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**THE CURRENT ECONOMIC PARADIGM
IN THE LIGHT OF FINANCIALISATION**

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Abstract

The paper presents the direction of the mainstream economics paradigm shift and the evidence supporting the inadequacy of its several foundations. The author puts emphasis in particular on the aspects of financialisation in international markets and its impact on the current economic life. International commodity markets provide a good reflection of the effects of financialisation. Current price movements in these markets are determined to a large extent by the engagement of financial investors, which has serious implications to the practical aspect of the economy and contributes to the changes in the nature of several basic economic categories. These markets can be, therefore, considered a certain detailed case study illustrating the general theoretical problems analysed in the paper (directions of evolution of the current economic paradigm).

Keywords: economic paradigm, financialisation, world prices, international economic relations.

JEL classification: B4, A1, F1, F3.

A breakthrough in science is a consequence of its crisis manifesting itself in its inability to explain the real world under the existing paradigm.

(W. Stankiewicz)

Introduction

For many years the body of economic literature, especially the publications dealing with methodological and theoretical aspects of economics, has raised the issue of adequacy of the mainstream economics paradigm. Concerns are frequently expressed about the validity of this paradigm in the light of significant transitions witnessed in the contemporary economy.

Those concerns have intensified particularly over the second half of the previous decade as a result of the global financial and economic crisis¹. As a consequence of the difficulties in interpreting a number of processes taking place in the contemporary economy, voices have emerged claiming there is a **crisis of economics** as a science, particularly in terms of the inadequacy of its paradigm².

One of the basic phenomena in the contemporary economy, which still requires further exploration of its methodological aspects, is the process of financialisation. It refers not only to the purely theoretical aspects (such as the direction of the paradigm shift) but also to the individual aspects of economic life (such as commodity markets or international trade)³.

The aim of this paper is to present the effects of financialisation in the contemporary economy in the dimension of theoretical and methodological foundations of economics (direction of the paradigm shift). The emphasis has been put on the analysis of the financialisation process in terms of price movements in international commodity markets.

The first part of the paper presents the concept of the mainstream economics paradigm and its attributes. The second section describes the concept of financialisation and its contribution to the sectoral, global and internal imbalances. Next, the effects of financialisation in relation to commodity markets and commodity price changes are analysed in depth. In conclusion, the direction of the paradigm shift in economics resulting from economic imbalances has been readdressed. This part provides a certain generalisation of the earlier (more detailed) discussions, referring at the same time to the main problems discussed in the paper.

1. The contemporary economics paradigm

The term paradigm has been introduced to science by T. Kuhn. From his work “The Structure of Scientific Revolutions”, published in 1962, it is apparent that he used this notion to define special and extraordinary “discoveries” in the process of historical scientific evolution which identify distinct periods in its development. Although T. Kuhn used the term ambiguously, the “paradigm” is usually defined as “a mental epistemological structure describing two groups of ideas: the **system of values** shared by scientists representing a given discipline and a **group of concepts** of theoretical methods and research techniques as well as methods to verify hypotheses”.

An analysis of the essence of the paradigm emphasises also that the paradigm “as a particular matrix of a scientific discipline” requires acceptance by the scientific community and **undergoes changes in the moments of scientific breakthrough**, i.e. scientific revolutions, which lay grounds for new paradigms. W. Stankiewicz claims that **a breakthrough in science is a consequence of its crisis manifesting itself in its inability to explain the real world under the existing paradigm**⁴.

M. Shermer, on the other hand, emphasises that the paradigm – as a **conceptual system** – unites the majority of the scientific community members and has been constructed in order to define and interpret the observed or inferred, past or present, phenomena so as to accumulate verifiable scientific knowledge⁵.

In relation to the recent significant changes in the economy, more and more often it is argued that the theory of economics is unable to provide an accurate interpretation of the phenomena and processes observed around us. These voices have become louder – as already mentioned – following the outbreak of the financial and economic crisis. A thesis is even formulated that contemporary economics has suffered a defeat as it had failed to forecast the crisis or offer effective measures to combat it. This opinion was shared, among others, by a famous economist, P. Krugman⁶.

A body of literature emphasises the need to revise numerous aspects of the theory of economics and modify (or shift) its paradigm. The Western literature addresses also frequently the aspect of “over-financialisation” of the economy, which will be explored in the next parts of the paper⁷.

2. Reasons for a paradigm shift

The literature often identifies economic processes which still need further exploration and lay grounds for creating a new paradigm in economics. According to B. Fiedor, these processes provide “room for crises in this scientific discipline”⁷⁸. The developed **separation of the financial market** from the real economy belongs to the major processes of this kind. It is usually a source of microeconomic miscalculations made by production investors, and exerts far-reaching effects on various spheres of the economy. The second process, **capital “virtualisation”**, is related mostly to the so-called new economy which usually leads to total separation of the financial capital from real economic processes, and creates a mechanism in which this capital drives the economy and eventually causes crises. Those new phenomena which still require further theoretical exploration include also, thirdly, the **globalisation of the financial market**, which makes it more difficult for individual countries or regional groups (such as the European Union) to adopt an effective macroeconomic growth policy. “**Unipolarity**” of the present world is the fourth relevant problem of this kind. It is understood as an economic, political and military supremacy of the United States affecting the self-regulatory processes in the economy.

The impact of the above processes induces adjustment of the major features of the mainstream economics paradigm. It refers in particular to its basic assumption – **economic balance (equilibrium)**. In the light of numerous publications, especially the recent ones, it can be concluded that **the major assumptions of the paradigm**, i.e. (macro) **economic balance** – low inflation under control, balanced public finance and external balance – on the one hand, and accepting that the **market mechanism** (through its components: price, demand and supply) lays grounds for an optimal (rational) allocation of resources on the other, **require adjustment (or a far-reaching change)**.

A vast majority of the new phenomena and processes in the contemporary economy – having a severe impact on both economic practice and the theory of economics – is related to the dominance of the financial sector, which is more and more widely known as financialisation, and its effects, i.e. imbalances observed in the contemporary economy. This issue will be explored below in both general (sectoral imbalance, external and internal imbalance) and more detailed (prices versus balance in international commodity markets) aspects.

3. Financialisation and the problem of imbalances in the contemporary economy

Financialisation has been an element of contemporary economy for a long time, yet it gained in intensity over the last decades. It stems from liberalism (neoliberalism), which is

related to the trust in the utmost efficiency of free market mechanisms. In practice, this doctrine manifested itself in the deregulation processes observed in the contemporary global economy, particularly intense in the developed economies. They encompassed to a large extent also the financial sector⁹.

The problem of financialisation has attracted a lot of attention among researchers who devoted a huge body of literature to this topic¹⁰. In essence it comes down to the following issues:

- Dominance of the financial sector in the entire economic life;
- Increasing significance of financial markets and the whole financial sphere;
- Huge scale of financial operations exceeding objective economic needs;
- Independence of the financial system and its changing role – from protection towards speculation;
- Financial services are becoming the key sector of the economy with a significant and still rising share in GDP, being a considerable provider of jobs.

Table 1. Total turnover in the US financial markets in the years 1956–2000 (USD billions)

	1956	1960	1963	1966	1970	1980	1990	2000
Equity Markets Trading	36	47	61	128	139	522	1 671	14 222
US government securities trading	276	478	722	1 091	1 891	4 840	26 688	67 056
Futures Trading	150	165	203	250	330	5 584	152 717	343 136
Foreign Exchange Trading	41	47	55	74	111	5 449	36 000	60 960
Corporate Debt Trading	19	35	56	90	170	821	3 972	3 960
State and Municipal Bonds	12	23	37	60	112	542	2 622	2 112
TOTAL FINANCIAL TURNOVER	534	795	1 134	1 692	2 749	17 804	227 448	508 456
US Gross Domestic Product	425	526	603	770	1 039	27 90	5 303	9 817
Turnover divided by GDP	1.26	1.51	1.88	2.20	2.65	6.38	42.89	51.79
GDP as percent of financial turnover	79.6	66.2	53.2	45.5	37.8	15.7	2.6	1.9

Source: Żyżyński (2009), No. 2, 9. 174.

Model development of the financialisation process could be observed for a long time in the US economy. According to J. Żyżyński's estimates, the US GDP increased in the years 1956–2000 23 times, and the turnover in financial markets almost 1,000 times (952 to be precise). The effects of financialisation became particularly visible after the year 1980. Whereas in the 1960s and 1970s the financial turnover exceeded the GDP by between a few dozen to up to 250 per cent, in 1980 it was more than 6 times, and in 2000 even more than 50 times. In the 1950s

the GDP represented nearly 80% of the financial turnover, whereas in 2000 – only 2% (see Table 1).

Later on financialisation became visible particularly in the US and the UK economies. As T. Casey observes, in 1947 the financial and insurance sector accounted for as little as 2.5% of the US GDP, in the 1970s this share increased to 4% whereas in 2006 it reached 8.3%. The figures for the UK were similar; the financial sector in this country reported a nearly 5% annual growth rate in the years 1987–2007 when the economy as a whole grew at a much slower pace (by approx. 50%)¹¹.

3.1. Sectoral imbalance

The dramatic and rapid changes in the financial sector have contributed to the occurrence of the **general imbalance** in the contemporary world. Several dimensions of this state can be analysed. **Firstly**, it manifests itself in a certain dominance of the financial sector over the real sector (the dominance of the financial sector is the essence – as already mentioned above – of the financialisation of the economy). The sectoral imbalance is expressed – on the one hand – in the trade volume in the derivatives market, and on the other – in the value of the global GDP and international trade volume. Whereas in the years 2009–2010 the total OTC notional value amounted to approx. USD 600 trillion, the global GDP amounted to approx. 60 trillion, i.e. ten times less. The total amount of the global exports amounted in that period to around 15 trillion.

It is noteworthy to observe that whereas the **daily** turnover in the world foreign exchange market is presently estimated at between USD 3 and 4 trillion, the global **annual** exports of goods and services reach only USD 18 trillion. The **daily** forex turnover in Poland, in turn, is estimated at approx. USD 7–8 billion, and the **annual** exports of goods abroad – at approx. USD 150 billion¹². These figures seem to be a good description of the analysed process of financialisation while revealing at the same time the scale of the sectoral imbalance (dominance of the financial sector).

The other aspects of current economic imbalances can be defined as, **secondly**, the so-called global imbalance (**external** imbalance), which is reflected in the condition of the current accounts of individual countries and regions, and **thirdly**, the **internal** imbalance, visible mostly in the increasing budget imbalances, faster inflation pace, and higher unemployment rates. Financialisation of international **commodity markets** is a separate and very interesting problem attracting ever more attention in the world literature, and has become particularly visible since the late 2000s. It can be approached as a certain partial illustration of the general economic imbalance, subject to analysis in this paper, in the context of a more detailed phenomenon, i.e.

commodity markets. As a result of this process, we witnessed the so-called commodity boom in the previous decade, and the subsequent surge in their prices in the years 2009–2011 (see Table 3).

Individual aspects of the general economic imbalance will be discussed in the following parts of this paper.

3.2. Global imbalance

The so-called global imbalance seems to be one of the major problems in the contemporary economy. It is commonly understood as a cause of the global financial and economic crisis. Global imbalance is expressed mainly in the huge US current account deficit (accompanied by surpluses reported by China and other developing countries, and Japan) – see Table 2. These phenomena contribute to the accumulation of currency reserves held by public institutions in Asia and the world's major oil-exporting countries.

Table 2. Summary of Balances on Current Account by countries and regional groups for the years 2003–2010 (USD billions)

	2003	2004	2005	2006	2007	2008	2009	2010
Advanced Economies	-218.9	-219.5	-411.2	-449.8	-344.2	-471.8	-101.1	-95.5
United States	<u>-520.7</u>	<u>-630.5</u>	<u>-747.6</u>	<u>-802.6</u>	<u>-718.1</u>	<u>-668.9</u>	<u>-378.4</u>	<u>470.2</u>
Euro Area	23.4	76.6	14.6	-12.6	14.7	-196.9	-69.4	-77.0
Japan	<u>136.2</u>	<u>172.1</u>	<u>165.7</u>	<u>170.4</u>	<u>211.0</u>	<u>157.1</u>	<u>141.8</u>	<u>194.8</u>
Other Advanced Economies	128.7	127.4	131.1	142.0	137.0	129.0	158.2	167.7
Memorandum								
Newly Industrialized Asian Economies	84.3	86.9	82.8	99.4	130.9	87.8	128.6	133.1
Emerging and Developing Economies	145.2	219.7	443.0	661.5	649.7	704.2	326.6	378.1
Regional Groups								
Central and Eastern Europe	-32.5	-52.0	-57.7	-85.3	-131.7	-151.3	-44.3	-76.0
Commonwealth of Independent States	35.7	63.5	87.6	96.3	71.7	107.7	41.4	75.0
Developing Asia	<u>85.2</u>	<u>92.6</u>	<u>167.5</u>	<u>289.2</u>	<u>418.3</u>	<u>435.9</u>	<u>382.2</u>	<u>308.1</u>
Latin America and the Caribbean	9.4	21.5	36.3	49.5	14.6	-31.2	-25.0	-56.9
Middle East and North Africa	59.8	101.9	212.7	281.1	265.8	343.1	47.9	152.8
Sub-Saharan Africa	-12.4	-8.2	-3.4	30.8	11.0	0.0	-21.6	-24.9

Source: World Economic Outlook, IMF IV 2011, p. 198.

This process of global imbalance has been accompanied by processes of more internal character taking place in individual economies. On the one hand side, negative household savings were reported in Anglo-Saxon countries (and the US in particular), on the other, however, a surge in real estate prices, as speculative bubbles was recorded.

It can be, therefore, concluded that the global imbalance was related to the accumulating internal imbalance and at the same time it laid grounds for the global financial and economic crisis. The fact that the international monetary system is based on the US dollar is yet another factor to have played a significant part in the initiation of these processes. Since the beginning of World War II the US dollar has been continually playing the role of a reserve currency for central banks, commercial banks and other financial institutions in the rest of the world. This is exactly why the United States are able to pay for nearly their entire imports with their own currency. Thus they are benefiting from the opportunity to use a formally short-term and in fact an endless credit made available by the rest of the world on as large a scale as the world's desire to hold foreign exchange reserves in the US dollar¹³.

It is also noteworthy to point out that the global imbalance has inspired many theoretical analyses in the world literature. According to one of the theories, developed by M. Doodley, D. Folkerts-Landau and P. Garber, it resembles the first phase of the Bretton Woods system. This state can remain relatively stable for a long time. It depends mostly on how long the Asian countries will be interested in maintaining their current economic policy¹⁴. A synthetic analysis of selected aspects of the global imbalance indicates that the problem is closely related to the next issue observed in the contemporary economy – the internal imbalance.

3.3. Internal imbalance

According to certain concepts, the internal imbalance is closely related to the issue of external imbalance. It is reflected in the twin deficit hypothesis¹⁵. This problem is at present widely analysed in the literature and even in daily press, due to its political implications (Greece) and the disturbances in the foreign exchange market (its impact on the Euro exchange rate). Although the internal balance is related not only to the problem of budget balance but also the problems of unemployment and inflation, in this study – owing to its limitations – the author concentrates only on selected issues of budget balance and public debt.

The dramatic rise in the global public debt is the best reflection of the increasing internal imbalance – according to the estimates, the total debt increased from USD 18.7 trillion in 2000 to as much as USD 40 trillion in 2010 and 45 trillion in 2011. By 2020 it is expected to reach USD 52 trillion, i.e. not much less than the global GDP¹⁶. This raises concerns about the future

of the whole world economy, among others owing to the crowding out effect, expected rises in interest rates on loans (higher debt service costs), and particularly the slowdown in production and international trade volume.

The so-called “hidden” debt is still greater a problem which originates in the country’s obligations towards its ageing society. Those obligations are usually unaccounted for in the official budget forecasts. This “hidden” debt is, however, **even several times higher** than statistics, which raises serious concerns¹⁷.

In the reports it is usually pointed out that in a number of countries the accumulating internal imbalance poses a threat to both economic and political stability. It requires implementation of almost dramatic measures which can, however, seriously affect the development opportunities of economies as well as their financial and monetary stability¹⁸.

4. Financialisation of commodity markets versus commodity prices

The most recent literature¹⁹ as well as the reports published recently by international organisations²⁰ emphasise strongly the consequences of financial investors’ engagement in international commodity markets (organised exchanges and the OTC market) on the development of commodity price tendencies.

Although this kind of activity undertaken by financial investors is nothing new, their total engagement (measured with both the number and volume of transactions) has been clearly rising since 2005. According to the opinions presented above, they contributed significantly not only to the aforementioned **surge in commodity prices reported in the late 2000s** but also – to an even higher extent – to a **dramatic fall in these prices** in the second half of 2008 resulting from mass withdrawals from commodity markets (see Table 3).

Oil prices seem to be a great example of interrelations between commodity markets and financial markets. The price of this resource increased between 2002 and 2008 nearly four times (till July 2008 – as much as five times), whereas the global demand for oil in that period increased by 10.4% and its supply – by 12.5%²¹. Later on, along with mass withdrawals of financial investors from commodity markets, oil prices dropped by nearly 70% in a short period of 7 months (between July 2008 and February 2009). In the last period, following a wave of financial investors’ returns to commodity markets, oil prices rose again, as so did the prices of other commodities. At the beginning of 2011, for instance, the prices of metals and food exceeded their record levels reported in July 2008, while oil prices nearly reached their record

levels. The following months saw a slowdown in this tendency, reporting even a drop in the total commodity price index.

Table 3. Development tendencies of commodity prices in international market in the years 2002–2011^a (in %)

Commodities	VII 2008 (2002 = 100)	II 2009 (VII 2008 = 100)	II 2011 (VII 2008 = 100)	II 2011 (II 2009 = 100)
Total raw materials and food	375	43	86	193
of which: non-fuels	218	65	121	181
of which: food and beverages	213	71	109	152
Metals	348	50	136	238
Fuels	527	36	72	201
of which: crude oil	527	31	74	234

^a IMF Indices of Commodity Prices.

The scale of financial investors' engagement in commodity markets is best described with the fact that their total commodity assets under management, according to *Barclays Capital* estimates, reported a nearly **40-fold** growth over the previous decade²², and recently this value has still been rising (in the first quarter of the year 2011 it exceeded USD 400 billion)²³. Detailed information and statistics concerning the directions and scale of investors' involvement in commodity markets are available in numerous publications²⁴. It is noteworthy to observe, however, that the notional value of commodity derivatives in OTC markets increased between the year 2001 and July 2008 nearly 20 times (from USD 0.6 trillion to 13.2 trillion)²⁵.

In the earlier period (i.e. till the beginning of the previous decade) financial investors, when constructing their investment portfolios, initially considered mostly assets such as shares and bonds, but then became more and more interested in real estate, etc. Later on – along with the development of the modern portfolio theory – they began to include in their portfolios also the so-called “alternative financial instruments”, commodity contracts being one of them. In that time the price movements for commodity contracts were to a large extent independent of those for typical financial assets. They were particularly loosely related to the prices of shares or even groups of commodities. In other words, commodity price movements were isolated from the prices of classical financial assets and (at least partially) the price segmentation within the whole group of commodities. This meant a significant difference in relation to typical financial assets, whose prices were closely interconnected²⁶.

The 2000 slump in the stock market and publications on the negative correlation between the stock earnings and commodity contracts have attracted the attention of financial investors to the latter to reduce their portfolio risk. This in turn has enabled investment banks to promote

commodity contracts as a **new category of financial assets**. As a consequence, a huge wave of financial resources was directed to various financial instruments related to commodity contracts thus initiating a process known as the **financialisation of commodity markets**. This process manifests itself in an ever stronger interdependence between commodity prices and the prices of classical financial assets on the one hand, and within the commodity group: resources and food itself on the other. There was yet another important determinant of the inflow of financial resources to commodity-based investment instruments: under increasing inflation classical assets (shares and bonds) became less attractive while commodity contracts were gaining in attractiveness since they provided a good protection against inflation.

Although the thesis on a strong impact of financial investors' engagement on the prices of resources and food is sometimes questioned²⁷, the literature and the reports published by international organizations (particularly UNCTAD and the UN) consider the activity of the aforementioned investors as an extremely relevant factor explaining commodity price rises. In the Polish literature it is also argued that "the lack of supervision over international markets was a significant determinant of the global commodity price rises"²⁸.

The Commodity Futures Modernization Act, which was passed in 2000, has played a key role here as it exempts interbank markets from the requirements imposed by the Commodity Exchange Act of 1936, regulating trade in commodity exchanges. It enabled the limits to be lifted, and so the trade in commodity contracts could no longer be controlled²⁹.

Following the negative impact of financialisation, international organisations as well as recent publications have raised the need to limit and control the functioning of financial markets. It is even pointed out that the European stock exchanges or even the OTC market should be subject to such regulations in order to provide more transparency of transactions³⁰.

The effects of financialisation in commodity markets are reflected in serious phenomena reported in international trade, including:

- Higher dynamics of commodity prices (price scissors are closing);
- More volatility of commodity prices;
- Negative impact on the global economy through the transfer of the futures market price movements to the real sphere (changes in unit value indices);
- Simultaneous changes in index goods, which denote a deformation (crisis) of the classical market mechanism;
- Deformation (crisis) of the classical information function of the world price (a similar phenomenon can also be observed for the price of money and is often defined in the literature as a "crisis of the information function of money")³¹.

5. The directions of the paradigm shift

In the light of the above discussions which support the need for adjustments or even a shift of the current economic paradigm, the final part of this paper will present the directions – as suggested in the literature – of changes in this paradigm.

Particular attention should be paid to the school originated by J. Stiglitz along with S. Akerlof and M. Spence, which is known as **information economics**. This approach – through exposing the relevance of information to the contemporary economy – questions the role of the market and government in the process of regulating the economy³². J. Stiglitz argues that the foundations of neoclassical economics, particularly those concerning the role of the market as an instrument of efficient allocation of resources, no longer hold for the contemporary economic reality. The paradigm of the contemporary economy should take into account the issues related to the information asymmetry (and the role of government in reducing it) as well as the models describing the dynamics of changes whereas the traditional paradigm exposed the issues of gaining balance.

Quoting the views from the literature, this certain “balance-oriented” approach popular recently in economics referred to a physics concept – the first law of thermodynamics (the principle of conservation of energy). Another new approach, the so-called **complexity economics** emphasises, on the other hand, that the economy is not a close state of balance but a “complex ongoing adaptation state” whose development is governed by evolutionary processes³³.

Complexity economics – which considers the economy as an element of a wider reality – subordinates it to the second law of thermodynamics, i.e. the law of increasing entropy. In such a system one state of equilibrium leads to another state of equilibrium without involvement of any external factors.

There is yet another new concept, presented by G. Soros in his “New paradigm of financial markets”³⁴ which shows significant resemblance to the foundations of complexity economics. According to G. Soros, the relationship between thinking and reality is totally different than in traditional economic models. When evaluating facts – argues G. Soros – these models assume separate sequences of the two functions he identifies: the cognitive function – which strives to understand the reality (through accumulation of knowledge) – and the so-called manipulative function – which strives to change this reality. According to this concept, both functions are active simultaneously, which make it impossible to distinguish the dependent and independent variables in relation to facts, views (evaluation of those facts) and the resultant situations. The isolation of these two functions requires earlier separation of thinking and reality. In the model

presented, however, perception itself is an element of the reality³⁵. This concept – as G. Soros concludes – has been developed in response to the fact that the then dominant paradigm – the equilibrium theory and the orthodox market theory – is no longer able to provide explanations for the phenomena observed in the present reality³⁶.

Conclusions

In conclusion it can be stated that the financial and economic crisis of the previous decade eventually has revealed the need to modify the present economic paradigm. The most recent one has turned out to be useless in explaining numerous phenomena and processes taking place in the contemporary economy.

Financialisation, undoubtedly, belongs to the most significant of these phenomena. It manifests itself in the dominance of the financial sector and its independence or even separation from the real sector. Financialisation has also exerted a severe impact on the commodity markets and the entire international trade thus penetrating even those economies which had been so far loosely related to the global economic life.

The development directions of the world economy – also in the context of the impact of its financialisation – will depend to a large extent on the degree of regulation in the economy (both on the national and international level), and the financial sector in particular. These processes are reflected in the further evolution of the theory of economics and appropriate adjustment of its paradigm.

Notes

¹ See White (2009).

² See Fiedor (2010) and Godłów-Legiędź, (2010).

³ See Casey (2011).

⁴ See Przesławska (2011).

⁵ Quoted after: Flejterski (2010).

⁶ See Przesławska (2010), p. 1–2.

⁷ See Casey (2011), p. 1–5; Epstein (2005) and Finlayson (2005).

⁸ See Fiedor (2010).

⁹ See Casey (2011), p. 1–5.

¹⁰ See Finlayson (2009).

¹¹ See Casey (2011), p. 2.

¹² Own calculations based on the data published by: WTO, BIS, GUS and Bassu, Gavin (2011), p. 43.

¹³ See Lutkowski (2006).

- ¹⁴ See Janicka (2010).
- ¹⁵ See Lutkowski (2006).
- ¹⁶ See Gruszeński (2010).
- ¹⁷ Ibidem, p. 66–67.
- ¹⁸ Cecchetti, Mohanty, Zampolli (2010).
- ¹⁹ See Domański, Heath (2007); Gilbert (2010); Mayer (2009); Tang, Xiong (2010).
- ²⁰ Price Formation... (2011).
- ²¹ *Trade and Development Report* (2009), p. 10.
- ²² *Trade and Development Report* (2010), p. 10.
- ²³ Price formation... (2011), p. 16.
- ²⁴ See Dudziński (2010a); Dudziński (2011b); Basu, Gavin (2011); Stoll, Whaley (2009); Mayer (2010).
- ²⁵ See *BIS Quarterly Review* (for individual years)
- ²⁶ See The financialization... (2009); Domański, Heath (2007); Gilbert (2010); Tang, Xiong (2010).
- ²⁷ See Irwin, Anders (2010).
- ²⁸ See Sławiński (2010), p. 146.
- ²⁹ Ibidem, p. 156.
- ³⁰ See Price formation... (2011), p. 49–52.
- ³¹ See Gotz-Kozierkiewicz (2010).
- ³² See Przesławska (2011), p. 176
- ³³ Ibidem, p. 179
- ³⁴ See Soros (2010).
- ³⁵ See Przesławska (2011), p. 180.
- ³⁶ See Soros (2010), p. 197.

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