wrong asset pricing and wealth transfer between investors, but also contributes to the wrong allocation of resources as well as underinvestment or overinvestment in individual sectors, bringing about significant losses for the entire economy. The debate over the importance of capital market efficiency broke out with a particular force in the context of the 2008 turmoil and the ensuing problems in the real sphere of the global economy.

The structure of this article reflects its planned scope and advanced theses. The text is divided into two basic parts. The first comprises three sections discussing, first, the separate nature of the financial sector and the real economy, second, the impact of financial sector support schemes and quantitative easing programs on the market situation as well as the consequences of these programs for economic growth, and finally, the differences in the way quantitative easing programs impact the economy depending on the capital market model prevailing in a given country. These reflections expand on the first of the advanced theses.

The other part contains two sections that focus on the different aspects of market efficiency and the relationship between the efficiency of capital markets and of the economy. The main conclusion of this part is that capital market inefficiency leads to a waste of resources in the real sphere. This confirms the second thesis.

The text ends with a conclusion that summarizes all its main findings and identifies the importance of the reflections for potential further studies as well as political and economic practice.

4.2 Separate Nature of the Financial and the Real Spheres of the Economy

It is commonly acknowledged that the economy operates in two fundamental dimensions. The first of these is the real sphere which encompasses everything that relates to material and physical processes of goods production or service provision. The other dimension is the financial (monetary) sphere. Initially, its role was to assist the real economy and was supposed to be limited primarily to financial matters and settlements: money is used to enter into contracts between good producers and their customers, entrepreneurs need sources of financing, households need consumer loans

or mortgages, exporters and importers have to exchange currencies, and many entities must make savings. While the real economy produces physical goods or provides services, the only result generated by the financial sphere is cash flows.

The traditional view is that the source of wealth for societies is the real sphere as it is there that goods are produced and services provided as the genuinely new value. Inventing more and more sophisticated instruments as well as repacking and reselling financial assets only create the appearance of wealth and can at most enrich individual financial market players at the expense of others. The financial sphere is not the place where new value is created in the economy. The only outcome of financial transfers is to reallocate the value created in the real sphere. These fundamental truths are often forgotten by the financial markets.

Over at least two last decades, there have been important changes in the mutual relations between the real and the financial (monetary) spheres. The financial sphere stopped playing a role that was only ancillary to the real economy, becoming more and more independent and detached from it. Traditional transactions involving money and goods were dominated by money–money transactions. Not only did the value of trade in financial instruments skyrocket, but there were also new categories of financial assets that were being created on an unprecedented scale. These became more and more complicated and disconnected from the original sources of cash flow creation so that it was increasingly difficult to identify the true risk factors that determined their value. All these issues came dramatically to the fore during the financial crisis of 2008, a painful lesson of how transient and illusory the value of created financial instruments can get.

For the first time in history, the 2008 turbulences in financial markets were caused directly by the financial factors. Previous financial crises have always taken place in the wake of different shocks that originated in the real economy. This time, it was the monetary–financial sphere that experienced problems first, the entire global economy suffering the consequences as a result.

The chaos in the financial sphere forced state governments and watchdogs of international economic order to take action. Contrary to what some populist critics claim, the aid provided to financial institutions was not motivated by any particular preferences or strong lobbying from financial actors. It was primarily driven by concerns that, once it becomes impossible to use transfers uninterruptedly and capital is no longer available, the real economy will go into a long-term and deep tailspin.

4.3 Support for the Financial Sector and Quantitative Easing Programs

The cost of keeping the global financial system stable through a recapitalization of financial institutions and offering state guarantees proved to be huge—the International Monetary Fund estimated that, at the turn of 2009, such costs in the G20 countries amounted to the equivalent of 5.3% of their GDP figures from 2008. This

average is made up of over 6% of the GDP in the USA and about 20% of the GDP in the UK. State expenditure in Ireland intended for bank recapitalization corresponded to the G20 average, but the Irish government also provided guarantees to banks amounting to 257% of the Irish GDP [14].

In addition to the direct recapitalization of financial institutions in danger of bankruptcy, actions were taken at an almost global scale to increase the supply of money. Having brought interest rates down to unusually low levels, central banks (Federal Reserve System in the USA, Bank of England, Bank of Japan and European Central Bank) launched policies of quantitative easing on an unprecedented scale by purchasing assets on financial markets. Over the three phases of the quantitative easing program implemented in the years 2009–2014, the Fed pumped over $3 trillion into the American financial market. This gigantic operation was accompanied by a campaign of purchasing risky assets: the Fed purchased not only governmental securities, but also cooperate stocks and bonds, and even huge amounts of the notorious subprime bonds, helping commercial banks to get rid of assets that could compromise their financial stability. Undoubtedly, the Fed's actions did much to alleviate the consequences of the crisis for the American economy and helped it to recover relatively quickly.

The European Central Bank (ECB) started purchasing assets from commercial banks only in March 2015, which is at the moment when the Fed was already at the end of the process of decelerating its own quantitative easing program. At the beginning, the ECB purchased assets worth €60 bn per month, and then the figure was increased temporarily to €80 bn. From 2018, however, the program was reduced by half to €30 bn per month and it was announced that it will continue at least to September 2018. There are many reasons to believe that the efficiency of quantitative easing in stimulating inflation and economic growth in Europe is much lower than in the case of the programs implemented in the USA by the Fed and that the European process of transmission from the financial sector to the real economy is much more complex and resistant. With the exception of the German economy, which does spectacularly well, practically all the other economies in the eurozone are still struggling to get back on the path to sustainable growth and ward off the spectra of stagflation.

The Bank of Japan (BoJ) was the first to apply quantitative easing. BoJ maintained short-term interest rates close to zero since 1999. The country was mired in a crisis caused by accumulated debts of large corporations, lack of investment, and deflation. Unable to decrease interest rates any further, BoJ started handing out cash to commercial banks as early as March 2001, promoting loans and hoping that the economy will recover. This was done by purchasing treasury bonds and stocks. In 2010, the Bank of Japan announced that it will consider another asset purchase program. It was an attempt to decrease the value of the yen to the dollar in order to stimulate the domestic economy by making Japanese exports cheaper. In 2013, the central bank increased the asset purchasing program to JPY70 trillion annually with the aim of bringing inflation to 2%. This policy was named Abenomics. In 2014, BoJ announced that the program will be expanded, purchasing bonds worth JPY80 bn annually. Despite these efforts, the situation has not improved significantly so far, even though asset purchasing in Japan has grown to monstrous proportions. It is

enough to say that, as a consequence of the ongoing purchase of assets (including stocks), the Bank of Japan has become the largest shareholder in Nikkei 225.

The impact of the policy of quantitative easing on the real economy is difficult to assess clearly at this stage as we do not know how the global economy would look like had the financial sector not been pumped with unimaginable funds. There are a lot of signals that quantitative easing proved to be more effective in boosting the real economy in the Anglo-Saxon economies (USA and the UK) compared to the economies of the eurozone (except for Germany) or in Japan.

As for capital markets, the policies of quantitative easing resulted in a huge supply of capital. Besides provoking a drop in bond yields (in the case of both governmental bonds—as a result of enabling cheaper deficit financing—and corporate bonds—by facilitating investment), but it also caused a long-term and spectacular boom on stock markets, which took stock market indexes to levels that much exceeded the values from before the crisis of 2008.

4.4 Capital Market Models and Channels for Capital Transfers Between the Financial Sector and the Real Economy

There are two opposed institutional models of capital markets: Anglo-Saxon (also referred to as Anglo-American) and European-Japanese (sometimes called the German-Japanese or continental model). The Anglo-Saxon model prioritizes capital markets and institutional investors. It is dominated by direct financing carried out through securities issue. The main functions of commercial banks in this model have to do with settlements, payments, and, possibly, short-term financing. On the other hand, the basic channel of supplying the capital to companies is the capital market where companies issue stocks, bonds, or other financial instruments. Stock exchanges play a key role in the pricing and allocation of capital. Also, important are institutional investors, i.e., investment funds (including pension funds), insurance companies, and investment banks. The Anglo-Saxon model is characterized by advanced capital markets, high liquidity (i.e., easy trading in large packages of securities), active market for corporate control (understood as a large volume of merger and acquisition transactions), and a great share of public capital market in the total economy (measured as a ratio of overall market capitalization to GDP). Suppliers of capital are often anonymous, the relations between companies and suppliers of capital are frequently short-term and opportunistic, and investors allocate their funds being motivated primarily by the risk-return relationship.

In the European-Japanese model, capital allocation in the economy is done mainly through the banking sector and, to a lesser extent, through the capital market. The financial system is dominated by universal banks responding to short- and long-term needs of customers, whether depositors or borrowers. A lot depends on capital links between banks and companies reflected by a large share of banks in the financing

of companies. Here, capital suppliers are not anonymous, and relationships between entrepreneurs are often long-term and multilayered. In the European-Japanese model, it is not the capital market but banks that control companies (e.g., through special provisions in loan contracts—the so-called covenants). In this model, strong universal banks also play an important role in public-sector financing as they are one of the chief buyers of government bonds issued to finance budget deficits. It is also worth mentioning the links between the banking sector and politics.

Globalization of financial markets and regulatory changes (such as making it legally possible for universal banks to operate in the United States) should contribute, at least theoretically, to the convergence of the two capital market models mentioned above. Even so, historical differences between the Anglo-Saxon and the European-Japanese models seem to be persistent and have far-reaching consequences. The fact that the two models have different channels of transferring capital from the financial sector to the real economy may explain the differences in the efficiency of the quantitative easing programs launched by the major global central banks.

In the Anglo-Saxon model, the key channel for the allocation of capital is the capital market, and in particular the public market. The growth of capital supply caused by asset purchases as part of quantitative easing programs increases asset prices, lowering the cost of capital for companies. Noticing positive developments on the capital market, companies issue stocks or corporate bonds, placing them on the market at comparatively high prices to raise relatively cheap capital. Among other things, the lower cost of corporate financing means that more investment projects become profitable [low-weighted average capital costs (WACC) increase the net present value (NPV)]. This is how the economy stimulates investment and, consequently, consumption to boost economic growth.

In the European-Japanese model, the main channel for distributing extra capital from quantitative easing is the banking sector. Theoretically, a higher supply of funds in banks should bring down loan prices and foster lending. On the other hand, access to cheap credit should generate more investment from companies, as well as higher private consumption figures. It turns out, however, that the banking channel of transferring capital from the financial sector to the real economy is less efficient in this case than a well-developed and active capital market. Despite access to cheap financing sources, banks are risk averse and do not increase lending sufficiently. Instead of engaging in risky investment projects, banks used the funds from the asset purchase program primarily to rebuild their own capital base weakened as it was by the crisis. Furthermore, banks often prefer to invest funds in new issues of government bonds as the market is never short of them given the fact that most governments experience never-ending problems with budget deficits. As a result, in the European-Japanese model, only some funds from the quantitative easing program reach companies. This is done either through lending, which has been partially increased after all or by means of the capital market which does account for some of the transfers into the real economy in the European-Japanese model in spite of the domination of the banking sector.

4.5 Efficiency of Capital Markets and Efficiency of the Real Economy

The concept of market efficiency is not clear-cut, although its individual meanings are more or less related. Nonetheless, even specific interpretations of the term contain detailed definitions that may be so different as to produce serious theoretical and practical consequences. On the most general level, we may differentiate between operational efficiency, informational efficiency, and allocational efficiency of capital markets.

4.5.1 Operational Efficiency

Operationally speaking, a market is efficient when it ensures attractive conditions for making transactions. Among other factors, this concerns primarily asset liquidity, price continuity, no investor discrimination, rational transaction costs, and access to information. In other words, the operational efficiency of the market is technical and should be understood as a situation where investors enjoy equal rights and are able to make transactions cheaply and quickly. The closer the market gets to the idealistic conditions of the perfect market, the higher the level of its operational efficiency. Overestimated or excessively diverse transaction costs, unequal access to information, investment restrictions for some categories of investors, segmentation, poor liquidity, or other market inefficiencies may lead to an imbalance in the relationship between return rates and investment risk. This means that high operational efficiency is a necessary (but inefficient) condition to obtain market efficiency in the areas of information and allocation.

4.5.2 Informational Efficiency

Informational efficiency is understood as the ability of the market to reflect information correctly in the quotes of financial instruments. When people talk about capital market efficiency in general, what they mean most often is precisely informational efficiency. It was difficult to arrive at a formal and precise definition of the concept right from the outset and, with the passage of time, its understanding became more and more intuitive or common sense which led to misunderstandings and interpretations that were frequently wrong.

Arguably, the most well-known definition of informational efficiency was offered by Fama [7]: “A market in which prices always “fully reflect” available information is called “efficient.”’ (p. 383). However, Fama [7] himself noticed that this definition is too general and, as such, cannot be verified empirically. Hence, in the same article, he put forward the concepts of potentially testable predictions i.e., the so-called fair

game, submartingale and random walk models. The models are different in several aspects—for example, the martingale and submartingale models are less restrictive compared to the random walk model—but they all claim that neither future no current information can be used to predict the future situation on the market in the way that would guarantee extraordinary return rates, i.e., rates higher than justified for a given level of risk (see Samuelson [21], Mandelbrot [17, 18]).

In response to that, LeRoy [16] made the objection that the formal account based on the fair game model Fama advanced to enable verification of the efficient market hypothesis is, in fact, a tautology. Moreover, one could not equate the martingale, submartingale, and random walk models with the efficient market hypothesis.

Answering LeRoy's objection, Fama [8] suggested a new formal account of informational efficiency whereby "in an efficient market the true expected return on any security is equal to its equilibrium expected value, which is, of course, also the market's assessment of its expected value" (p. 144). Put differently, the balance price set by an efficient market is such that the expected market return rate on investment reflects the "real" return rate for a given level of risk. The account implies that long-term return rates should always offer an adequate reward for the amount of risk involved in an investment.

This, however, presents us with the fundamental problem of the so-called joint hypothesis. The problem is that we are actually testing two hypotheses: one concerns the validity of the risk-reward pricing model itself; the other concerns informational efficiency of the market. If it turns out that the empirical results are much different from those that were predicted on the basis of the tested formula, we cannot say whether there was an error in the theoretical structure of the model or whether the market is inefficient. This was the line of argument adopted by the proponents of the informational efficiency hypothesis in response, for example, to the observed empirical anomalies related to the so-called company size effect [3] or the possibility to predict return rates based on the price/book value index [10]. For instance, the literature does not generally challenge the empirical results of parameter estimates in the Fama and French [9, 11] three-factor model. The debate focuses only on the interpretations of the observed bonuses for company size and bonuses for high price/book value ratios. Representatives of behavioral finance provide convincing arguments to demonstrate psychological errors and irrational investor behavior. Still, the point of departure for the proponents of market efficiency is that, if a given category of companies experiences higher return rates, it must be because the rates are a rational reward for the extra risk. Consequently, instead of rejecting the market efficiency hypothesis, we should change the model of risk estimation. Thus, in this account, the market efficiency hypothesis becomes unfalsifiable.

Depending on the type of information that is to be reflected by asset prices, informational efficiency is usually divided into three forms: weak form (current prices reflect all important information contained in historical instrument quotes), semi-strong (current prices reflect all publicly available information), and strong form (current prices reflect all important information, including private and confidential) [3]. It is easy to notice that progressively stronger forms of efficiency contain weaker forms. For example, if market efficiency is semi-strong, the market should

also display weak-form efficiency. In other words, the entire set of publicly available information contains a subset comprised of potential signals coming from the series of historical quotes.

Jensen [15] suggested the following definition of informational efficiency that is valid for any information set: "A market is efficient with respect to information set θt if it is impossible to make economic profits by trading on the basis of information set θt. 'By economic profits', we mean the risk adjusted returns net of all costs." (p. 95). The problem of the costs of obtaining and using information was also raised by Grossman and Stiglitz [12] and Cornell and Roll [4] who demonstrated that, when information is not entirely free, the market cannot be perfectly efficient in the strict sense and may at most move toward the conditions of quasi-efficiency under which marginal costs of obtaining new information is equal to the marginal benefit an investor can earn thanks to this information. In time, informational efficiency started to be equated with an inability to predict future price changes and obtain long-term net return rates (cost adjusted) that would be higher than suggested by the level of risk.

Even though Fama made the reservation that, in the world of uncertainty, intrinsic values cannot be known precisely, he also argued that, at any time, prices of securities take account of the effects of information about both the events that have already taken place, as well as those that the market expects to take place in the future based on the current situation. In other words, in an efficient market, "actual prices at every point in time represent very good estimates of intrinsic values" (Fama [6], p. 54). In the literature that has been written over several decades, whether popular, textbook, or scientific, there are many examples where the fundamental value of an instrument is directly equated with its market pricing (see the critical review presented by Guerrien and Gun [13].

In fact, Shiller et al. [22] already warned against making the error of linking the unpredictability of price changes with the conclusion that they offer a good approximation of intrinsic values, calling this one of the biggest mistakes in the history of economic thought. It is actually a classical fallacy of inverse induction in logical reasoning. Granted, if market quotes are to reflect all available information, prices should change only in response to new information, which is unpredictable by definition, which means that price changes themselves should also be random. Nonetheless, the unpredictability of price changes does not prove that the market is able to price assets correctly. Prices may change at random and still be incorrect. After all, it is also difficult to predict human action and, by the same token, behaviorally motivated errors. Among others, this is illustrated by the General Behavioral Asset Pricing Model (GBM), which illustrates the scale of incorrect pricing resulting from irrational, psychologically motivated investor behavior, is a random variable that generates stochastic price changes and leads to unpredictable return rates as a result [25].

Referring to the fair game hypothesis that he himself suggested, [21] warned against its misunderstanding or overinterpretation: "It does not prove that actual competitive markets work well. It does not say that speculation is a good thing or that randomness of price changes would be a good thing. It does not prove that

anyone who makes money in speculation is ipso facto deserving of the gain or even that he has accomplished something good for society or for anyone but himself" (p. 48). In spite of the author's warning, the fair game hypothesis was used by Fama [7] rather uncritically to construct theoretical arguments in support of the efficiency hypothesis.

Discussing the events of the last financial crisis, DeLong [5] wrote that many wrong economic decisions have been made over the last decades as a result of the failure to differentiate between two fundamental implications of market efficiency, i.e., "there is no free lunch" (related to the concept of fair game and the unpredictability of return rates) and "market price is always right" (which is supposed to be related to the market's ability to reflect information in prices quickly and correctly). While the former element has consequences primarily in the area of investment strategies and the results obtained by individual investors, the ability to price assets correctly has a direct impact on the allocational efficiency of the market and can potentially bring about more serious repercussions for the general economy.

4.5.3 Allocational Efficiency

In the microeconomic sense, one may define the allocational efficiency of the market as the ability to allocate capital among different available investment options in a way that offers the investor the highest expected return rate at a particular level of risk or makes him accept the lowest risk given the expected return rate. In this account, allocational efficiency is equivalent to efficiency as understood by Markowitz [19].

Macroeconomically speaking, allocational efficiency of capital markets is understood as the ability to allocate capital to such individual sectors of the real economy where it will be used in the most efficient way. Hence, allocational efficiency of capital markets is an element of the broadly understood economic efficiency where all assets are allocated optimally in the sense of Pareto, i.e., in such a way that there is no alternative method of allocation that could make any player earn profit without worsening the situation of another player.

The first fundamental tenet of welfare economics says that perfect competition always leads to the Pareto optimum. This is because, under conditions of perfect competition, the market mechanism forces allocation of resources where the marginal rates of transformation are equal for all resources, whereas the structure of consumption ensures the equal marginal rate of substitution for all goods. Given that the competition on capital markets is very intense, it was claimed that such markets ensure efficient allocation of the basic resource traded there, i.e., capital, contributing in this way to the efficiency of the entire economy. Unfortunately, the restrictive requirements on which this first fundamental hypothesis of welfare economics was based were all too often forgotten. Besides perfect market conditions, another requirement is the rationality of decision-makers who are able to process all available information correctly and it is on this basis that they make the right choices focused on maximizing individual usefulness of each of them (the *homo oeconomicus* concept).

4.6 Efficiency of Capital Markets and Efficiency of the Economy

Stiglitz [24] provided a number of arguments of both formal and practical importance to demonstrate that informational efficiency of capital markets is neither necessary nor sufficient as a condition to achieve the allocational efficiency of the economy in the sense of Pareto. Among other things, he identified such inefficiencies of the economy as the costs of obtaining information, agency costs, market incompleteness, or divergent motives of suppliers and receivers of capital. For example, wherever information is obtained at a cost, the prices on the market will not reflect "all available information" but only such information that was obtained and used at a cost that does not exceed the economic benefits it may bring. Therefore, formally speaking, the market will not display informational efficiency as it will not take account of the information for which the cost of obtaining and application is too high (see Grossman and Stiglitz [12]; Cornell and Roll [4]. Still, this does not preclude allocational efficiency in the sense of Pareto, provided that the potential methods of allocating resources factor in the costs of obtaining information. The same goes the other way round—even supposing that capital markets are characterized by perfect informational efficiency and are able to price each company adequately, it does not automatically mean that the entire economy is allocationally efficient in the sense of Pareto. Even if the market pricing of a company is correct, the obtained value is not necessarily the maximal possible value resulting from the optimal use of resources by this company. In fact, there are many reasons for which management boards, whether consciously or not, make decisions that are not optimal and do not try to maximize the market value of the company using the available resources. Thus, inefficient management on the microscale may lead to the cumulative effect of wasting and non-optimal use of resources in the economy as a whole.

In spite of the above reservations, the relationship between informational efficiency and allocational efficiency of the market is commonly considered to be quite obvious. The inability of the market to reflect the available information correctly in asset prices leads, on the one hand, to an imbalance in the relations between return rates and risk (potential surplus return rates and the lack of efficiency in the sense of Markowitz), and on the other, to a situation where market equilibrium prices cannot be used as reliable indicators for the assessment of the true value of specific assets (there are no grounds for a correct allocation of resources).

With no informational efficiency, allocational efficiency becomes defective on the micro- and macrolevels. Capital markets characterized by informational inefficiency offer no guarantee that using a well-diversified investment portfolio as part of the so-called passive strategy will be an optimal kind of investor behavior in the long term. It cannot be excluded that a combination of investments that are potentially inefficient in the sense of Markowitz will provide investors with higher return rates than should be expected for a given level of systemic risk. If we reject the hypothesis about the informational efficiency of the market, it makes sense to allocate capital actively by looking for specific rules of investment or analytical tools that are based

on, for example, repeatable patterns of behavior displayed by market players. We should always remember, however, that it is not easy to predict return rates, even on inefficient markets, as it is difficult to predict human behavior, including the one triggering market anomalies [26].

Incorrect asset pricing also means that the costs of capital are priced incorrectly. Changing investor fads or moods may lead to periodical overpricing of stocks from one sector or underpricing of companies from another. This disturbs the optimal allocation of capital among particular sectors of the real economy. Due to mispricing, part of resources may be used in a non-optimal way.

Let us try to trace the mechanisms whereby mispricing of financial instruments may lead to losses in the general economy. First, let us imagine that some companies or even the entire sectors are incorrectly priced on the market for a long time because of growing investor irrationality. If an investment fad, excessive expectations related to new technologies, pure speculation, or other factors result in a situation where stocks of a specific group of companies are overpriced (e.g., the dotcom bubble at the turn of the twentieth century), the cost of equity is automatically underpriced for these entities. Being an incentive for a given type of issuers to step up their activities, this generates the supply of new stocks purchased by the capital flowing into the sector. With the low cost of equity, the weighted average cost of capital also drops, which increases the net present value (NPV) of potential new projects. In this situation, the management boards of such companies will be inclined to engage in more expansive investment policy. Unfortunately, at least some of their projects should not have been implemented if the market cost of capital had been priced correctly. The capital they engage could be used alternatively in more efficient way in other companies or sectors of the economy that offer a better relation between the expected return rate and the actual, correctly priced, risk.

The same is true for the situation where incorrect asset pricing affects not only individual companies or sectors but the entire capital market. At times of irrational booms, the overestimation of most securities is accompanied by underestimated risk. Financing that is too cheap and incorrectly priced in relation to risk induces management boards to launch investment initiatives that should not be implemented under normal circumstances. When the risk materializes later according to the true, rather than overly optimistic, distribution of probability, part of the launched projects turn into real losses that, accumulated, can spread onto the general economy.

On the other hand, when the market is bearish and the cost of equity is too high, attractive investment projects are in danger of being put off for later. Available capital resources will not be properly used, and the economy will develop slower than it could have if assets on the capital market had been priced correctly.

Of course, the problems with incorrect estimation of the cost of capital do not only apply to the stock market, but may also have equally serious consequences for the debt market. Too low a cost of foreign capital impacts real investment policy in two ways. First, it boosts the appetite for investment due to the lower average cost of financing projects. Second, it increases the tendency to leverage, i.e., finance projects with foreign capital to a greater extent, which burdens investment activities with extra risk related to financial leverage. The terrible consequences of excessive

leverage could be observed, for example, during the last period of turbulence on global financial markets caused by the US subprime mortgage crash.

Finally, capital market inefficiency also has a direct impact on the economy by influencing the mood among small investors who are not only suppliers of capital but also consumers. At times of "irrational exuberance" (a term popularized by Shiller [23]), when company pricing is on the rise and investment portfolios of small players have more and more value, the propensity to consume is often also on the rise, driving specific sectors of the economy. For example, the luxury goods market in California experienced a significant upturn during the time of the dotcom boom. The rental market for luxury summerhouses in The Hamptons on Long Island—the favorite destination of Wall Street bankers—is also rather well correlated with the situation on the stock exchange and the amount of paid out bonuses.

In conclusion, it should be observed that, even if a capital market displaying informational efficiency made it possible to allocate capital optimally in the sense of Pareto, this allocation would not necessarily be desirable in the social sense. Capital that is priced adequately in the sense of the relation of return rate to risk may be supplied to sectors that are socially harmful (such as armaments, gambling, or the production of substances with an adverse impact on health), which would not really contribute to general prosperity.

4.7 Summary

The relationship between financial markets and the real economy becomes most evident during times of destabilization and extraordinary interventions. This calls for a deeper reflection on the actual links between the two structures.

The present article focuses on two important aspects of the relations between the real economy and the financial sector. First, it analyzes the impact of quantitative easing programs on the situation of global capital markets and the efficiency of such programs as tools to stimulate economic growth in different countries. On the one hand, quantitative easing programs implemented by central banks through asset purchasing contributed to a significant drop in bond profitability and a spectacular boom on global stock exchanges over the last decade. On the other, the efficiency of such programs in achieving economic objectives differs across countries. It may be assumed that this is due, at lest partially, to the differences between the Anglo-Saxon and the European-Japanese models of capital markets. The reason is that these models use different channels for capital transfers between the financial sector and the real economy. The channel that is based on capital markets seems to be more efficient in transferring funds to the economy than the one based on the banking sector.

The second part of the article focuses on the problem of capital market efficiency versus the efficiency of the economy. The lack of efficiency on capital markets has serious consequences not only on the microlevel (for investors), but also the macrolevel of the real economy. On the microscale, it leads to a situation where wealth

is transferred from the investors who make mistakes in asset pricing to the investors who take advantage of them. Additionally, incorrect asset pricing also results in incorrect allocation of resources as well as underinvestment or overinvestment in individual sectors, which generate substantial losses in the entire economy.

The reflections presented in this article may have a considerable impact on future macroeconomic policies and the issue of supervising financial markets. They may provide inspiration for further studies in this field, especially those involving empirical research.

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1. The text was written as part of Statutory Research carried out in the Collegium of World Economy at the Warsaw School of Economics, Poland
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