Projekt finansowany w ramach umowy 857/P–DUN/2016 ze środków Ministra Nauki i Szkolnictwa Wyższego przeznaczonych na działalność upowszechniającą naukę.

Nazwa zadania:
Stworzenie anglojęzycznej wersji publikacji

Ministerstwo Nauki
i Szkolnictwa Wyższego

Zeszyty Naukowe
Wyższej Szkoły Bankowej w Poznaniu
2017, t. 72, nr 1

Robert Sobków

LMB Consulting Poznań
e-mail: r.sobkow@interia.pl
phone: +48 509 460 036

Fisher Effect as an Example of Methodological Essentialism in Light of the Development of Economic Thought

Abstract. *Simplifying assumptions create the basis for theoretical framework and Irving Fisher's theory on changes in nominal interest rates in an inflationary environment also follows suit. These simplifications should be described by their authors within the scope of a given theory. However, Fisher sidestepped this issue in his research work. Thus, the aim of this article was to detect the simplifying assumptions of the Fisher effect as well as to indicate the extent of their impact on the theory described. Furthermore, the twentieth century's development of economic thought and changes in global economy established the basis for evaluating the adequacy of the aforementioned simplifications. Hence, this analysis supports the view of the necessity to view the Fisher effect as a historical generalization.*

Keywords: *Fisher effect, methodological essentialism*

Introduction

Irving Fisher in his monograph *Appreciation and Interest* proposed, for the first time, a hypothesis about the relationship between expected inflation in the economy and nominal interest rates [Fisher 1896]. According to this theory the interest rates in the economy change as change the expected inflation rates. It is the so-called point-for-point effect, also known as the Fisher effect, which can be demonstrated by a simplified equation:

$$In = Ir + F \tag{1}$$

where:

In – nominal interest rate,

Ir – real interest rate,

F – expected inflation rate in the economy.

Fisher maintained his view in subsequent works: *The Rate of Interest* [Fisher 1907] and *The Theory of Interest* [Fisher 1930]. The conclusion from Fisher's theory is that there is a constant real inflation rate occurring in the economy. The changes in nominal interest rates are supposed to be only the effect of changes in the expected inflation rate.

Since then there have been multiple attempts to falsify the Fisher effect. They have given divergent effects. Some empirical studies proved the hypothesis true [e.g. Gibson 1970; Carneiro, Divino & Rocha 2002], some others, however, negated the existence of that phenomenon [e.g. Rose 1988; Pelaez 1995; Miyagawa & Morita 2003]. Eventually there appeared research works that indicated the temporary occurrence of the Fisher effect in the economy [e.g. Yohe & Karnosky 1969; Mishkin 1992; Jareño & Tolentino 2013].

Up to now researchers dealing with this subject matter have literally interpreted Fisher's ideas trying to find the exact reflection of the Fisher effect in economic reality. The author of this paper looks at the Fisher effect as an example of a theory based on methodological essentialism. In this kind of theory the researched phenomenon is demonstrated in an idealizational form with the assumption that there is only one main causal factor.

Methodological essentialism does not negate other factors affecting the researched phenomenon. It accepts their gradation and tries to reveal the most significant ones ignoring the ones that are less essential or simply random [Nowak & Nowak 2000]. In pursuit of finding the "essence" of the problem on the basis of methodological essentialism, a scientific proposition may take the form that abstracts away from economic reality. As a result the study falsifying "the essentialism hypothesis" in pursuit of finding the reflection of reality in a proposition abstracting away from it may come ineffective. The subject literature has already indicated that Fisher's elaborations resulting in the equation, which was later called the Fisher effect, were based on certain idealizational assumptions. This issue, however, was treated in a non-exhaustive, or even, random manner [e.g. Cooray 2003].

This paper demonstrates methodological grounds for the Fisher effect treated as an essentialism proposition. The author performed a synthetic analysis of specific simplifying assumptions of the Fisher effect, at the same time relating to their adequacy in the contemporary world. In the final part of the paper the author pointed to methodological errors connected with the application of the falsification method that, like the Fisher effect, is based on idealistic assumptions.

1. Significance and aim of the simplifying assumptions the Fisher effect

Economizing at macroeconomic level is a complex process that involves billions of entities performing billions of economic operations every day. Hence we are doomed to simplifications while data collecting as well as while presenting the research results. The acquisition of knowledge about the mechanisms governing economic processes and the most significant relationships involves abstracting away from less essential issues.

By formulating a specific theoretical model we create a hypothetical construct of the mind which is a simplified image encompassing its most essential features. According to the views of the Poznań school of methodological essentialism "Scientific theories are not created so that they could become the exact images of reality, they are created so that they, being specific idealized deformations of phenomena, could disclose the essence of particular areas of reality" [Brzeziński, Klawiter & Łastowski 2009: 29]. Hence idealization resulting in the distortion of the examined phenomenon is justified or even desired [Lutz 2009].

The first thing one should do in the essentialism approach to a scientific theory is to formulate a simple proposition. In case of the Fisher effect it is the observation that "the nominal interest rates change as the expected inflation rates change". Without, for the time being, analyzing by means of research methods the scale of the relationship of these changes, at the next idealization stage one introduces a number of simplifying assumptions that boil down to the elimination of factors distorting the examined relationship. The factors should be recognized as:

– less essential,

– something whose impact on the examined phenomenon is hard to evaluate,

– insufficient now, but likely to occur in subsequent empirical studies (e.g. falsification of the theory being created),

– being in existence now, but likely not to occur in the future (e.g. in an economy under a different tax regime).

In the aftermath of subsequent introduction stages of idealizational assumptions the theory is elevated to higher levels of abstraction. On the one hand, it detaches the simple proposition from the realities of economic life, but on the other hand, it leaves the very "essence" of the research problem. After all the idealizational assumptions have reached the highest level of abstraction, the research problem takes the form of an "idealizational proposition". The Fisher effect can be seen just as an idealizational proposition that states that "the nominal interest rate increases exactly by the expected inflation rate". This, in turn, can be transposed into the following, "the cost of money in an inflationary environment rises by the expected price growth rate in the economy." Despite the fact that this approach

may seem trivial [Sobków 2015], it is possible according to Fisher's approach [Fisher 1896; 1907]. It is hard to prove it unequivocally because Fisher while presenting his view did not demonstrate the simplifying assumptions in detail. One may find a few reasons for him sidestepping this issue:

– fact that the theory does not have any simplifying assumptions,

– assumption that the relationship concerns the then American economy, hence the theory is a historic generalization incongruent with the conditions of some other economy operating, e.g. under a different legal or tax regime,

– recognition by Fisher of his theory being incomplete and leaving further analysis of the simplifying assumptions to other researchers.

Fisher, sometimes called „the greatest economist that the United States has ever produced" [Schumpeter 1951: 223] notes in his book *The Theory of Interest* that there are discrepancies between empirical observations of relationships and the formula that he himself indicated. He also contends that the congruity of his effect with the empirical observations may be provided for solely on the basis of concrete idealizational assumptions [Fisher 1930: 132]. Even if he was not aware of all the limitations of his effect it does not change the fact that such limitations may exist. The fact that a given researcher does not indicate such limitations does not excuse other researchers from indicating those limitations.

2. Idealizational assumption of the Fisher effect

The analysis of Fisher's publications on the relationship between the real and nominal interest rates in an inflationary environment [Fisher 1896; 1907; 1928; 1930] allows us to indicate five main simplifying assumptions. They are related to the following:

– the functioning of the law of supply and demand,

– investors' rationality,

– efficiency of the capital market,

– no other inflation premiums apart from the inflation rate,

– no income tax both on corporate income and individuals' income from interest.

2.1. The functioning of the law of supply and demand on the financial market

The law of supply and demand is one of the most basic economic principles. It explains the interaction between the supply of a resource and the demand for that resource and the price of a commodity. The law asserts that excess demand over

supply brings about an increase in price, and excess supply over demand causes price to drop.

If we assume that Fisher's hypothesis is true and that in the economy, regardless of the scale of inflation changes, the real interest rate is stable, and if the relationship between the inflation rate and the interest rate did not correspond to the point-for-point relationship, then under such circumstances there would be disequilibrium in the money market. In an noninflationary environment trading parties acknowledge a creditor's remuneration level at a level determined by the real interest rate. According to Fisher this level being stable would apply in an inflationary environment. Inflation would not change anything in terms of the creditor's real remuneration level, and the creditor would benefit from a loan in the same way as in an noninflationary environment. Many economists still hold this view today. The Polish literature is not an exception [e.g. Bajuc, Belka et al. 1996: 46]. This view is justified because if the interest rate did not keep pace with the expected inflation rate there would be a transfer of additional financial benefits from lenders to borrowers. After the loan granting period the lender could have in real terms a lower value of resources than before granting a loan. This situation, if it was to persist over a certain period of time, and at the same time if it was to be predicted (all in all the Fisher effect is based on an ex ante inflation rate), it would cause the borrowers to take more interest in this form of financing their activity. The investors could expect that apart from the benefits related to the efficiency of their businesses they would also gain some additional benefit from the depreciation of their loans. The more they would borrow, the more benefits they would have, which would increase demand for money, and as a result these values could be balanced only if there was a higher price level. According to Fisher the equilibrium would occur only if the postulated point-for-point condition was met. At the same time a certain loss expected by the lenders, or at least a lower economic efficiency of the loans would discourage them from this form of economizing their resources. It would have an impact on a drop in money supply on the market and it would be another factor disrupting the equilibrium.

The view that in an inflationary environment there might be a transfer of additional benefits between the lender and the borrower is well-founded in the economic literature. The conditions under which such transfers of additional benefits could occur were yet narrowed to the situation in which there are discrepancies between the expected and real inflation rates [e.g. Alchian & Kessel 1959]. Fisher held this view and related to it many times in his book *The Money Illusion* [Fisher 1928]. The aforementioned situation involved, however, the conditions under which the real inflation rate would correspond to the expected rate. Even then, and with the Fisher effect not taking place, there would be a transfer of additional benefits between the parties involved. Moreover, while in the second case the transfer of benefits was supposed to result from unpredictable events (the difference be-

tween the expected inflation rate and the real one is unpredictable by nature), in the second case the transfer of benefits could be predicted.

It is easy to find many economies where the law of supply and demand does not apply at all or, at least, is degenerated and the Fisher effect does not have to apply (e.g. in a socialist economy or in countries where there is a substantial amount of state intervention, especially with the central bank actively functioning). From a scientific point of view in such economies it is pointless to study the Fisher effect unless the research aim is to analyze the scale of no law of demand on the monetary market, and with the Fisher effect being a research measurement tool. The more skewed the expected hypotheses would be, the higher impact of state interventionism on the monetary market.

2.2. Investors' rationality

One of the paradigms of microeconomics is rational choice theory. Fisher, in his thinking about rationality in economy, compared rationality of economic laws to rationality in physics and astronomy [Fisher 1907: 107]. Nevertheless he expressed his doubts about real rather than methodological rationality on the monetary market [Fisher 1907: 278]. In his subsequent research works, the capstone of which is *The Money Illusion* [Fisher 1928], Fisher was more convinced to conclude that maintaining the congruity between his theory and empirical studies on the relationship of the nominal and real interest rates in an inflationary environment required a new conceptual apparatus, namely money illusion. Money illusion can be defined as irrational thinking about interest rates under the conditions of price growth. Summers, who elaborated more on that phenomenon, stated that there was no Fisher effect in the USA as early as 1940, and concluded that "money illusion infects financial markets" [Summers 1983: 232].

Rationality of choices made by other market actors cannot also be supported in light of empirical studies and development of economic thought (especially the development of behavior theory) that took place in the 20th century. The works by Kahneman and Tversky [1974] or by Simon [2013] indicated that people do not act rationally, and their decisions are even full of contradictions. Suffice it to say, in surveys the respondents could state that they preferred apples to oranges, oranges to pears, and pears to apples depending in what order they were asked the questions. Inadequate responses of the market are the reflection of their irrationality and psychosocial burdens resulting from the fact that the decisions are conditioned by habits and heuristics such as: making systemic errors in the way of thinking, paying too much attention to past experiences, or drawing conclusions on the basis of single facts or unrepresentative samples. To these factors can be added psychosocial burdens, so much close to the Polish reality originating from the experiences of the previous economic system. In contemporary science there

have even appeared studies indicating the possibility of explaining the variations of market return rates by means of weather factors (temperature, cloudiness) and defined in this way emotional factors (amount of natural light) [Balcerzak 2014].

In light of the above-mentioned research works Fisher's works and his speculations on the relationship of the nominal and real interest rates in an inflationary environment can be viewed as a foundation for still open discourse about investors' rationality of choices. Under these circumstances the Fisher effect may become another criterion for the irrationality of choice made by entities locating their resources. In the situation of the expected inflation rate at x% the deviation of the nominal interest rate against the real one in plus or in minus by more than x% could be a measure for the irrationality of choices of entities operating on the financial market. This issue needs to be further explored.

2.3. Efficiency of the capital market

The hypothesis of the efficiency of the capital market that presumes reliable valuation of assets through market mechanisms is today one of the fundamental and, at the same time, controversial assumptions. According to this concept each new piece of information that appears on the market is immediately incorporated and included in the price of assets, thanks to which they are reliably priced. This hypothesis is exactly in line with Fisher's propositions on which he based his theory of the relationship between the expected inflation rate and the nominal interest rate.

Present-day studies on the nature of capital markets indicate, nevertheless, non-linear character of economic systems. The information flowing into the market is not always incorporated immediately, on the contrary – at first it may be ignored and reveal its impact after getting beyond a certain point of information flow. With the non-linear character of economic system are linked features such as: the effect of long-term memory – a given process stores "memory" of past information without adequately responding to the inflow of new information. There may also appear a feedback effect – past information affects the future whereas new information affects the perception of past observations. It contradicts the thesis that there is a phenomenon of random walk on the financial market. The reality is that prices are subject to trends, store the memory of past observations and are self-correlated. The results of the research conducted by Lee and Tsong [2013] may confirm the aforementioned observations. On the basis of the studies of six OECD countries they demonstrated that the nominal interest rates and the inflation rates are correlated only in a long-term perspective. In the short term and with an earlier inflation rate the changes in the inflation rate do not have a point-for-point impact on the nominal interest rates. The Fisher effect can be observed only when for a certain period of time the inflation rates in the economy were already

high, and the investors after some time incorporate into their awareness and behavior new economic conditions.

2.4. No other inflation premium besides the inflation rate

Another assumption of the Fisher effect is a presumption that the investors in an inflationary environment will not expect any other inflation premiums. The difference between the real and the nominal value of interest rates in an inflationary environment, also called the break-even rate (BER) is limited in Fisher's works only to the inflation rate [Fisher 1896: 9].

Present-day scientists, looking at the issue of inflation premiums from the perspective of hyperinflation that hit many economies in the 20th century, to name Poland and Germany in the 1920s, or a double-digit inflation in the US in the 1970s and 1980s, do not have any doubts today that the elaborations on the inflation premium cannot be limited only to the inflation rate. Hoerdahl states that "break-even rates do not, in general, reflect expected inflation alone. They also include risk premia that compensate investors for inflation risk, as well as differential liquidity risk in the nominal and index-linked bond" [Hoerdahl 2008: 23]. But according to Bekaert and Wang the risk premium for operating in an inflationary environment is "the compensation demanded by investors, for not being perfectly indexed against inflation or, put differently, the insurance premium investors pay governments to shoulder the inflation risk" [Bekaert & Wang 2010: 758]. Given all the aforementioned circumstances, the relationship between the nominal and real interest rates in an inflationary environment should be expressed as follows [Bekaert & Wang, 2010: 779]:

$$In = Ir + F + r \tag{2}$$

where:

r – inflation risk premium,

F + r – break even rate.

In the final part of their speculations they state, "A well-known theory of interest rate determination due to Fisher [1930] holds that the inflation risk premium ought to be zero. If true, there is no expected benefit to the government of issuing inflation protected securities" [Bekaert & Wang 2010: 779]. But according to the view expressed in the title of the book *There's No Such Thing as a Free Lunch* by Milton Friedman, Noble prize winner in economics, there must exist an additional inflation premium.

Fisher in his equation sidesteps not only the issue of the inflation risk premium but also the inflation premium resulting from the scale of changes in expected

inflation. As it comes to Fisher's formula it does not matter if expected inflation is several percent or several hundred percent. What also does not matter is inflation character (constant – variable, increasing – decreasing, low dynamics – high dynamics). Some of the empirical studies may indicate that the degree of the impact of the Fisher effect may depend on the inflation rate [e.g. Phylaktis and Blake 1993]. Present-day economic thought also asserts that the premium expected by the investor for investments in instruments with highly variable rates of return will be higher than investments in more stable instruments. On this assertion is based, among others, portfolio theory. Yet it was developed no sooner than in the 1950s and 1960s, thus many decades after the publication of Fisher's fundamental works.

The fact that Fisher introduced to his elaborations an idealizing assumption (simplification) lying in not including the investment risk premium in an inflationary environment may be one of the essential elements affecting the results of empirical studies that falsify the Fisher effect. In the subject literature there has not been so far any comprehensive elaborations combining both the research on the Fisher effect and the scale of risk premium in an inflationary environment.

2.5. No income tax on corporate income and on individuals' interest income

In order to maintain, in an inflationary environment and under the conditions of corporate income taxation, the real rate of cost of money and at the same time avoid the violation of equilibrium of supply and demand for money, the nominal interest rate would have to increase more than point-for-point. In order to avoid additional transfer of benefits from lenders to borrowers, the increase in the nominal interest rate must include additionally the tax shield generated from interest paid by companies [Darby 1975; Feldstein 1976]. Otherwise thanks to an additional tax shield there would be a transfer of benefits from capital donors in favor of recipients if, in an inflationary environment, interest rose only by the rate indicated by the Fisher effect.

However, when Fisher published his works *Appreciation and Interest* (1896) and *The Rate of Interest* (1907) corporate income taxation did not exist in the US. It was introduced in 1909, although it was full-fledged no sooner than after the 16th amendment to the Constitution in 1913. Moreover, until the US joined the 1917 war the inflation rate was merely 1-2% [IRS 2015]. With a low tax rate and low inflation rate in that period the impact of the tax shield on the nominal interest rate would have been on average only a fraction of a per mille. Thus its influence on the calculations of future interest rates conditioned by inflation predictions could have been left out. The lack of corporate income tax would have been a fully explainable reason for not including this factor in Fisher's formula when he de-

scribed his views on the relationship of the nominal and real interest rates in an inflationary environment at the turn of the 20th century. He could sidestep this effect until the publication of his fundamental work *The Theory of Interest* [1930].

After this date there appeared significant tax and inflation changes in the US economy. Both of the rates rose sharply, and holding Fisher's assumption about zero percent income rates was getting away further and further from the reality of world economies.

With reference to the Fisher effect there occurred notions of the Darby effect or Darby-Feldstein effect. This effect describes the relationship between the nominal rate and real rate in an inflationary environment and the conditions of income taxation, where there would be no transfer of financial benefits from the tax shield between the donors and recipients of money:

$$In = Ir + F/(1-T) \tag{3}$$

where: T – income tax rate.

The studies towards confirming the Darby effect indicated actually proof for its occurrence [e.g. Peek 1982]. But many of them also indicated time narrowing and various intensity of the impact of the taxation factor on the nominal interest rates [e.g. Carlson 1979].

Conclusion

Economic theory is based on specific simplifying assumptions relating to clearly defined conditions. Thus one cannot expect a full resemblance between the "caricature" and the pattern of this "caricature." Nowak defined in a straightforward manner such attempts of empirical studies as methodological error of reification. He wrote, "error of reification lies in [...] direct relating an idealizational proposition to facts without performing concretization. This error, let's add, is possible because very often when researchers formulate idealizational laws they do so not in a clear mode including idealizational assumptions in the protasis, and in the apodosis a specific formula (equation), but in the form of equations only. As a result one may not take into account the fact that such an equation refers to idealizational conditions and may relate it directly to empirical conditions. [...] this equity is a shortcut of this law. Thus if equity of this type is treated literally, not as a shortcut to a fuller form of the law as indealizational law, then the danger is that the idealization law will be treated as a factual statement relating to empirical phenomena" [Nowak 1977: 102]. Nowak acknowledges the error of reification as the most serious "sin" of present-day methodology of scientific research, and its "culprit" is phenomenalistic assumptions of present-day empiricism. He also indicates that the error of reification may take two forms. In the first case the re-

searcher accepts an idealizational statement on the basis of empirical research, in the second case the researcher rejects the idealizational statement on the basis of this research [Nowak 1974: 69-72]. It is just the second case that we deal with as it comes to empirical research on the Fisher effect.

An important element of getting to know a concrete theory is the analysis of premises (especially simplifying assumptions), on which the theory is based. The Fisher effect is based on many assumptions. Some of them are based on basic paradigms of microeconomics, some others, however, refer to specific conditions of the US economy at the turn of the 20th century.

In this article the author carried out detection of idealizational assumptions adopted for the formulation of the Fisher effect, at the same time showing possible further steps of research on these issues. The more so that the simplifying assumptions are one of the errors in the measurement of investigated phenomena [Majda 2016].

Fisher's assumption that only the change in inflation expectations that has an impact on the level of changes in the nominal interest rate in an inflationary environment is unlikely. This fact has already been pointed to before. It is more sensible to state that the Fisher effect is an idealizational proposition leaving out all the other factors that have an impact on the nominal interest rate. Fisher himself confirms this approach in his book *Theory of Interest.* It was published in 1930. By 1930 Fisher had already witnessed the introduction of corporate tax in the US in 1913, hyperinflation (and related to it inflation risk premium) of the 1920s. One should also remember that the publication of *Theory of Interest* followed the 1928 publication of *Money Illusion*. Nevertheless, in *Theory of Interest* Fisher contended that despite all of this knowledge he still adhered to his conclusions expressed in his previous works. He wrote explicitly, "my theory of interest has been altered scarcely at all" [Fisher 1930: 5]. His deliberations on the results of his empirical studies are proof that he realized that his equation was an idealistic approach to reality, "One obvious result of such an ideally prompt and perfect adjustment could undoubtedly be that money interest could be far more variable than really is and that when it was translated into real interest this real interest would be comparatively steady. What we actually find, however, is the reverse – a great unsteadiness in real interest when compared with money interest" [Fisher 1930: 132].

The analysis of the present-day adequacy of the simplifying assumptions of the Fisher effect has proved many of them to be outdated. It supports the postulate to qualify the Fisher effect expressed in the form of idealizational proposition as a historic generalization that is time limited to the first half of the 20th century at the most [Sobków 2016].

In light of the aforementioned deliberations one can draw a conclusion that empirical research on the Fisher effect should not be focused on the analysis of correlations of inflation expectations and changes in the nominal interest rates

because these cannot fully bring useful results. This kind of research is based on the methodological error of reification. It allows a lot of room for further research on the Fisher effect and on real possibilities of defining its role and significance in the present-day economy.

References

Alchian A., Kessel R., 1959, Redistribution of Wealth through Inflation, *Science*, 4 September, 535-539.

Bajuc J., Belka M., Czyżewski A., Wojtyna A., 1996, *Inflacja w Polsce 1990-95*, Warszawa: Wyd. Prywatnej Wyższej Szkoły Businessu i Administracji.

Balcerzak M., 2014, *Zmiany na rynkach akcji w krajach wchodzących do strefy euro a psychologiczno-społeczne uwarunkowania inwestorów* [unpublished PhD dissertation], Uniwersytet Warszawski.

Bekaert G., Wang X., 2010, Inflation Risk and the Inflation Risk Premium, *Economic Policy*, October: 757-806.

Brzeziński J., Klawiter A., Łastowski K., 2009, Wspomnienie o Leszku Nowaku, *Nauka*, 4, 27-34.

Carlson J., 1979, Expected Inflation and Interest Rates, *Economic Inquiry*, 17, 597-608.

Carmichael J., Stebbing P.W., 1983, Fisher's Paradox and the Theory of Interest, *American Economic Review*, 73, 619-630.

Carneiro F., Divino J., Rocha C., 2002, Revisiting the Fisher hypothesis for the cases of Argentina, Brazil and Mexico*, Applied Economics Letters*, 9, 95-98.

Cooray A., 2003, The Fisher Effect: A Survey, *Singapore Economic Review*, 48, 135-150.

Darby M.R., 1975, The Financial and Tax Effects of Monetary Policy on Interest Rates, *Economic Inquiry*, 13, 266-269.

Feldstein M.S., 1976, Inflation. Income Taxes, and the Rates of Interest: A Theoretical Analysis, *American Economic Review*, 66, 809-830.

Fisher I., 1896, *Appreciation and Interest*, New York: Macmillan.

Fisher I., 1907, *The Rate of Interest*, New York: Macmillan.

Fisher I., 1928, *The Money Illusion,* New York: Adelphi Company.

Fisher I., 1930, *The Theory of Interest*, New York: Macmillan,.

Friedman M., 1975, *There's No Such Thing as a Free Lunch,* Chicago: Open Court Publishing Company.

Gibson W, 1970, Price-Expectations Effects on Interest Rates, *Journal of Finance*, 25, 19-34.

Hoerdahl P., 2008, The Inflation Risk Premium in the Term Structure of Interest Rates*, BIS Quarterly Review*, September, 23-38.

IRS Internal Revenue Service USA, 2015, www.irs.gov/pub/irs-soi/02corate.pdf [access: 15.07.2016].

Jareño F., Tolentino M., 2013, The Fisher Effect: a comparative analysis in Europe, *Jokull Journal*, 12, 201-212.

Kahneman D., Tversky A., 1974, Judgment under Uncertainty: Heuristics and Biases, *Science*, 185, 1124-1131.

Lee C., Tsong C., 2013, Quantile cointegration analysis of the Fisher hypothesis, *Journal of Macroeconomics*, 35, 186-198.

Lutz S., 2009, *Justifying Idealization by Abstraction*, www.phil.uu.nl/~slutz/documents/justifying_idealization.pdf [access: 15.07.2016].

Martins M., 1994, Interests, Prices and the Barsky and Summers' Resolution of the Gibson Paradox under the Gold Standard System, *RBE*, 48(1), 3-28.

Majda P., 2016, *Analiza niepewności pomiarów. Rozważania praktyczne*, www.pmajda.zut.edu.pl [access: 15.07.2016].
Mishkin F., 1992, Is the Fisher Effect for Real? A Reexamination of the Relationship between Inflation and Interest Rates, *Journal of Monetary Economics*, 30, 195-215.
Miyagawa S., Morita Y., 2003, *The Fisher Effect and The Long-Run Phillips Curve – in the case of Japan, Sweden and Italy*, Kyoto: Kyoto Gakuen University.
Mundell, R., 1963, Inflation and Real Interest, *Journal of Political Economy*, 71, 280-283.
Nowak L., 1974, *Zasady marksistowskiej filozofii nauki. Próba systematycznej rekonstrukcji*, Warszawa: PWN.
Nowak L., 1977, *Wstęp do idealizacyjnej teorii nauki*, Warszawa: PWN.
Nowak I., Nowak L., 2000, *Idealization X: The Richness of Idealization*, Amsterdam – Atlanta: Rodopi.
Peek J., 1982, Interest Rates, Income Taxes and Anticipated Inflation, *American Economic Review*, 72, 980-991.
Pelaez R., 1995, The Fisher Effect: Reprise, *Journal of Macroeconomics*, 17(2), 333-346.
Phylaktis, K., Blake D., 1993, The Fisher Hypothesis: Evidence from Three High Inflation Economies, *Weltwirtschaftliches Archiv*, 129, 591-599.
Rodes J., 2008, *Devolution of the Fisher Equation: Rational Appreciation to Money Illusion*, Tokyo: CBIR Policy Information Center.
Rose A., 1988, Is the Real Interest Rate Stable?, *Journal of Finance*, 43, 1095-1112.
Schumpeter J., 1951, *Ten Great Economists from Marx to Keynes*, New York: Oxford University Press.
Simon H., 2013, *Models of Discovery and Other Topics in the Methods of Science*, Dordrecht – Boston: D. Reidel Publishing Company.
Sobków R., 2015, Efekt Fishera – prawo, teoria, czy jedynie hipoteza naukowa?, *Studia i Prace Wydziału Ekonomicznego Państwowej Wyższej Szkoły Zawodowej w Gorzowie Wlkp.*, 8, 171-179.
Sobków R., 2016, *Dezaktualizacja efektu Fishera w realiach współczesnej gospodarki globalnej*, www.robertsobkow.weebly.com [access:15.07.2016].
Summers L., 1983, The Nonadjustment of Nominal Interest Rates: A Study of the Fisher Effect, in *Macroeconomics, Prices, and Quantities*, ed. J. Tobin, Washington: The Brookings Institution.
Tobin, J., 1965, Money and Economic Growth, *Econometrica*, 33, 671-684.
Yohe W., Karnosky D., 1969, Interest rates and price level changes 1952-69, *Review of the Federal Reserve Bank of St. Louis*, December, 18-38.

Efekt Fishera jako przykład esencjalizmu metodologicznego w świetle rozwoju myśli ekonomicznej

Streszczenie. *Jak każda teoria, również teoria Irvinga Fishera dotycząca zmian nominalnych stóp procentowych w warunkach inflacji oparta jest na założeniach upraszczających. Przedstawiając swoje poglądy, każdy autor powinien je szczegółowo opisać, jednak Irving Fisher pominął to zagadnienie w swoich pracach. Celem badawczym artykułu jest dokonanie detekcji założeń upraszczających „efektu Fishera" oraz wskazanie zakresu ich wpływu na opisywaną teorię. Rozwój myśli ekonomicznej oraz przemiany w gospodarce światowej, jakie dokonały się w XX wieku, były również podstawą dokonania oceny adekwatności stwierdzonych założeń upraszczających. Przeprowadzona analiza wspiera poglądy o możliwości zakwalifikowania efektu Fishera jako generalizacji historycznej.*

Słowa kluczowe: *efekt Fishera, esencjalizm metodologiczny*