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# **ON THE CHANGING STRUCTURE OF THE WORLD FINANCIAL MARKETS**

## **Introduction**

The aim of my paper is to characterize main structural changes of international /world/ financial markets /WFM/, to discuss what their driving forces were, and to comment on financial markets /FM/ existing and/or prepared regulation.

The bulk of a quantitative analysis in my paper is based on statistics of several selected international organizations and institutions, i. e. the International Monetary Fund, Bank of International Settlements, Basel Committee of Banking Supervision, and Financial stability Board. The qualitative analysis draws on different sources, mainly on documents of the above international organizations (Annual Reports etc.), and on the results of academic research (working papers, conference proceedings etc.), my new /unpublished/ book on global FM included.

A few notes on sources: First, FM statistical data on 1st decade of 21st century probably are more reliable than data on 90ties. The statistics' higher reliability was achieved by a general improvement of statistical methods used by international organizations, especially through standardization of methodology. In spite of these efforts, many data are incomparable. Second, many summarized statistical data on capitalization, trade volumes etc. are missing (for example, in WFE statistics); data given by research should be interpreted more as estimates than as precise calculations. Third, it is very difficult (if not impossible) to separate data on international markets from data on domestic markets.

## **The Background**

Very often, the words “structural changes” are taken as “given”, without any explanation. In this paper, the word “structure” refers to market structure; market

structure is defined by important market features, such as market volume, market capitalization, market volatility, market concentration etc. which can be measured by statistical methods. But: many markets' features are not directly measurable by statistical methods. Structural changes practically may refer to any time period/seconds, hours, days, up to centuries and so on/. The longer is the period, the more general is the 'substance' of the change. This paper deals with a period of two decades; because of lack of comparable data on the years 1990-1999, more stress is laid on the years 2000-2011.

Is it possible to define structural changes of FM in the world in a precise, quantitative way? My answer is: I doubt it. The incompatibility, incomparability and lack of data make the research difficult. It is easier to analyse individual market segments and sub-segments, than 'financial markets of the world' /as a sum of domestic markets of all countries/: such mechanical summarization would not reveal the main changes /and driving forces of future changes/ – they would be levelled. In my opinion, 'financial market of the world' is not the same as the 'world financial market' or a 'global market'. These differences are not only terminological: they reflect the different views on internationalization and globalization.

There are no generally recognized approaches to FM' structural analyses. The current way of FM' quantitative analysis consists in research of the changing financial products/services' share of the 'global financial industry product'; other indicators, such as the share of GDP etc. are used as well. For different market segments specific approaches based on specific indicators are used. I will characterize 5 forms of FM structure, namely: product structure, geographic structure, structure of growth, relations on-exchange/OTC, and domestic/international structures.

## **Structural changes on selected FM**

FM development can be described as result of an interaction of three main forces: investors, intermediating entities and regulators. FM main role consists of trading, supported by an efficient financial infrastructure<sup>1</sup>. One of the most important elements of FM organizational structure are stock exchanges which still represent the core element, a backbone of trading. This is why we start with a characteristic of the main changes relating to stock exchanges trading during the second

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<sup>1</sup> CPSS-IOSCO issue consultative report on the recovery and resolution of financial market infrastructures. <http://www.iosco.org/news/pdf/IOSCONEWS246.pdf>

half of 90ties; the years 2008-2009 are critical for the future FM structural development.

### **The on-going transformation of stock exchanges**

Since second half of 90ties, deep transformation of big stock exchanges was started and the technological innovation process is still going on. The major changes are the following: First, many important stock exchanges were demutualized and transformed into joint/stock companies: the holders of 'seats' became shareholders. Second, competition between the stock-exchanges which started to behave like other profit-oriented joint-stock companies and different alternative private platforms considerably intensified<sup>2</sup>. Third, big stock exchanges started an acquisition policy oriented towards promising markets in different countries; they bought minority to be able to gain more influence on trading. Fourth, after 2000, the trading technology gradually was transforming: traditional floor trading was gradually replaced by electronic trading. Fifth, emerging markets became more important and the leading stock exchanges located in the former 'periphery' started to move nearer to 'centre'. Sixth, a general growth of risk became one of the most important factors for stock exchanges policy.

A very important driving force of the above changes was a very rapid progress of computer and communication technology. The higher speed of computers enabled a substantially higher speed of trading. In addition, many important technological and organizational innovations appeared. Let us give a short list of these important changes due to direct and/or indirect technological progress: 1. Algorithmic trading, 2. Market fragmentation, 3. Dark liquidity, 4. Direct electronic access, 5. Co-location, 6. Tick size, 7. Fee structure.

There is a permanent discussion on the impact of the above changes; many aspects are taken into account, and it is not quite clear, whether some of the above new elements of trading will be regulated or even prohibited. The question of cui bono is pending: which of the above changes will help the market grow without creating disturbances, which market 'entities' would be discriminated /and other preferred/, how high the burden of additional cost will be etc. After crisis, regulators are more alert, more careful, stricter, and more powerful.

The above changes are interconnected; this means that their impacts should not be analysed separately, but as a whole, which is very difficult. However, some

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<sup>2</sup> Just to remind: in 2008, some 40 Electronic Communication networks /ECN/, alternative trading systems /ATS/ and so called new entrants were registered with the US SEC.

individual trends already can be identified; the impact of these individual trends is reflected as structural /decennial/ changes of important FM segments. Our characteristics will refer to the stock exchange market of shares, financial derivatives market /both exchange and OTC/ and foreign exchange market /mainly OTC/.

## Stock exchange markets

Stock markets are still a very important segment of FM. During the last two decades, they were growing with a relatively important rate of growth, and – in spite of views of some writers who thought that traditional stock exchanges will be substituted by OTC-like new trading platforms – they were able to transform their institutional and managerial structure within a short time /demutualization, corporate government, product innovation, electronic trading etc./. The role of stock exchanges on the field of primary issues cannot simply ‘disappear’; the same is valid for other traditional functions, such as price-formation, investment allocation and so on.

At present, up to 90-95% of shares’ trading is concentrated on 54 big stock exchanges, members of the World Federation of Exchanges. During 2000-2009, the value of share trading grew very quickly. /See Table 1./ During the last two and a half years, the growth of shares’ trading continued, however with a lower rate. The peak of 2007 still was not reached.

Table 1

The growth of share trading on WFE-member exchanges /2000-2009; %/

Market capitalization	+33%
Total value of share trading	+61%
Total number of trades in equity shares	+700%
Total number of listings	+41%

Source: WFE. Ten years in review /1998-2009. <http://www.world-exchanges.org/statistics>.

At a first glance, one can see the extraordinary growth of total number of trades. It was caused by a drastic fall of the average size of trades /by 85%/. The growth of total number of listings is partially due to the growth of number of WFE-members. Since 2005, the number of listings was stable; it represents more than 45 000 firms.

As compared to the market capitalization evolution, it is interesting to note that the Americas remain dominant, while the Asia-Pacific share has more than doubled.

Table 2

The location of share trading /%/

Area	2000	2009
Asia/Pacific	10	23
EAME	24	16
Americas	66	61

Source: Ibid.

To conclude: the most important macroeconomic structural change of shares' trading on the WFE member exchanges was a shift of trade to the Asian region. Also important are the changes of total value of trades in favour of the biggest stock exchanges, i. e. the growth of market concentration. The share of electronic trading was growing, but it still probably is not prevailing. Precise data from many exchanges are missing.

Many other changes have a microeconomic character, as they are related to internal problems of stock exchanges. Sooner or later, they will most probably be reflected in macroeconomic parameters as well.

### Financial derivatives markets

Financial derivatives markets most important specific feature is the leverage. The use of leverage stimulates investors to invest without necessity to have substantial financial means at their disposal, however, the use of leverage considerably increases the investor risk.

Main financial instrument used on financial derivatives markets are options, futures, swaps and forward rate agreements, based on underlying financial /or other/ assets. Financial derivatives are traded on exchanges and/or OTC markets. The market structure – in comparison to other financial market segments is more complex. Financial derivatives instruments can be measured either by number of contracts, or by so called 'notional value' which makes them partly comparable with the value of other financial instruments. Financial markets are also analyzed according to underlying financial assets, products/groups of products, according to geographical regions, and/or growth dynamics.

Financial derivatives classification in different statistical sources differs which makes any comparison difficult. In addition, there are a lot of unregulated forms of derivative contracts, both exchange-traded and OTC. It is quite clear that any data taken from different resources and mechanically summarized will be

misleading, unless their origin is carefully analyzed and verified /sometimes, with poor results, or in vain/.

Table 3

Financial derivatives trading volumes on WFE-member exchanges (millions of traded contracts)<sup>1</sup>

Financial derivative instruments	1998	1998 (%)	2008	2008 (%)
Stock options	623	39,4	4368	35,7
Index options	196	12,4	4077	33,4
Index futures	172	10,9	2286	18,7
Long term interest rate options	171	10,8	172	1,4
Long term interest rate futures	418	26,5	1322	10,8
Total	1530	100,0	12225	100,0

<sup>1</sup> Own compilation – V.P.

Source: IOMA Derivative trading: trends since 1998, D. Davydoff, G. Naacke, IEM Finance May 2009, passim. <http://www.world-exchanges.org/files/statistics/excel/WFE%20IOMA%20Trends%20since%201998%20-%20May%202009.pdf>

The relative share of groups has changed as a result of different average growth of traded contracts. The highest compound annual growth rate achieved was the 35% rate of index options volumes which became the second largest instrument, while stock options still were on the first place.

In 2010, the number of futures traded surpassed for the first time the number of options. During the period of 1999-2011, notional outstanding amounts of on-exchange and OTC equity derivatives grew from approx. 2000 billion USD to more than 8000 billion USD in 2007, and in 2011 surpassed 6000 billion USD. In 1999, on-exchange and OTC contracts relation was 50:50; in 2011, OTC contracts prevailed for the first time.

As far as notional amounts of interest derivatives are concerned, OTC amounts highly surpass the on-exchange amounts. In 2011, according to BIS statistics, the range of different types of financial derivatives global market /notional amounts/ was the following: 1. interest rate derivatives, 2. foreign exchange derivatives, 3. credit default swaps, 4. equity-linked derivatives, 5. commodity derivatives<sup>3</sup>.

The above data show that the pre-crisis evolution of financial derivatives market represented a dangerous element in financial markets structure: first, because of its very rapid growth in relation to growth of the real economy; second, because of the shift towards the more risky instruments /such as CDS etc./; third, because of growing importance of the OTC markets which were less regulated;

<sup>3</sup> See: BIS, Statistics, <http://www.bis.org/statistics/otcder/dt1920a.pdf>

fourth, because of the shift towards Asian region with less secure, inexperienced developing markets.

To conclude: financial derivatives markets play a very important role; by the end of 2011, the notional amounts of derivatives instruments were estimated as high as 650 trillion USD, i.e. they were 10times higher than the volume of the world economy.

### Foreign exchange markets /FOREX/

During 1998-2010, the product structure has not substantially changed, /See table 4./ but the currency distribution did: the percentage share of daily turnover of USD fell from 86.8% in 1998 to 84.9% in 2010; during the same period, the share of Japanese yen fell from 21.7% to 19%; Euro grew from 37.9% in 2001 to 39.1%, and pound sterling grew from 11% to 12.9%. Since 1998 till 2010, the global character of international foreign exchange market was strengthened: the shares of cross-border transactions grew from 54% to 65%<sup>4</sup>.

The relation of foreign exchange derivatives on global market turnover to the share of spot transaction remained almost the same, i.e. approximately 63% to 37%.

Table 4

Global foreign exchange market structure /by turnover and instrument, April figures/

Average daily turnover/ instrument	1998	1998(%)	2010	2010 (%)
Foreign exchange swaps	734	48,0	1,765	44
Spot transactions	568	37,2	1,490	37
Outright forwards	128	8,4	475	12
Options and other products	87	5,7	207	6
Currency swaps	10	0,7	43	1
Foreign exchange instruments	1,527	100,0	3,981	100

Source: BIS Triennial Central Bank Survey. Foreign exchange and derivatives market activity in April 2010, September 2010, ISSN 1814-7356.

<sup>4</sup> Statistical data on foreign exchange market are published every three years; next issue will be published in 2013. See: M.R. King, C. Mallo, A user's guide to the Triennial Central Bank Survey of foreign exchange market activity, "BIS Quarterly Review" 2010, December.

During the period examined, except for distribution structure, the global character of foreign exchange market has not substantially changed<sup>5</sup>.

## **The impact of 2007-2009 financial crisis on the WFM**

In 2008, the burst out of financial crisis in the USA had a strong impact on FM all over the world. The world financial community reacted rather late; a series of G-20 Summits was a very important factor for preventing a menacing super-chaos on the WFM. In 2007, before the US mortgage bubble burst, almost nobody was aware of the growing danger; stronger FM regulation was refused by many experts. Four years after, almost nobody dares to deny the necessity of stronger financial regulation and supervision. The time of liberal /or irresponsible?/ approach is over; hard times have come.

The actual question of to-day is, whether the new strict regulatory measures really are necessary? Did they already not surpass the threshold after which they would bring more harm than use? Would they not create a too high burden on FM institutions? In my opinion, the financial reforms which have been started are not yet fully accomplished; they should not be stopped. Many unfulfilled promises still exist – just to remember: on top managements of big banks remuneration, on rating companies, on SIFIs resolution, on off-shore transactions regulation etc. The search for ‘sinners’ and their punishment /Madoff and others/ cannot be traded for necessary reforms. In many respects, the fraudsters evidently are trying to continue the old pre-crisis practices – otherwise such monster-manipulations as LIBOR-case could not be thinkable.

## **Conclusions**

The most important driving forces of FM structural changes can be divided into three groups: 1. A general progress of technology /both HW and SW/, applied to FM entities. 2. General ‘financialization’ of economics, transformation of organization, management and behavior of big financial entities. 3. FM regulation and supervision /strive for financial stability, new approaches to risk

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<sup>5</sup> It can be supposed that the structure of foreign exchange market sub-sectors, in some respects might have been changing. It is probable that after crisis, the importance of forwards and swaps as to the length of payment periods might have changed.

management etc./ . The most important structural changes relating to FW sub-segments: 1. shifts of geographical location /visible in all segments/; 2. Shifts of on-exchange to OTC relation /different within sub-segments; a general tendency towards OTC/. 3. Shifts of product structure /different: for example, a growing role of futures in FD markets/. 4. a growth of internationalization /all segments/. Structural changes on international FM probably will be decisive for future development of domestic markets.

Current development trends of different FM sub-segments which already are ‘visible’, although they are not prevalent, are important for structural changes in the next decade.

In spite of the fact that numerous mathematical, statistical and econometrical models are available, any prediction of the long-term financial markets’ structural changes is still very difficult, if not rather dubious: we are not sure how the main financial market tendencies will be changing, and how important the changes will be. Anyway, there is a high probability that the above described changes will be continuing. It is possible that financial markets’ national and international regulation may reduce, on one side, the rate of financial markets’ growth, and – on the other side – to reduce some of existing risks. However, it is not probable that high markets’ volatility could be reduced.

## Literature

BIS Statistics, <http://www.bis.org/statistics/otcder/dt1920a.pdf>

BIS Triennial Central Bank Survey. Foreign exchange and derivatives market activity in April 2010, September 2010, ISSN 1814-7356.

CPSS-IOSCO issue consultative report on the recovery and resolution of financial market Infrastructures, <http://www.iosco.org/news/pdf/IOSCONEWS246.pdf>

IOMA Derivative trading: trends since 1998. Davydoff D., Naacke G., IEM Finance May 2009. <http://www.world-exchanges.org/files/statistics/excel/WFE%20IOMA%20Trends%20since%201998%20-%20May%202009.pdf>

IOMA/IOCA Derivatives Market Survey 2010, R. Devai, G. Naacke, May 2011, [http://www.world-exchanges.org/files/file/2010\\_IOMA\\_Survey.pdf](http://www.world-exchanges.org/files/file/2010_IOMA_Survey.pdf)

King M.R., Mallo C., A user’s guide to the Triennial Central Bank Survey of foreign exchange market activity, “BIS Quarterly Review” 2010, December.

WFE. Ten years in review (1998-2009), <http://www.world-exchanges.org/statistics>

WFE/IOMA Derivatives Market Survey 2011, R. Devai, G. Naacke, May 2012.

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### Summary

The paper presents selected long-term structural changes of world financial markets: 1. Shifts of location /visible in all segments/; 2. Shifts of on-exchange to OTC relation /different within sub-segments; a general tendency towards OTC/. 3. Shifts of product structure /different: for example, a growing role of futures in FD markets/. 4. growth of internationalization /all segments/. Driving forces: 1. technology; 2. 'financialization' of economics; 3. regulation.