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THE IMPACT OF MAJOR TRENDS AND CURRENT CONDITIONS OF CAPITAL MARKETS ON UKRAINE'S POLICY OPTIONS FOR SECURING SUSTAINABLE GROWTH AND PRICE STABILITY

This paper investigates the impact of the global financial markets on Ukraine's economic conditions and reason on the policy options to sustain its growth path. By taking fundamental features of currency and asset markets as well as important theoretical weakness of standard economic thought into account, it aims at an effective policy of Ukraine to absorb possible shocks and the underlying institutional setting necessary to execute these policies in a way that creates trust among market participants and shapes their inflation expectations towards its main policy goal – low inflation and sustainable growth.

Course of the study:

Actuality of the topic: In recent months, several long term and mid term trends on capital markets cumulated in a sharp rise of raw material and a substantial depreciation of the US-Dollar against major currencies as well as some emerging markets (EmMa). Financial turmoil in US and UK credit markets increased risk aversion around the globe, affecting the general credit conditions and market liquidity negatively. Given Ukraine's current state of economic and social transition, these conditions increased the pressure on policy makers and the National Bank of Ukraine (NBU) to develop appropriate monetary and fiscal policies and to execute these policies in a way that creates and maintains trust in the Central Bank and the further improvement of the underlying institutional structures. Therefore it is highly necessary to put the theoretical and empirical foundations of these policies on a sound base.

Aim and course of the paper: The paper wants to contribute to a sound understanding of price changes and its dynamics, to assess its impact and to review international experience in dealing with

combating inflation, especially in EmMa's. Since empirical and theoretical consistency is a precondition for a sound and effective monetary policy, we investigate the Efficient Market Hypothesis (EMH) and the role of expectations in price changes. We present recent empirical data on market risk, reject the market efficiency hypothesis and conclude that the underlying model assumptions are risky since they don't reflect sufficiently the real probability of large price deviations. They are risky in a sense that central bank and law makers as well as market participants underestimate systematically market risk. This might create a delay in policy response, in too low optimization pressure on institutional decision making structures, non-optimal management of expectations of market participants, and lead to a sudden and unintended change in policies, which in turn affects the growth path and policy options negatively. Secondly, we reflect on the possible consequences for Ukraine and EmMa's in general.

Principal matter with review of recent publications: Recent research faced standard economic theory with substantial empirical data suggesting that its underlying assumptions might be far less reliable than previously assumed and necessary to be a sound base for monetary policy of central banks, policy makers and market participants. The revival of the „economic man” as a human being (e.g. behavioural finance) couples with irrefutable empirical evidence that proofs the EMH wrong.

After the formation of Psychology as a fundamentally empirical science in Leipzig and Königsberg in the early 19th century, mathematicians described French bond prices first in with probability distributions. Louis Bachelier [1] published in 1900 the foundations of the EMH, and used later on equitations of the atomic Brownian movement for the spreading out of warmth to describe the distribution of probability, with which French bond prices might go up or down. [2] However, Bachelier emphasized the fact that it would be impossible to catch the dynamics of the market with probability distributions, but this major limit of his claim was rather neglected. With the intent of the neoclassic theory to appear as a natural science, economics mixed reality with a should-be order and installed the idea of a „homo oeconomicus”, whose decisions were fundamentally based on reason without interference of emotions. But the advancement of psychology paved the way for the repeated inclusion of new psychological insight into economics, leading to the rehumanization of economic thought. Kahneman and Tversky's prospect theory points to systematic cognitive distortions in human decision making, especially under risk.[3] Although being

far from presenting a unified model, Shleifer [4] shows the limits of arbitrage as a mechanism of the EMH and points as well to the resulting policy implications.

More fundamentally, empirical psychology saved economics from moving too far from reality, leaving an evident risk that the false belief becomes self-referential and self-confirming. Since then, by making a „psychological turn” [5], strong evidence was found to move away from the „rational egoist” and the efficient market hypothesis, but mainstream financial theory still clings to the misunderstanding of concluding from probability distribution (description) to calculation (understanding), which implies understanding. After all, human behaviour is heavily bounded by cognitive limits [6], and heavily influenced by social behaviour of others (e.g. market participants) [7], that is in turn mainly reflected in expectations as a component of market prices and market stability. Institutions themselves rest on the expectation that they provide stability. So we should keep in mind, that the EMH has mainly a cognitive function to make market participants believe that the market is efficient. If this belief is at risk, even the market institutions are object to downward self-dynamics. As long as a sufficient number of market participants follows market rules, the market can fulfil its function. Since EmMa’s only start to incorporate their economies into world markets, they face a double challenge: The volatility of world markets and they own adjustment volatility triggered by the change from administrative prices to market prices. Institutionally, often they still have to decentralize decision making power and to build up reputation of newly independent central banks [8].

Among other functions, the central bank is the agent to manage expectations of market participants about price stability and exchange rates. It should be assigned the necessary decision making power and the institutional capacity to fulfil that function. It includes refraining from funding state budget and independence of monetary decisions from political interference, since its independence is a precondition for trust. There is striking evidence for the great importance of trust in the central bank for the effectiveness of monetary policy, [9] resulting in low inflation. As well, it is a condition for its political support. Conversely, high inflation endangers central banks independence, since it will lack political support or even worse, face contradicting fiscal policies [10].

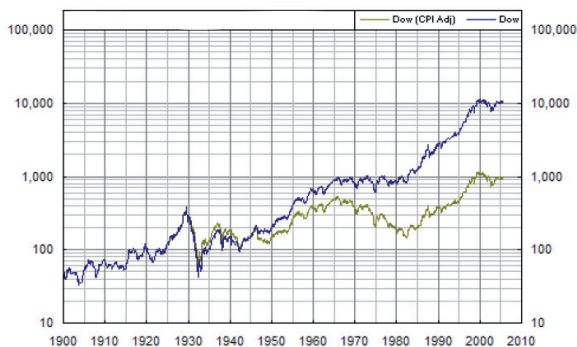
Having started with linking money supply to quantitatively limited materials (e.g. gold, silver), the excessive demand (e.g. to finance wars) and supply (over-consumption at too low interest

rates) of money itself is a source of volatility, which in turn decreases economic activity and creates social distortions. Central bank should appear as an agency that functions as a psychological anchor for market participants to orient themselves, because the market expectations of future prices contains the risk of a self fulfilling prophecy. This holds true for all assets, since the mechanism is a cognitive-social one. The extent to which it appears over certain asset classes may differ. Of utmost important should be consumer price stability. However, in a globalized economy price expectations for currencies, stocks and bonds are of the higher importance, the more a country relies on them as a major source of funding or the more the wealth of the nation depends on international trade.

To illustrate the impact of inflation, a comparison between real and nominal value of assets broadens the view and can clear up the subjective feeling of wealth. Beside that it complements the picture of reasons why a central bank has to pursue an anti-inflationary policy – simply to keep the wealth of the nation. As an example we choose the nominal and real development of the Dow Jones Industrial Average (DJIA). The chart shows the advantage of investment strategies which avoid loss from inflation.

In the period from 1966 until 1982, an investor with an index investment in the DJIA kept about his nominal value, but in real terms the index fell from about 500 points to about 150 points, which means a loss of 2/3 (excluding dividends). A Japanese investor, investing 1966 from the Japanese Yen in the DJIA in Dollar terms, invested 1966 at an exchange rate of about 360 Yen/Dollar. Given a return to Yen in 1982 he would have changed back at a rate of about 240 Yen/Dollar, loosing additional 1/3 of its investment. Beside that, an US-investor, investing in the DJIA index in 1966, had to be invested until 1996 to return to even in real terms, waiting 30 years! Meanwhile, in 1996 FED

chairman Alain Greenspan stated:
 "[...] Clearly, sustained low inflation implies less uncertainty about the future, and lower risk premiums imply higher prices of stocks and other



earning assets. We can see that in the inverse relationship exhibited by price/earnings ratios and the rate of inflation in the past. But how do we know when **irrational exuberance** has unduly escalated asset values, which then become subject to unexpected and prolonged contractions as they have in Japan over the past decade? [...]”[11].

It shows the crucial necessity for the central bank to act preemptively to manage price expectations, which might be interacting, as it has been shown for currency and country risk, especially in EmMa’s [12]. Since a lack of country trust is a more fundamental source of sudden stops of capital inflow, a lack of currency trust is both a source of country distrust and a reason for a country’s weak ability to deal with sudden stops of capital inflows.

This is in particular relevant for Ukraine, since there are severe institutional reasons to doubt about the country’s ability to deal with external shocks. This is represented in a low institutional capacity to deal with structural change, a pro-cyclical fiscal policy, signs of interference into central bank decision making processes by political leaders, and reliance on current foreign currency reserves to pursue an independent exchange rate policy. As having done for about the last 3 years, the peg to the US-Dollar could be maintained in a risk friendly investment climate on world markets, which means in turn, that the reached currency stability (with or without seeing US-\$ reserves of NBU rising from 22,3 to 31,7 billion USD over the year 2007) might be overestimated by policy makers and central bank. Lessons from the Asian crisis in 1997 show that if Ukraine is once integrated into global markets, it will become quite difficult to maintain a soft US-\$ peg in times of far from equilibrium conditions, [13] since markets tend to punish domestic policy mistakes and inefficient institutions with leveraged attacks.

One feedback mechanism, by which country distrust is channelled is the country’s rating for foreign currency debt. In recent weeks Ukraine was downgraded by two major Rating agencies (Moody’s and Standard & Poors) for not being sufficiently containing the surge in consumer prices, explicitly owed to the failure of authorities. A downgrade increases refinance costs and therefore slows investment. If credit risk is up and credit spreads are rising, the much needed capital inflow may dry and increase the current account deficit, which in turn increases the risk of a devaluation of the currency. A devaluation increases currency risk and decreases external creditability further. By this way, the country would pay a high price for low state capacity regarding monetary policy and for the low trust in authorities to deal with that in a trust-building manner. And it underpins the reflexive interrelation between the

sensitivity for sound transition strategies under starting conditions and its results, especially on capital markets [14].

Since exchange rate regimes matter for the persistence of inflation,[15] the exchange rate policy should adopt an appropriate regime, which enables the central bank to react to external shocks quickly. Beside that it has to take the state of transition into account, because the liberalization of administered prices triggers an inflationary adjustment impulse. Usually, food and administered prices have also a greater weight in the consumer price index than in advanced economies. Several central banks of transition countries addressed this issue explicitly when choosing among monetary policies [16].

But the exchange rate policy does not work for its own sake. It is a means to reach a policy goal. And since inflationary pressures can be huge in transition, the central bank should consider ways to influence inflation. Inflation itself has a rather calculable component, the real inflation rate, and a rather fluctuating one, namely inflation expectations. When inflation expectations are anchored sufficiently, the risk of second round effects is far less.

There is also recent evidence suggesting that inflation and inflation expectations are better anchored in inflation targeting economies than in non-inflation targeting economies with no adverse effect on output. Beside that, with inflation-targeting interest rates, exchange rates, and international reserves are less volatile, and the risk of currency crisis relative to money or exchange rate targets is lower [17].

Another result from less volatile inflation expectations is an extension of the maturities of fixed income products. As often in emerging economies, their bond markets lack size and liquidity and result in a quite short yield curve, because investors consider the possession of long bonds too risky. As the experience of Mexico in the mid 1990's shows, by anchoring inflation expectations better, volatility of long term bond yields is decreasing and gives investors more reason to hold such bonds. Apart from this, a longer yield curve with interest rates determined by the market increases effectiveness of monetary policy.

Alternative indicators to inflation targeting like targeting monetary aggregates are far less reliable in their predictability of future inflation. Especially in EmMa's with an often high speed of monetarization, a high growth of monetary aggregates often indicates rather a deeper financial penetration than an increase in inflation. However, although there are examples of advanced economies (USA, EU) with low correlation between money

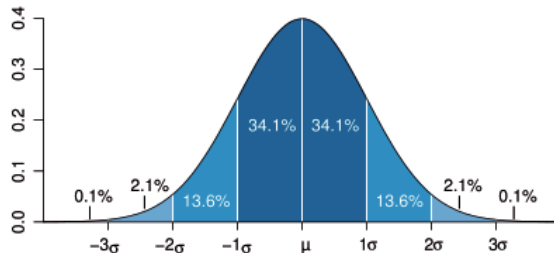
supply and inflation rate especially in the 1990's, especially the relationship between both remains strong long term [18]. But for managing short term price stability, monetary aggregates appear to be not sufficient to be based on exclusively [19].

After all, inflation targeting is not consistent with a strict exchange rate regime. In the long run, it is coupled best with a completely flexible exchange rate and an open capital account. Short term, it could be appropriate to manage the exchange rate, but it should be clearly subordinated to the objective of maintaining a low and stable inflation rate. Additionally, inflation targeting monetary policy can only be effective if it is accompanied by sound fiscal policies and the necessary level of independence of the central bank concerning funding the state budget and political interference.

About the essence of capital markets

Given all the reasonable effort to maintain price stability, there is strong reason to assume that the prevailing theories rest on weak foundations since they lack simply empirical evidence. The point seems to deserve more attention especially if it comes to managing volatility: For central bankers, investment managers, or for setting policy goals. All roles require a sufficient understanding about the entity of markets and a reflection, to what extent the underlying theoretical assumptions rest on sound empirical data. So far, EMH is as central as the belief that markets tend to an equilibrium.

Additionally, there are other discrepancies between reality and theory: The equal distribution of information contradicts with investor's interest to have an informational advantage and with rent seeking behaviour. The Markowitz' central idea to reduce investment decisions to mean and variance as proxies for expected risk and return assumes continuous price changes, but it shows that prices pass in jumps. It is assumed as well that price changes appear independent from another over time, but it is not. And finally, the normal distribution of price changes as an appropriate model to catch the real distribution of price changes, measured in standard deviat-

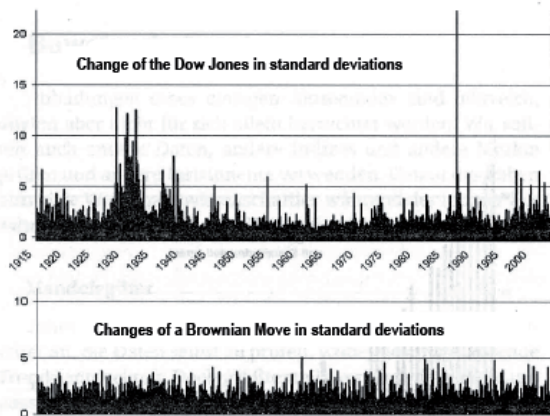


ons Sigma (σ), as shown below, dividing the distribution of changes into confidence intervals.

About 68% of values drawn from a normal distribution are within one standard deviation $\sigma > 0$ away from the mean μ ; about 95% of the values are within two standard deviations and about 99.7% lie within three standard deviations.

So far the assumption of the normal distribution. If we face the normal distribution of price changes – represented by the Brownian movement in the following chart – [20] with the living representative counterpart for stocks – the Dow Jones Industrial Average -, we see impressively the real world of capital markets before and after model simulations.

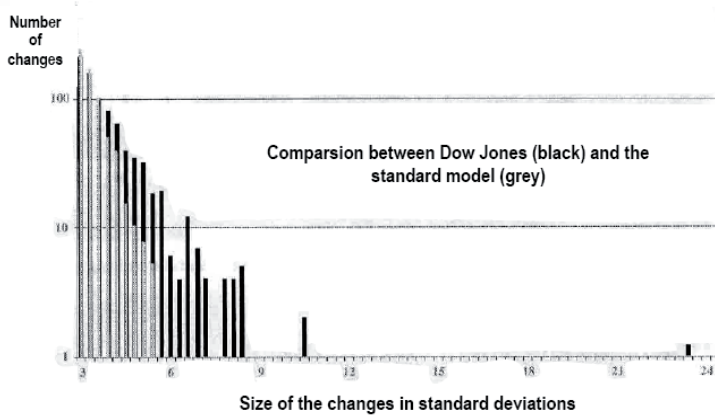
Reality versus Standard Model 1916-2003: Index changes of DJIA and Brownian move in standard deviations Sigma (σ)



As the Brownian movement follows the standard model, the DJIA shows large discrepancies over 87years: Some changes reach 10 standard deviations, in the stock market „crash” in 1987 it reached even 22 σ . The probability for such an event is about $1:10^{50}$. This is so small, that the normal distribution function even does not take it into consideration! In other words: Practically impossible. But it exists.

Now we put both tables together and sort the events beginning from the left with the highest number of changes with similar σ [21].

The very large changes are located at the right side, the smallest (positive or negative) at the left. The eye catching difference: The Brownian movement of the standard model is fading quickly and does not contain a change larger than 5 σ . The black strips of the DJIA contain many changes with more than 5 σ , even one change



with 22σ . And this means, that the standard financial model is wrong. These Results correspond with results for other global stock indexes.

Kurtosis is a measure of the peakedness of a curve. Higher kurtosis means more of the variance is due to infrequent extreme deviations, as opposed to frequent modestly-sized deviations. The normal distribution has a kurtosis of about 3. Recent research found the daily price changes of the S&P 500 between 1970 and 2001 to have a kurtosis of 43,36. Even after excluding the stock market crash in 1987, the kurtosis is 7,17. The kurtosis for the NASDAQ is 5,78, for the French CAC 40 results in 4,35. All are well above the norm of the standard distribution [22].

Since currencies are a main policy target, understanding the essence of currency markets is crucial for the consistence of many central bank operations and exchange rate policy. And since the currency risk is a core data for global investors, it is therefore highly relevant for managing a sustainable growth path in the economy.

For currency markets are available a lot of empirical data. Recent studies showed among others for the US-\$ / Yen relation changes of $5,1 \sigma$ (standard deviations), with the largest of $10,7 \sigma$ [23]. Referring to the normal distribution that means: Such a change should not appear even one time in 15 billion years!

If we consider long term trends, the picture does not change: These hefty sudden changes appear in daily, weekly, monthly and yearly rates, although the kurtosis is getting smaller, the longer the term is. For a time frame of about 400 years see a comparison of the Dutch guilders against the British pound: The data does not fit into the standard deviation curve and shows instead of that lots

of very small changes and as well very big changes, but too few inbetween: [24]



That these questions are a concern for central bankers shows a remark of the FED in the aftermath of the Asian crisis, when Greenspan expressed as well doubts about the appropriateness of the standard theory regarding crisis scenarios:

„History tells us that sharp reversals in confidence hap-

pen abruptly, most often with little advance notice. They are self-reinforcing processes that can compress into a very short time period. Panic market reactions are characterized by a dramatic shift to maximize short term value, and are an extension of human behavior that manifests itself in all forms of human interaction—a set of responses that does not seem to have changed over the generations. I defy anyone to distinguish a speculative price pattern for 1999 from one for 1899 if the charts specify neither the dates nor the levels of the prices.

If this paradigm turns out to be the appropriate representation of the way our economy and our financial markets will work in the future, it has significant implications for risk management. Probability distributions estimated largely, or exclusively, over cycles excluding periods of panic will underestimate the probability of extreme price movements because they fail to capture a secondary peak at the extreme negative tail that reflects the probability of occurrence of a panic. Furthermore, joint distributions estimated over panicleless periods will underestimate the degree of correlation between asset returns during panics when fear and disengagement by investors results in simultaneous declines (or, in rare instances, increases) in values as investors no longer adequately differentiate among degrees of risk and liquidity. Consequently, the benefits of portfolio diversification will tend to be significantly overestimated by current models” [25].

10 years after the Asian crisis started with the devaluation

of the Thai Bath, the neighbour country Vietnam faces high macroeconomic tensions as well. With inflation forecast at of about 25% and after a huge influx of foreign capital triggering a consumer boom, the already mentioned mechanism showed: The rating agency Fitch downgraded the country, trust disappeared, volatility was on the rise, the Dong lost already almost 60% of his value and major banks predict a currency crisis. Although other emerging market countries accumulated large foreign currency reserves, the prospects are not automatically better, since the impact of currency reserves depends strongly on the country's exchange rate policy. Beside that, it is very risky to excuse unfinished reforms with the argument to possess reserves. The less solid the institutional policy base and the more inconsistent the policy decisions are, the more likely the reserves will not do what they are supposed to. And the quicker the market responds to inconsistencies in economic policy or related fundamentals, the more likely – under imperfect information and reasoning – bubbles and crashed will occur. They are too complex to describe with simple standard deviations, but rather with fat tails, excess kurtosis and excess volatility [26].

Apart from that, today's situation is even worse, since the prospects for countries with relatively high levels of dollarization of the economy – like Ukraine– face several challenges regarding their central bank policy. If interest rate differentials increase to the US-\$, sterilization costs for the central bank are up as well. Beside that the experience in Hungary shows that also central bank might not find the right timing and size of sterilization activities.

Conclusion and outlook:

World markets are far more risky than suggested by prevailing economic theory. The theoretical dominance is a risk because it puts a blind spot to the most inconsistent underlying assumptions. This is what Soros included in his term „market fundamentalism” and considered it a major behavioural and ethical source of the current crisis [27].

For Ukraine we see a strong need for rebalancing its institutional base, which was already a major reason for credit markets to attribute less trust. Due to the complexity of the parallel transition and globalization process, there should be an error and learning friendly climate to be pursued by authorities, which increases transparency, reliability and consistency of political decision makers and central bank. By taking the nature of markets into account, we would start a process of revision the current peg to the US-Dollar, regardless the amount of foreign currency reserves. Having the quite stable exchange rate period from 2005 in mind,

Ukraine could be tempted to extent with a VaR and standard deviation logic into the future. Since we expect the credit and currency turbulences on global markets rather to increase than to vanish, we consider an inflation-fighting, trustworthy, and sound central bank policy coupled with anti-inflationary fiscal policies as a cornerstone of trust in Ukraine. This in turn would provide more policy options (refinancing, lengthening of the maturity structure of government bonds, higher liquidity, decreasing credit spreads). And finally, we consider this the most sustainable way to an economically prosperous, socially balanced, and ecologically healthy Ukraine in the expected turbulent global environment.

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