

# TIGER

TRANSFORMATION, INTEGRATION and GLOBALIZATION ECONOMIC RESEARCH

CENTRUM BADAWCZE TRANSFORMACJI, INTEGRACJI I GLOBALIZACJI

**TIGER Working Paper Series**

**No. 130**

**ENDOGENOUSLY INCREASING UNCERTAINTIES AND  
GOVERNANCE**

**Olivér Kovács**

**Warsaw, January 2014**

# Endogenously Increasing Uncertainties and Governance<sup>1</sup>

Olivér Kovács<sup>2</sup>

## Abstract

This contribution argues that uncertainty is integrated into the modern economic systems; however *its autochthonously increasing feature* is puzzling and should be addressed in a more dedicated way. Behind the curtain of increasing uncertainty, we purport to demonstrate that at least the following intertwined and interrelated main building blocks can be deciphered that are contributing to the deepening global distribution of uncertainty in the advanced world by establishing a *vicious circle*: (i) increasing complexity; (ii) wicked characteristics of policies; (iii) heightening role of psychological factors in economics; (iv) secularly declining innovativeness feeding into inequality which reinforces and maintains increasing uncertainties. We also shed light on some implication of increasing fundamental uncertainty on governance.

**JEL classification categories:** H00, D80, O3

**Keywords:** uncertainty, complexity, wicked policies, techno-economic paradigm, innovation

---

<sup>1</sup> The author is indebted to László Csaba and Stefan Musto for their valuable comments and suggestions to an earlier version of this paper.

This research was realized in the frames of TÁMOP 4.2.4. A/2-11-1-2012-0001 „National Excellence Program – Elaborating and operating an inland student and researcher personal support system”. The project was subsidized by the European Union and co-financed by the European Social Fund.

<sup>2</sup> Olivér Kovács, Ph.D in Economics, Research Fellow at ICEG European Center, H-1126, 5/B Kiralyhago Street, Budapest, Hungary. E-mails: okovacs@icegec.hu; Web: www.oliverkovacs.com

## **Endogenously Increasing Uncertainties and Governance**

### **Introduction**

There is an important thumb rule in economics, namely that building on easily observable, measurable and interpretable phenomena during any kind of analysis can result much precise knowledge. This is because we simply do not always understand the ‘big picture’ comprehensively and precisely due to its complexity. We often tend therefore to understand reality by investigating the microsphere and then approaching the macrosphere upon our obtained knowledge. As in physics, investigating elementary particles then drawing conclusions to the macro, (e.g. to the universe) is treated as an instructive direction of understanding the laws of nature that are not displayed in any code books like the code of Hammurabi or the Civil Codes in modern democracies. This holds to a certain degree in case of economic and societal ‘laws’ as well.<sup>3</sup>

This is partly why the issue of uncertainty was once addressed by looking at the microsphere, namely at organisational optimising problems in uncertain environments (Duncan, 1972; Galbraith, 1977; Milliken, 1987). Except some discordant voices like Bernanke (1983), research on uncertainty has not gained momentum for a long time in a more vigorous way from a macroeconomic perspective. Moreover, uncertainty, let it be policy or economic, has been traditionally viewed as a challenge in developing (Handley – Limão, 2012) and emerging economies that are more prone to failed states, inefficient and distorting formal and informal institutions. By now, and with the 2008 financial and economic crisis, these views were reversed into the oblivion as advanced countries started to have intensifying uncertainties. Research on uncertainty has to acknowledge that old approaches with microsphere focus should be transformed into a more systemic one pervaded by macro-level analyses better suited to the expectations of academics and economic policymakers. The old question is still the same, but the context in which it has to be addressed has changed radically: how does uncertainty affect economic activities, socio-economic developments?

---

<sup>3</sup> Nevertheless, neglecting the fact that aggregating micro does not equal with macro would be a rather seductive line of thinking. The whole cannot be counted as a sum of its parts as the ‘fallacy of composition’ suggests (See Samuelson – Nordhaus, 2004). Owing to the externalities of financial markets, the sum of micro-level decisions does not equal to the macro-level result (See Csaba, 2008:296).

As time passed, numerous economic fields got acquainted with the issue of uncertainty which shaped the line of thinking. In cases of development economics and growth theory, recent research found that increases in uncertainty are mainly associated with protracted negative impetus on economic activity (Bachmann et al. 2013). However, there is still much to explore about the nature of uncertainty, which is a very complex issue.

Pitirim A. Sorokin emphasised 58 years ago that there are complex socio-economic phenomena that cannot and should not be seen and reduced to numerical terms if the real world's complexity and nuances are to be reckoned with in scientific analyses (Sorokin, 1956). In this spirit, there are phenomena that cannot be comprehensively understood because of the complex system in which they happen and because of their own complexity being often pervaded by non-linear dynamics, interspersed with qualitative factors and being affected by the wide gamut of intangible psychological motivations.

Beyond a peradventure, the thoroughly and completely unexplored complexity fuels and maintains uncertainty. In this respect, uncertainty can be seen as *the unquantifiable and thus unknown risk* which has two meanings semantically: uncertainty being associated with a decision's exact outcome as well as uncertainty over what shall a socio-economic actor (e.g. firm, government) do under the given complex circumstances. Although uncertainty has long been discussed in the context of the private sector, this type of mindset can be complemented with the issue of how uncertainty affects governance *per se* with the recognition that public sector is also *exposed to uncertainty* and can be a *maintainer channel* of it alike.

Additionally, getting a better understanding over how uncertainty relates to modern economic activities demands a more systemic approach by incorporating the fact that although financial sector and the real economy are generally viewed as two coexisting and different worlds, they are heavily intertwined and interconnected (Blanchard, 2013) and are exerting influence on each other (Davis, 2010) by having uncertainties with distinctive nature. There is no linear causal relationship between financial markets' friction and decline in the real economy. They affect each other recursively. Without being exhaustive, it is amply demonstrated by the widely accepted unpredictable character of currency exchange rate fluctuations (Meese – Rogoff, 1983), not to mention the capital flows related economic literature's message that global portfolio

inflows as well as outflows are shaped by significantly changing economic conditions in the advanced world (Raddatz – Smukler, 2012; Forbes – Warnock, 2012).

Some argue that financial markets are pervaded by the driving force-feature of uncertainty in a more vigorous way compared to the real economy. It is mainly because of a more intensified feedback opportunity to any news, initiative, policy, change in fundamental economic indicators etc. The feedback mechanism is largely influenced by hard and soft factors leading to non-linear processes that affect the financial markets *per se* as well as the real economy. As the development of the streams of behavioural finance and the Functional and Structural Finance literature suggest, beyond fundamental macroeconomic indicators, financial markets are deeply governed by uncertainty given by the weaving relations among various factors such as emotions, overreaction bias, imperfect information, information asymmetry, herd mentality etc.<sup>4</sup> Accordingly, periodic instability is encoded into the global financial system because of regulatory shortcomings and uncertainties (Spence, 2012:141). Without omniuncertainty, *a contrario*, in a fully predictable world, markets would presumably terminate themselves or at least they would completely confuse their operation.<sup>5</sup>

In this paper, we argue that uncertainty is integrated into the modern economic systems; however *its autochthonously increasing feature* is puzzling and should be addressed in a more dedicated way. In this respect, Baker et al. (2013) argued that policy uncertainty has been secularly rising since the end of the 1960s. Behind the curtain of increasing uncertainty, we purport to demonstrate that at least the following perceptibly intertwined and interrelated main building blocks can be deciphered that are contributing to the deepening global distribution of uncertainty in the advanced world by establishing a *vicious circle*: (i) increasing complexity; (ii) wicked characteristics of policies; (iii) heightening role of psychological factors in economics (trust,

---

<sup>4</sup> People's decisions are governed by expectations and their reactions rely strongly on what kind of event they face. Unexpected, what is more, relevant events (e.g. surprisingly bullish or a rapidly dispiriting change in the stock market) are more common in the financial markets because this market is heavily pervaded by real-time mass psychosis. Since unexpected events like winning and losing trigger reactions with relatively more intense emotions (Ortony et al. 1988; Mellers et al. 1999), overreactions happen by pumping additional sources to the prevailing uncertainty. This is why speculation – a certain manifestation of soft-factors – is traditionally viewed as a conscious way of formenting uncertainties to realise gains (Maggio, 2013).

<sup>5</sup> Uncertainty is partly responsible for making great losses and gains possible at financial markets. In this sense, uncertainty does not have just the sheer negative connotation. Additionally, uncertainty is also a driver of innovation in the business sector as economic history demonstrated. Innovations were born even during uncertain times (e.g. plastic, pocket calculator are those products that were invented during the Great Depression and the crisis of the 1970s).

increasing sensitivity, halo-effect, priming, creeping normalcy); (iv) secularly declining innovativeness feeding into inequality which reinforces and maintains increasing uncertainties.

### **Ever-more complex world**

Due to the irreversible and complex process of globalisation, now we are living in an era of increasing interconnectedness with asymmetrical interdependency being coupled with growing Knightian uncertainties (*unknown risk*) (Knight, 1921|2006). As Anthony Giddens' holistic view stresses, the intensification of worldwide social relations link distant localities together in such a way that local happenings are shaped by events occurring many miles away and *vice versa* (Giddens, 1990:64).<sup>6</sup> Complexity has been growing, what is more, it has been further aggravated particularly due to the global financial and economic juncture erupted in 2008 which showed that the old saying of 'if a globally core country sneezes, the rest of the world would catches flu' has become peremptorily part of our modern times irrespective of considering the US or China as the core country. This is mainly because of the threat of permanent slowdown in China, the threat of budget standoff in case of the US (even if the US debt-ceiling is raised, the deeper problem persists making creditors' calm a phantasmagoria and thus leading to higher borrowing costs). Importantly, both phenomena are likely to have various direct and indirect negative consequences on the rest of the world, including Europe where the high-level of uncertainty has been already injected into the way of thinking on the fiscal and banking crisis and where a more-than-fragile recovery is by no means in the cards, either.

With the quite dynamic development and diffusion of information and telecommunication technologies (ICT) since the early 1970s, that can be regarded as general purpose technologies that brought new e'lan into the development path of the advanced world by becoming one of the most pivotal driving forces of globalisation, accessing relevant as well as irrelevant information has become ubiquitous feature of nowadays (Perez, 2002, 2009; Lundvall, 2002). Affluent information about phenomena perpetually creates impressions, perceptions and decisions about how to act in the mindset of economic agents. Since extensive information does not necessarily lead to the useful and relevant thesaurus of knowledge because of our limited rationality,

---

<sup>6</sup> For example, Federal Reserve interest rate policy in the US has non-negligible impetus on the European economy as well.

considering uncertainty as a reducible component of ignorance (Hart, 1942) *via* learning-by-doing does not hold inevitably. What is more, in the course of this type of proactive perceptions, expectations over the timing of proper governmental interventions as reactions to problems are rising.

The age of immediacy is therefore here to stay by having an embedded prone to causing uncertainties because there is no governance – neither on national nor on international levels – that would be an omnipotent one having the necessary *lapis philosophorum* whereby that would carefully and scientifically properly overlook *ex ante* the whole system and the effects of the actions imposed because of the complexity it faces (i.e. the essence of complexity is that there are unknown unknowns that cannot be taken into account).

Complex system entails complex problems – so-called, wicked problems spanning over the traditional walls of national states – requiring, by their very nature, complex solutions permeated with uncertainty over ‘what to do’ and implementation-related uncertainty (i.e. the impact of interventions cannot be estimated *ex ante* properly with due diligence at all time). Such complex problems, when our knowledge faces its limitation in the sense that we are not fully capable of assigning probabilities to various potential outcomes, are as follows: (i) demographic challenge (e.g. ageing population, increasing inequalities and impoverishment); (ii) climate change (e.g. increasing temperature, air pollution etc.); (iii) changing characteristics of emerging markets; and (iv) the *sui generis* sovereign debt crisis. These complex challenges seem to call for international solutions, some sort of global governance.

*Demographic challenge* is important from many aspects. As far as ageing population is concerned, one of the main reasonable side-effects of that is the need for greater mobility, i.e. stream of active labour force paying taxes due to the worsening financial base of traditional European social systems that will be undermined by the decline in European employment levels (Schuknecht, 2011). Demographic challenge can be directly linked to the issue whether mid and longer term employment situation will be improved or not. This line of thinking can be ranked with the circle of issues hovering around the phenomena of ‘job-less growth’ (i.e. economic growth with lower and lower level of sustained employment creation). This type of argument has an increasingly growing theoretical and empirical backing since extensive standardisation, the development of robotics, automation of labour *per se* direct toward fewer jobs. Moreover, new

and breakthrough innovations tend to require new skills from the side of end-users as well. The latter is a perplexing issue because the demographic trend conveys that ageing population in Europe will presumably lead to a society having relatively worse adaptive and absorptive capacity concerning the evolution of new services and technologies. With regard to increasing income inequality, it can *inter alia* undermine the trust base of the given region or country by hampering sound socio-economic development. Increasing gap between rich and poor poses risks over impoverishment which is of key importance simply because impoverishment is likely to undermine political stability inevitable to conduct economic policy. The presented collage of issues related to demographic challenge is already meshing into an uncertainty-maintainer (heightener) channel across Europe.

*Climate problem* can be captured by many ways, but its *pièce de résistance* is that according to the common view of ecologists, mankind's only chance of survival is to provide the sustainability of Earth's biosphere.<sup>7</sup> In this respect, some argue that cross country, optimally global governance seems to be needed to dampen emissions by reducing atmospheric greenhouse gases, to enhance more climate-resilient low-carbon economies. This requires realising that anthropogenic climate change is featured with global externalities, hence it goes beyond the Coasian world (Coase, 1960) simply because there is no global court that would stand sentinel and dispose over the rights. It implies that incorporating the ecological approach both into the public and private sectors's activities is of high relevance. Uncertainties arise here if for no other reason than because of complicated issues more than just 'fire-fighting'.<sup>8</sup> Without being exhaustive, just to name a few: how to unfold the potential that of a more climate-resilient socio-economic development as well as how and to what extent will future global warming and climate change affect various fields such as demography (e.g. evolving movements due to deforestation,

---

<sup>7</sup> This includes the sensitive equilibrium disturbed by the greenhouse-effect. If the latter decreases significantly, the annual average temperature at the Earth's surface may change to a downward trend. As a result, more and more water would freeze intensifying the global cooling due to the fact that ice and snow are reflecting back more light than water. In the opposite case, water would evaporate faster leading to higher concentration of vapour in the air. Since vapour is able to absorb infrared rays easily, the global warming would be a self-sustaining process. Human activities are more likely to be blamed for climate change (IPCC, 2013). This awareness is also reflecting in the new policy framework for climate and energy in the period 2020-2030 proposed by the European Commission (2014).

<sup>8</sup> Despite the good deal of uncertainties about the physical impacts of a given degree of warming and the associated economic losses (or gains), climate change moderating decisions are needed, as Fisher (2001) accentuated. Beyond the physical impact, the psychic-effect is of importance as well (i.e. growing impatience for long term solutions). See more on climate change related uncertainties: Pollack (2003) and Aizebeokhai (2009).

increased flooding and drought, air and water pollution etc.), the fiscal sustainability of states (e.g. turbulent weather anomalies have serious fiscal consequences etc.).

Additionally, forgetting the fact that the *characteristics of emerging markets is changing* would be a Hayekian fatal conceit if for no other reason than because it will presumably have significant impetus on the economic performance of the EU, as well. There is a more and more observable shift in the economic paradigm of the Chinese economy that is to say the economic paradigm based exclusively on manufacturing sector and export-led growth do not seem to fit the requirements of the country any longer. Recent 5 Year-Plan alludes to the required shift towards a more consumption and service sector based paradigm, it was discernible *expressis verbis* in the plan (Roach, 2011). Due to the shift, the economic growth will go through a dampening process, which is now the case (real GDP growth of China was 10.4% in 2011, while it then plummeted to 7.7% by 2013 (IMF 2013)). This is completely in line with the results of Barry Eichengreen and his co-authors emphasising that economies tend to slowdown as they reach the 17000 dollar per capita income level (Eichengreen et al. 2011). It can be anticipated by 2015, in case of China. Another potential repercussion will be the change in the European import structure, and the price-moderating effect of the cheap Chinese products will also be lower. Apart from these presumptions, there is a fundamental uncertainty over how and through what channels will the Chinese slowdown and economic paradigm shift affect the rest of the developed world.

The flame of the era of Great Moderation, coined by Stock and Watson (2003) for the economically tranquil years in the period 1992-2007, has gone out with the eruption of the 2008 financial and economic turbulence and its ensuing *sui generis sovereign debt crisis*. The cascading effect of financial (e.g. the freeze-up of financial markets after the collapse of Lehman Brothers given by high uncertainties over the marketwide impact of such event) and economic problems resulted in the advent of the era of Great Recession (Coibion – Gorodnichenko, 2010) causing serious macroeconomic fluctuations, what is more, a conspicuous rise in uncertainties over the present as well as the future.<sup>9</sup> Debt-crisis calls for long-standing fiscal consolidations that are painful enough to be cushioned by more effective and innovative public sector which can

---

<sup>9</sup> Perceived growing uncertainty can be manifested in intensifying suicide rates where the Great Recession had the most juggernaut effect on employment. According to the study prepared by Luo et al. (2011), between 2007 and 2009, approx. 4,884 excess suicides (suicides that were beyond what one have previously expected based upon the trend) occurred, which is in line with the historical patterns conveying the message that suicide rates goes with the rise and fall of the economy. For more on how increasing unemployment has been historically associated with excessive suicides see Stuckler et al. (2011).

feed into the trust-base of citizens. Reinvigorating trust is of paramount importance in peripheral countries (southern Europe) that have not been fared quite well due to their conserved structural weaknesses. The core versus periphery dichotomy in terms of competitiveness was not dampened significantly by the European integration. Apart from the fact that the EMU is not a monetary and fiscal union, creating credible coercive power to conduct prudent fiscal policies and such structural reforms that are geared towards improving peripheral countries' international competitiveness was beset with difficulties.<sup>10</sup> It establishes a claim for deeper international coordination and surveillance (Shafik, 2013), however, the history of EMU conveys that member states are inclined to preserve their sovereignty and they require a solution which bolsters the fiscal discipline without endangering the transfer of sovereignty. As a consequence, due fiscal governance remains a priority at national level (Csaba, 2012; Di Fabio, 2011:464).

### **Increasingly wicked-characteristics of policies**

The above mentioned modern wicked problems make policies<sup>11</sup> increasingly wicked as well by contributing to fundamental uncertainty. *First*, coping with some complex challenges goes beyond the traditional wall of national governance by requiring some sort of global governance. *Second*, tackling complex challenges forms various difficulties if for no other reason than policies tend to have potential cross-border spillover effects as well.

As far as our *first* consideration is concerned, complex problems establish a solid claim for policy actions even on the global sphere by leading therefore to wicked policies (Churchman,

---

<sup>10</sup> Apart from the fact that softening the Stability and Growth Pact was equal with the worsening credibility, particularly by the early 2000s when two non-complying countries (Germany, France) were not sanctioned, we argue that EMU framework acted as a mechanism which was on the one hand benefiting for core-countries like Germany and France, and it was counter-incentive for such countries like Portugal in implementing necessary fiscal adjustments and structural reforms. Since the indebtedness in southern Europe, helped by Germany and France, fostered their imports, *a contrario*, it also triggered the German exports; and thus this system appeared to be a desirable one. So, the well-documented design failure (De Grauwe, 2013) was not only the result of human action, but, to a certain degree, also that of human deliberation. Nonetheless, the surplus cash stemming from the strengthening exports was being to a large extent re-allocated into the southern countries in form of loans. The reason why the EMU did not serve completely as an external enforcement framework is that the German and French governments would have blocked the flow of increasingly risky loans to the peripheral countries, but their interest groups would not have left it without a word because this would have led to additional economic slowdown determined by a decline in demand and workforce layoffs. For this reason, the creditor countries were not interested in brake up this *status quo* and therefore closed one of their eyes to the fiscal indisciplinary.

<sup>11</sup> A policy is defined here as a deliberate act of government that can alter or influence the society or economy. Policies include, but are not limited to, taxation, regulation, expenditures, legal requirements and prohibitions, as well as the provision of consulting, coaching and training.

1967; Rittel – Webber, 1973), “[...] where ends are neither well known nor agreed upon, and means-ends relationships are either poorly understood or unstable” (Paquet, 2013). Due to wicked policies, a certain level of uncertainty (fundamental uncertainty) is always encoded into the modern socio-economic system.

Importantly, it would be naïveté to think that the above deciphered insights are directing us towards the recognition that a more dedicated and effective global governance is feasible.<sup>12</sup> Desiring effective and efficient global governance can be deliciously tempting, but this would be the wrong inference pervading by a good deal of abstract thinking and forgetting the real world nuances and complexities. Some sort of global governance (*i*) should be based on wide political consensus which is not the case even in the European Union, either,<sup>13</sup> (*ii*) should be as democratic as it would be requested by citizens, and (*iii*) should possess all the necessary relevant information to overlook and fully understand non-linear economic processes. As Austrian economists ravelled out long ago, this cannot be the case. Mises (1929|1996) argued that interventionism even at national level generates unintended negative consequences, i.e. generates uncertainties. Hayek (1945) associated this issue to the shortcomings in utilising information when it comes to coordination (i.e. to have all the necessary knowledge to overlook the process of interventions). As a corollary, academics, pundits, and economic policymakers predominantly have different angles with different interpretations, hence the essential shared understanding of the causes and potential consequences of certain events among politicians is quite easily missing.

Let us add to the latter one that deep global governance seems to be impossible mainly because of our limited rationality (Simon, 1957; 1986) to understand the whole in its entirety by overcoming the world’s complexity and its nuances.<sup>14</sup> As the Nobel-laureate Daniel Kahneman rightly pointed out again, the predictive power of our knowledge reaches its diminishing marginal returns relatively fast (Kahneman, 2013). This time-tested insight also holds when it comes to predicting non-linear economic processes evolving in the above articulated complex

---

<sup>12</sup> As Temin and Vines (2013) repeatedly reaffirmed, in the absence of a hegemonic power, global governance seems to be a desired, but not realistic option. Even the World Economic Forum has just recently played down a scenario for global governance without clearly specifying its feasibility. See: Nye (2013)

<sup>13</sup> This is why the resoluteness of creating a real European Monetary and Fiscal Union is not so strength as one may have reasonably expected because economic rationality is not necessarily in line with political reality.

<sup>14</sup> Consequently, higher level international cooperation relies on whether the expectations on functions and capabilities are realistic enough as Frieden et al. (2012) ascertained.

system interspersed with growing interconnectedness and interdependency and the current dominance of uncertainties (e.g. estimating *ex ante* the value of fiscal multiplier precisely is particularly cumbersome as it was admittedly the case during the recent crisis management since 2009<sup>15</sup>).

As for our *second* consideration, the above mentioned joins to the line of thinking stating that we live in a complex world pervaded by wicked challenges, but one should bear in mind that even if the national state can be seen as the antiquated heritage of the French revolution, it still remains responsible for conducting policies capable of reducing excessive uncertainties through enhancing sustainable development and sustained growth. It is not an easy task, either. With respect to growing complexity, a more intensively arising issue is the spillover effects of policies. For instance, and by concentrating on Europe and fiscal policies particularly, due to the globalised and heavily interconnected economic arena when uncertainties prevail because of the 2008 crisis and that of the crisis management, external fiscal austerities trigger cross-country spill over effects, hence may create less favourable demand for the exported goods and services of the given countries at their main trading partners (Hebous – Zimmermann, 2013; Kovács, 2013a).<sup>16</sup> It is important to emphasise that peripheral countries such as Portugal, Italy, Spain and Greece with heavy-weight fiscal adjustments – which led to blatant decline in their domestic demand – engendered negative external shocks for northern European countries as well as the core countries through decreasing export (Vihriälä, 2013) coupled with deceleration in internal consumption and private investments. In the above cited study we contemplated different types of fiscal consolidations imposed by European countries, and we led to the conclusion that ‘this time is different’<sup>17</sup> in the sense that neither the classical view of consolidation (heavy-weight adjustment invoked to stabilise budgets in numerical terms in the short term) nor the large and

---

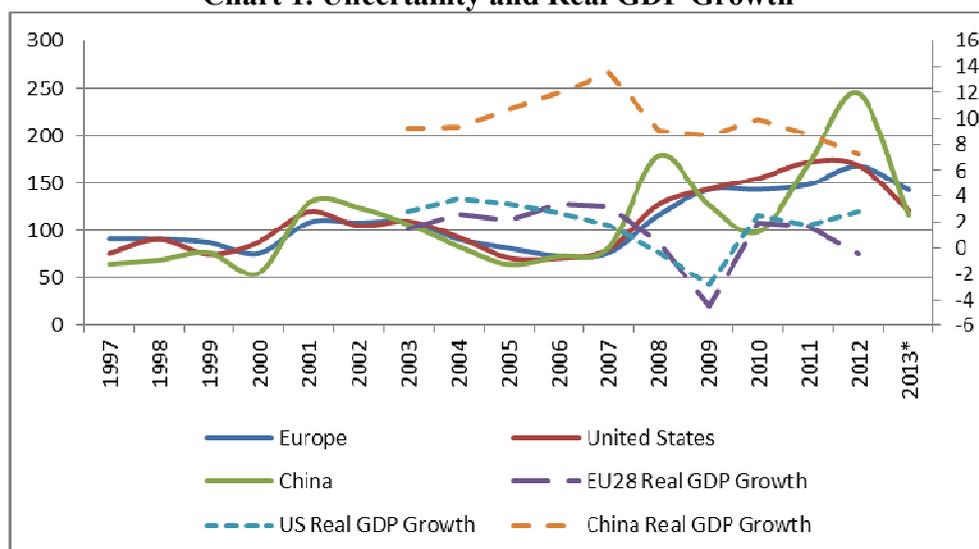
<sup>15</sup> In the early stage of crisis management, policymakers in the United States and Europe tried to boost economies through coordinated monetary stimulus. With the evolving web of commitment to underpin aggregate demand in a Keynesian way, governments in Europe were imposing fiscal measures as well to dampen the negative impetus of the financial and economic crisis. Many analysts estimated *ex ante* the fiscal multiplier, however, even the most authoritative estimations fell short afterwards because of the non-linearity and the potential spillover effects that cannot be captured in the models precisely (See: Blanchard and Leigh (2013), Romer (2012); Solow (2012); and Barrell et al. (2012)).

<sup>16</sup> For instance, the largest European countries of destinations of the Swedish export of goods are as follows: United Kingdom, Denmark and Germany of which imports from Sweden has been showing a pent up dynamics since the shift to austerity. See: [http://www.scb.se/Pages/TableAndChart\\_\\_\\_124062.aspx](http://www.scb.se/Pages/TableAndChart___124062.aspx) Accessed on: 06.01.2014

<sup>17</sup> This phrase was famously used in a comprehensive book written by Carmen Reinhart and Kenneth Rogoff in 2011. See: Reinhart and Rogoff (2011).

expenditure based adjustments<sup>18</sup> seem to be an instructive way forward in the current circumstances.<sup>19</sup> It holds especially because even the European core countries (e.g. Germany, France) also face growth problems and the European panorama *became highly integrated with cross-country spill overs occurring in a more emphatic way*. Because of these, the predictive power of knowledge of governments and that of international organisations reaches its diminishing marginal returns regarding the issue of how much will be the fiscal multiplier. This shortcoming *per se* may feed into ‘what to do’ as well as implementation-related uncertainties. Related to these uncertainties, there is a policy uncertainty index<sup>20</sup> exemplifying the lots of opinions, perceptions evolving on the accuracy and necessity of economic measures taking place or should be take place in their humble opinions. As Baker et al. (2013) emphasised, “since 2008, economic policy uncertainty has averaged about twice the level of the previous 23 years.”.

**Chart 1. Uncertainty and Real GDP Growth**



*Note:* left axis refers to the policy uncertainty index developed by Baker et al. 2013, 2010=100, annual average; while right axis refers to the real GDP growth performance in percentage. Uncertainty indices for 2013 are up to September 2013.

*Source:* Eurostat, Baker et al. 2013, World Bank

<sup>18</sup> Whose crucial role was accentuated by Alesina and Ardagna (2010) because of its greater potential to signal more credible commitment to fiscal prudence (i.e. reducing risk premia).

<sup>19</sup> Fiscal consolidation-related economic literature suggests that growth-effect (non-keynesian effect) is more likely to take place through investment-channel (Alesina et al. 2012). Consequently, policy should support investment activity, especially research and development, innovation activities.

<sup>20</sup> Developed by Baker et al. (2013) to capture the economic policy related uncertainties observable in selected countries.

Let us add immediately, that in time of immediacy and growing interconnectedness, policy related uncertainties in the US affect uncertainties perceived in China and *vice-versa*. Uncertainties and perceptions can be exported and imported in this way by giving no chance of such a seductive line of thinking that uncertainties across countries would be independent from each other.

Uncertainty all the more has implications on real GDP growth that also affects perceived uncertainties. Our state-of-the-art knowledge on the relationship between them suggests negative, but by no means linear (from growth to uncertainty, or from uncertainty to growth) correlation. With our ever-more complex world, uncertainties can arise in a more vigorous way by affecting negatively the wide range of economic activities from employment and investment, through consumption to innovation as well as research and development activities. The pioneering work of Bernanke (1983) and Dixit and Pindyck (1994) provided us the enduring finding that growing uncertainty deters firms to invest in a way they would otherwise do without uncertainty. Lensink et al. (2005) conducted a study on how increasing uncertainty influenced the investment behaviour of 1,097 Dutch companies and unravelled out that it had significant negative impetus on investment activity (e.g. SMEs were tended to delay or carry out smaller-scale investments in time of escalating uncertainty). Negative repercussion was demonstrated by considering that financial frictions tend to lead to increasing cost of capital as well as depleting credit supply, hence investments and productivity are suffering (Gilchrist et al. 2010). The negative correlation between uncertainty and economic activity is not raucously debated since the empirical backing of that finding has been thriving for decades (Bloom, 2009; Baker et al. 2013; Ghosal – Yang, 2013).<sup>21</sup> The weaving relations among external (e.g. exogenous shocks in oil supply as for instance Lutz (2005) or Hui and Kliesen (2005) presented) and internal ones create and propel uncertainties by posing hurdles against economic growth.

The existence of spillover effects also implies that the *role of luck* is appreciating in explaining policy outcomes (Wagener, 2011), because with a highly globalised world, lots of external factors are going definitely beyond the control of a particular government (particularly in case of small and open economies). The crux of this reasoning directs us towards Beck, who once

---

<sup>21</sup> Stein and Stone (2010) found that 2,230 US manufacturing firms behaved similarly as uncertainty was growing.

enunciated that „[...] the unknown and unintended consequences come to be a dominant force in history and society” (Beck, 1992:23).

### **On the heightening role of psychological factors in economics**

Since financial markets have become greatly integrated with the real economy, and since financial markets are governed especially by uncertainty, the linchpin role of psychological factors comes into the forefront in explaining some sort of events. Psychological factors play fundamental role in maintaining fundamental uncertainty encoded into the market system, and they are also responsible for triggering excessive uncertainty in turbulent times. In this respect, we argue that at least the following five factors can be deciphered as decisive ones that have been contributing to the phenomena of autochthonously increasing uncertainty: (i) trust, (ii) increasing sensitivity; (iii) halo-effect; (iv) priming; and (v) creeping normalcy.

As far as *trust* is concerned, it has been long recognised that the lack of trust impedes economic development as Banfield (1958|1967) and Arrow (1972) also argued. Incorporating the role of trust, the parties of the given contract promise compliance in some sort of transaction (Levi, 1998), bridges the gap between abstract economic modelling and analysing on-the-ground realities. Trust is of particular importance in lessening the costs of the given transaction for each party whereby even the riskier transactions (e.g. investments, innovations etc.) can take place. Accordingly, trust infrastructure plays a crucial role in our socio-economic development. It holds for the relation between state institutions, governance and citizens. Governance also needs trust from the citizens to implement necessary policies.

It goes without saying that economic crisis have been therefore always explained by the lack of confidence and trust (Akerlof – Shiller, 2009:34; OECD, 2013). Similarly, trust, which was built up during the era of Great Moderation, was systematically shattered with the 2008 financial and economic crisis in believing market forces and public sector including governance and institutions. Trust and confidence were started to dispose into the air, *inter alia*, with respect to the issue of whether governmental measures can be seen as instructive way forward or not. Although economic governance is expected in time of a deep crisis to serve as a catalyst of achieving a positive turnaround even in the shorter run, the challenges it faces are complex and

the impacts of its policy intervention cannot be anticipated accurately *ex ante* which translates into increasing uncertainties.

Let us underscore that always the longer run effect of economic policy shall be successful if it is in accordance with and supported by prevailing social norms, informal institutions and trust infrastructure, because short term effects cannot be accurately estimated (*wicked policies*) and supporters may back out in a low trust environment leading to failed initiatives/policies. Additionally, even though policies can be wicked ones maintaining uncertainties, in good times (e.g. dynamic economic growth) trust base of citizens tends to prevent that kind of uncertainties to generate serious problems. With the necessary trust base, even those policy initiatives can survive and be eventually carried out (e.g. deep and ambitious structural reforms that require longer time period to mature and express their benevolent effect) that are appearing to be inefficient ones in the short run.

The successfulness of policies always relies heavily on policy learning and refinement. While explorative and experimental approaches can be seen as the *conditio sine qua non* of an effective and efficient policy learning, the extent of uncertainty being permanently generated by these approaches is not indifferent and it depends on the extent and scope of policies as well as that of initiatives ranging for instance from incremental, smaller-scale innovations to comprehensive structural reforms. The complexity of a policy grows accordingly and, as a corollary, uncertainty is likely to increase as well. It sheds light on the crucial importance of dampening the perceptible potential uncertainty in time of crisis, otherwise it will evaporate trust base of citizens – through increasing democratic deficit that has to be mitigated since democracy is an extremely important framework condition (Bhatta, 2003; Pollitt, 2003) – exuded towards government and state institutions.

Concerning our *second* factor, the notion of decreasing sensitivity is originated in psychology to capture events when our sensitiveness loses its ground in a certain moment (e.g. at one point we can easily become unable to distinguish between the light coming from a night light in the room and the light given by the fact that daylight has come). *Increasing sensitivity*, as a reversed form of the indicated one, has a pivotal role in explaining events in uncertain situations. Let us add immediately that uncertainty is not an independently existing phenomenon (*objectum*) that should be identified and estimated, it is therefore the dynamically evolving pattern of perceptions

(*subjectum*) over economic policies. Since the importance of a momentum can be even higher if it generates significant differences in the experience and perceptions of another momentum, uncertainties become a complex web of mutually reinforcing phenomena perceived dynamically over time. This was explicitly the case after the eruption of the Greek crisis when financial markets' confidence with regard to Spain and Portugal was also crumbled because their sensitivity (tolerance) level against the degree of macroeconomic instability (linked to international competitiveness and sustainability of public finances) lowered substantially. Increasing sensitivity occurs and reflects to a certain degree that uncertainty is encoded into the modern economic system.

Another equally important recognition justifying that uncertainty is encoded into the market system is linked to our *third* and well-known issue of *halo-effect*. As Rosenzweig (2009) sensitively documented, public and the economic profession often have a predilection to overestimate the role of leaders in case of a successful or unsuccessful enterprise. In case of a successful enterprise, people are likely to *believe* that the leaders of that enterprise are flexible and thorough, while they tend to presume that the leaders are rigid and inconsistent later when the same enterprise is in an economic quagmire. Although both arguments seem to be logical in their own time, halo-effect brings significant bias into our perceptions: we tend to believe that a company is declining because of the rigidity of its leadership, but the truth is that the leadership seems to be rigid because of the declining situation.<sup>22</sup>

In similar vein, when it comes to economic policy, initiated and conducted policies are often believed to be responsible for economic growth or decline. Let us note that, economic governance has a crucial role, but according to the extended literature, governance is able merely to shape economic growth *indirectly* rather than directly (Csaba, 2007; Erdős, 2006). This has important implications for judging economies by using various rankings (e.g. IMD Competitiveness Yearbook, Global Competitiveness Report, Innovation Union Scoreboard etc.), namely that an improvement or decline from one year to another in terms of competitiveness or innovativeness (of which has a nexus) cannot be attributed exclusively to the discretionary

---

<sup>22</sup> This type of psychological mechanism (i.e. bias towards overestimating when circumstances are good and trigger overconfidence and vica-verse, bias towards perceiving increasing uncertainty when circumstances become more gloomy) is largely reflected and used by Akerlof and Shiller (2009) who applied this concept to the evolvement of the business cycle's boom and bust.

domestic economic policy engineering.<sup>23</sup> The competitiveness of a country depends not only on its innovativeness, but also on its international embeddedness which through the economy can be competitive in spite of having not efficient economic policy.<sup>24</sup> This bias by any means can feed into the volatile of uncertainties by maintain it as an endogenous phenomena of our modern economic system.

Our *forth* consideration refers to the so-called priming that should also be addressed simply because public opinions affect directly or indirectly policy outcomes through the emerging attitudes on risk and uncertainties associated to public policy issues (Eckles – Schaffner, 2011). To this end, one should incorporate that mitigating complex problems is challenging since expectations over the effectiveness of newly introduced policies or initiatives are influenced by memory. This kind of reasoning resonates to that of Musto (2010) who demonstrated that complex, open and dynamic systems like the economy and society have memory. Introduced and implemented policy actions, initiatives, statements either from the government or the independent central bank can be by no means completely removed from the system or even neutralised. They become part of the memory of the given socio-economic-political system (i.e. part and parcel of the memory of actors) which memory in turn impinges on psychological factors and behaviour.<sup>25</sup> By and large, perceptions, interpretations and opinions over policies may vary across citizens (voters) and experts by leading to *uncertainty-generating inconsistency*; and what is perhaps even more important; their reactions to novel policies cannot be estimated *ex*

---

<sup>23</sup> Musto (2010) argued that reality is so complex that the mechanism of policy actions evolves through multiple channels and not exclusively in a linear way. As a corollary, there is a great uncertainty about the effects of discretionary interventions. This insight is to a great extent built on the time-tested recognition of new institutional economics and that of development economics saying institutions matter.

<sup>24</sup> Recent crisis and its evolution offers an enlightning example for that kind of 'judging policy *ex ante* as good because growth has returned' situation. If we take a mere glimpse into the origins of recent financial and economic crisis, one can observe that when the dot com crisis hit in, the US real GDP growth lost its pace and slowed down from 4% of the first quarter of 2000 to 0.8% that of the first half of 2001. At that time, lax fiscal policy through tax reduction was coupled with monetary easing through cutting interest rates. This type of interventioism was widely seen as a remedy in the sense that economic growth recovered and got back in line (real GDP growth rebounded to 3.6% by 2004). However, with the benefit of hindsight, this policy encoded the real estate boom and the escalation of various forms of financial innovations leading to the recent crisis. What was once seen as a good policy turned to be a wrong one, because government is not omnipotent and was not able to incorporate appropriately all side-effects of that kind of policy mix. Economic practitioners always have to bear in mind the Machiavellian constraint of governance: in all human affairs, it is impossible to remove one inconvenience without another emerging.

<sup>25</sup> The aggregated memory of actors may remember us to the concept of the so-called *psychic capital*, coined by Kenneth E. Boulding in 1950 (Boulding, 1950:140). Psychic capital is a powerful motivating force simply because it embraces memories of pleasure, success, achievement, recognition as well as memories of failures, disasters, atrocities, or perceived injustices and indignities. The welcome and the support of economic policy actions depend a lot on the current status of (positive or negative) psychic capital.

*ante* precisely with certainty. This maintains the wicked-feature of policymaking especially in turbulent and unprecedented times when old routines and standard procedures do not appear to be useful any longer which gives rise to risk and uncertainty priming. Consequently, the cumulative impact of a policy often evolve along a complex way in which partial impacts are transmitted and may be strengthened in a Brownian-motion like way. It is mainly the reason behind the phenomena when macroeconomic news on policy consequences have a big impact on the economy.<sup>26</sup> Risk and uncertainty priming also matter when politicians or influential leaders declare something. It is important both in case of monetary policy (see Greenspan, 2008) and fiscal policy (see Hollmayr – Matthes, 2013). For example, when the president of the European Central Bank was to free the ECB from its shackles by stressing that „do whatever it takes” to safeguard financial stability and the survival of the Euro-zone by launching the unlimited purchase of debt instruments from debt-crisis ridden states from July 2013, uncertainty, on the one hand, was reduced because of the powerful institutional signalling that boosted trust and confidence of markets. On the other hand, this action also had uncertainty-generating feature since this declaration was crystal-clearly unlawful, that is to say, equivalent to breaching Article 123 of the Treaty on the Functioning of the European Union and might have therefore served as a catalyst for further non-compliance in case of other actors by paving the way to intensifying uncertainty. To date, no one really knows whether the consequences of the infringement will be beneficial or its positive effect will be ephemeral, merely. To sum, it is therefore a rather gargantuan task to get a shared understanding of the causes and consequences of problematic events and even that of the reactions they trigger. However, in the absence of that consensual view, policy hysteresis and thus uncertainty may prevail.<sup>27</sup>

The above mentioned points are also interrelated with our *fifth* consideration, creeping normalcy. The concept of creeping normalcy encapsulates slow trends concealed within noisy fluctuations (Diamond, 2011) thereby these fundamentally influencing trends remain hidden for the wider public for a long period. Once they are widely revealed, the awareness of their long-lasting development creeps uncertainty into the system because it reflects to some extent our admitted inability to perceive and understand these trends in time, hence they can recurrently happen

---

<sup>26</sup> For instance: increasing volatility, substantially changing asset prices, as Fostel and Geanakoplos (2012) as well as Gilbert et al. (2010) illustrated.

<sup>27</sup> This is partly why necessary epochal transformations in the public welfare systems are often deferred that would have positive impetus on the socio-economic development in the medium and longer run.

without being able to predict. Speculative bubbles, financial and economic crises are rather unpredictable because they can be seen as major changes of which causing processes happening previously in a slow and gradual way of which slight changes can be accepted as the normal situation.<sup>28</sup> In case of the 2008 financial and economic crisis, the lurking danger of speculative bubble remained hidden for a long period of time. It was mainly due to the calmness determined by the era of Great Moderation (1992-2007). This period provided a fertile ground for stable trust infrastructure, relatively stable tolerance level of financial investors (i.e. not resulting in increasing sensitivity), the belief that economic policies contributed to the stabilisation of macroeconomic fluctuations in terms of employment, inflation etc. by leading to some sort of halo-effect as well as positive attitudes (priming) towards public policies in the advanced world. However, with the benefit of hindsight, withering secular trends were registrable such as declining productivity and increasing income inequality since the 1970s both in the US and the European continent.

### **Secularly declining innovativeness feeding into inequality**

As presented above, our world has becoming ever-more complex pervaded by the predilection to have more wicked policies that feed into fundamental uncertainty that are also maintained and may be heightened by psychological factors. The complex web of interaction of these culminates into a secularly increasing uncertainty; this trend, all the more, has been also underpinned by the phenomena of secularly declining productivity and innovativeness worsening income inequality. One may therefore recognise that the sustainability and the functioning of welfare states have declined that can be captured by its inability to dampen inequality which has been rising for decades (Berg – Ostry, 2011). Thus, uncertainty has been increasing autochthonously.

It goes to commonplace that Europe's labour productivity has been worsening as compared to that of the US since the midst of 1990s. Still, Innovation Union Scoreboard 2013 reported that

---

<sup>28</sup> Again, shared understanding comes to play a major role. Even in case of the 2008 financial and economic crisis, particular advocates of imminent crisis were restricted to the margins. Apart from the ubiquitously cited names (e.g. Warren Buffet), William White, chief economist of the Bank for International Settlements, was to warn everybody in 2003 about the imminent crisis. See: Balzli and Schiessl (2009): The Man Nobody Wanted to Hear. Global Banking Economist Warned of Coming Crisis. Spiegel Online. Available: <http://www.spiegel.de/international/business/the-man-nobody-wanted-to-hear-global-banking-economist-warned-of-coming-crisis-a-635051.html> Accessed on: 12.01.2014

Europe has closed almost half of the innovation gap with the US, but the gap is yet gaping (IUS, 2013). Interestingly, it is often neglected that total factor productivity, which captures innovation dynamics, has been deteriorating since the midst of the 1970s in the US. This weakening is more and more often attributed by scholars, having a holistic approach, to the secular withering of innovations (Cowen, 2011; Atkinson – Ezell, 2012; Gordon, 2012; Kasparov et al. 2013) contributing therefore not so spectacularly and intensively to the improvement of well-being and welfare.<sup>29</sup> Challenges of our age, as presented earlier, require riskier innovations and solutions of which successfulness are rather uncertain. Consequently, to a large extent, the EU Member States have to enhance the European labour-productivity. Governance should therefore act in supporting much better innovative milieu in Europe.<sup>30</sup>

Emphasising that there is no common development path is in order; however, as one of the greatest grandfathers of the endogenous growth theory, Robert Lucas accentuated in his seminal work: the theory should concentrate on those forces that tend to trigger the changes in the growth and development paths (Lucas, 1988:41). From our point of view, innovation as well as research and development (R&D) can be defined as a pivotal group of such forces in the new techno-economic paradigm when knowledge, created *inter alia* through innovation and R&D, has become a fundamental and *de rigueur* input factor.

Innovation and R&D are also the victims of strengthening uncertainties (Koetse et al. 2006; Oriani – Sobrero, 2008; Jalonen, 2012).<sup>31</sup> At this point, one should not neglect the fact that beyond economic freedom and free coordination, the dynamism of capitalism rests upon innovation in which spontaneity plays a decisive role, as Röpke (1964) or Kornai (2010) emphasised. Spontaneity *per se*, by its very nature, means that uncertainty arises regarding the

---

<sup>29</sup> Robert J. Gordon emphasises that modern innovations are not so impressive and the information revolution does not seem to be so conducive to economic development and growth (measured in GDP per capita) compared to earlier waves of innovation, such as the internal combustion engine, electrification or the telephone. See: Gordon (2012). A certain justification for declining innovativeness is that venture capital investments (VC) have not fared quite well from the early 1990s. This justification is relevant, because empiria supports line of thinking that innovation are more likely to induce VC investments rather than VC investment would trigger innovation (Ueda - Hirukawa, 2008). A Kauffman Foundation report on VC activity found that „Venture capital (VC) has delivered poor returns for more than a decade. VC returns haven’t significantly outperformed the public market since the late 1990s, and, since 1997, less cash has been returned to investors than has been invested in VC.” (Mulcahy et al. 2012:2).

<sup>30</sup> This fact may be more than a nuisance by magnifying uncertainties simply because it raises the question of what seems to be one of the most expedient ways in stimulating the innovation-based growth model.

<sup>31</sup> It is well-documented that venture capital firms are more likely to postpone or moderate their investments during periods pervaded by growing uncertainties. See: Yong – Mahoney (2011).

outcome. *This lends support to the claim that innovation and uncertainties are to a certain degree the dynamic resources of each other.* Human being has a predilection to think that certainty is everything. This is the reason why risk-aversion is escalating with the scale of innovation which is pervaded by uncertain successfulness. Since innovation is a part and parcel mechanism of the Schumpeterian ‘creative-disruption’ where the dynamism of capitalism comes from, and since continuous innovation is vital in modern economies, uncertainty is recurrently boosted and mitigated *via* innovations.

Another important fact is that the new ICT-based techno-economic paradigm that emerged in the early 1990s not only provoked profound changes in the production process, but also tailored them to a more service-oriented economy. Now, the service industry represents typically about 70-80% of GDP in developed countries (World Bank, 2008; WTO, 2010) and 40-50% of GDP in the developing world (Glushko, 2008). In terms of employment, only the service sector has exhibited a permanent rise since 1999, reaching 70% of total employment in the EU in 2009 (European Commission, 2010).

What is especially important from our viewpoint is that, as services’ dominance increases with the sophistication of services innovation, the labour productivity becomes significantly lower than in the manufacturing sector. It holds even though distinguishing between goods and services is very much beset with difficulties since the border between them became rather blurred as manufactures add services to the product portfolio (servicising the product).<sup>32</sup> The lower level of productivity observable in the services sector has been long discussed (Clark, 1940; Fourastié, 1949). Let us add immediately, this aspect is of essence with regard to the sustainability of welfare states in Europe. If the state is sustainable (in fiscal terms), the necessary fiscal latitude armours it with effective and efficient developmental functions (e.g. increasing well-being, dampening income inequality, addressing complex challenges etc.). In case we have a techno-economic paradigm seems to be endogeneously biased towards lowering productivity (innovativeness), weakening potential economic growth arises which fetters any improvement in income inequality in a sustained manner.

---

<sup>32</sup> Beyond the technological innovations, the role of non-technological innovations has been appreciating (e.g. organisational, services innovation) (Bryson – Monnoyer, 2004; Lu et al. 2005; Lusch et al. 2007; Sawhney, 2006). One potential answer is that services innovation has a significant emotional effect, as well, i.e. it generates changes in consumer perceptions on services offered by the given firm (Miles, 2005). See more on services innovation: European Commission (2011).

According to Skidelsky (2013), the classical Keynesian renaissance – monetary and fiscal stimulus – would be of key importance in coping with the daunting challenge of income inequality, which can be seen as one of the most fundamental causes of the recent economic „perfect storm”. This argument assumes that the recent crisis can be rooted in the dispiriting income inequality that led to excessive borrowing coupled with affluent liquidity and banks that were able and willing to lend. However, this thought does not show convincingly that income inequality would be the cause; what is more, it can also be argued that income inequality is just a symptom of deeper structural phenomena in the developed world. Income inequality may be the result of a series of highly interrelated and mutually reinforcing phenomena being part and parcel of our described new techno-economic paradigm.

ICT-based new techno-economic paradigm was the key driving force of globalisation and led to global financial market having ever-increasing liquidity (credit supply) that sought opportunity to be absorbed with better returns, i.e. because of the regulatory shortcomings in the financial markets, more people passed to financial markets and devoted attention to financial investments in fields like real estate.<sup>33</sup> Financial markets deregulation distorted the harmony between financial market and real economy uncertainties. In addition to that, another leitmotif can be identified which spurred banks and investors to prefer financial investments in a more dedicated way over investments in the real economy focusing on technological or non-technological innovations, R&D activities. Namely, this paradigm has some specific features that have been directing towards lower productivity through labour-saving technologies (i.e. automation, standardisation by means of ICT etc.) which entailed downward trends in labour shares as, for instance, Karabarounis and Neiman (2013) pointed out. This *per se* affected negatively the gap between rich and poor, and the features of services dominated economies in the advanced world (i.e. requiring higher skills and competences to pursue service innovation that have more qualitative outcomes) might also be counterincentive to diminishing income inequality. There is a secular feature of problems behind the scene (Kovács, 2013b) rather than one could ascertain that mitigating income inequality *via* economic policy engineering can result a sustainable ameliorating trend, accordingly. Still, secularly worsening productivity (innovativeness) coupled

---

<sup>33</sup> In the US, households' debt started to accumulate rapidly, especially in case of low-income households being in low-inequality regions where the financial market, banking sector could spread the risk seemingly in a more efficient way. See more on this issue: Coibion et al. (2014)

with impairing income distribution bear the stamp of uncertainty-maintainer and strengthener channels.

As it was shown, uncertainty is endogeneous and maintained as well as strengthened secularly through a *vicious circle*: First, increasing complexity is pervaded by wicked grand challenges and wicked policies of which existence is based on psychological factors whereby fundamental uncertainty is maintained over time. Second, this fundamental uncertainty is strengthened further by secular negative trends in terms of productivity which loosing momentum whereby reinforces uncertainty-generating income inequality.

### **Concluding remarks**

In this article we addressed the puzzling question of what are the main constituents of a secularly increasing uncertainty in the modern economic system. We argued that a *vicious circle* of at least the following perceptibly intertwined and interrelated main building blocks can be deciphered: (i) our world has becoming ever-more complex (ii) more and more pervaded by the predilection to have wicked policies that feed into fundamental uncertainty (iii) that are also maintained and may be heightened further by psychological factors. *We also argued that the complex web of interaction of these culminates into a secularly increasing uncertainty; this trend, all the more, has also been underpinned by the phenomena of secularly declining productivity and innovativeness worsening income inequality.* The latter reflects to a large extent the inability of governance to curb rising income inequality through the last decades. The main lessons that can be drawn from our analysis focusing on the pathological tendency of increasing and dependent uncertainty are as follows.

*First*, we are now living in a world in which uncertainty is endogeneous to the global market system, as such it is dependent. As we emphasised, uncertainty is a complex web of mutually reinforcing phenomena perceived dynamically over time. Uncertainty is ubiquitous both in the real economy (e.g. risks and uncertainties linked to innovation activities) and the financial markets (e.g. through the channel of intensified feedback loops permeated and influenced by psychological factors as well). Although uncertainty has long been discussed in the context of the private sector, this type of mindset can be complemented with the issue of how uncertainty affects governance *per se* with the recognition that public sector is also *exposed to uncertainty*

and can be a *maintainer channel* of it alike. Especially in time of crises, socio-economic actors are to adapt, to refine their operations through incremental and radical changes that tend to trigger uncertainty by implying that the system and its changes should not be overlooked. Uncertainty is here to stay when market actors and governments are to make more than incremental changes of which end results are unpredictable and unestimated carefully *ex ante* (and may be *ex post*), to solve wicked problems, like sovereign debt crisis and eurozone crisis. As a corollary, the more complex is the system we face, the more trust may be required for good governance.

*Second*, stabilising and dynamising requires careful consideration in which the roles of growth friendly consolidation and that of *sequencing the initiatives* are taken into account. Uncertainty makes firms to defer innovations because of deteriorating trust base in the future and in governance's ability to impose adequate actions in dampening uncertainties. In an effort to reinvigorate the necessary trust infrastructure, governments should be innovative in the sense that they have to pursue stabilisation (i.e. fiscal consolidation, structural reforms) that is more likely to dynamise at the same time (i.e. not jeopardising, but strengthening economic growth).

As for fiscal consolidation invoked to tame sovereign debt crisis, since current techno-economic paradigm – ICT-based, services sector dominated knowledge or learning economy – is based on innovation and relevant knowledge utilisation, necessary fiscal consolidations (optimally being loaded predominantly on the expenditure side) should bear the torch of *anti-cyclical and pro-cyclical* measures. With this form of *aurea mediocritas* consolidation, governance might be able to reinvigorate research and development, innovation activities, while reducing excessive expenditures on unproductive fields (social transfers, public sector salaries, wages etc.) even during fiscal stabilisation. As literature suggests, fiscal consolidation affects growth primarily through investment channel, providing therefore the necessary financial backing for new start-ups (who have nothing to lose, but to win) and for firms in supporting not to delay important investment and innovations is of paramount importance.<sup>34</sup> In this way, uncertainties can be mitigated by supporting start-ups, already existing and innovating firms to maintain their innovation activities without resorting inevitably to uncertainty-heightener restructuring.

---

<sup>34</sup> As a recent study pointed out, high-growth innovative enterprises (i.e. high growth is defined in terms of saliently increasing employment on a yearly basis) have been operating more or less for 10 years irrespective of their industries (empirica/Dialogic/FHNW, 2013). Since they are significant job-creators, policy measures are needed in dampening bureaucratic and regulatory burdens as well as difficulties in accessing finance.

Regarding structural reforms, our analysis calls for mature deliberation by highlighting the importance of *sequencing the initiatives*, especially in time of crisis. A burgeoning body of literature suggests that the sustained way out of the Eurozone crisis inevitably demands deep and ambitious structural reforms. Beyond the fact that structural reforms are of paramount importance in favouring sustainable development and sustained growth, and beyond the ultimate goal of the public sector to increase people's well being, one should bear in mind on the one hand that cultivating well-being, the quality of life means such economic policy mixture of which effects cannot be measured easily because of the more qualitative outcome pursued. On the other hand, structural reforms are expected to bring positive results in longer run; hence they are always exposed to the potential crumble of trust. These aspects may feed into the evolvement of uncertainties, especially in time of crises. Apart from the fact that contemporary economic profession impels European countries to conduct structural reforms, they all fall short in outlining the necessary and detailed scripts for (i) what kind of reforms are to be reckoned with and (ii) how to materialise them in concrete terms in dealing with the sustainability of welfare systems. Neglecting the power of elusively elaborated reforms in increasing potential uncertainty would be naïveté, which, in turn, may provide an obstacle to growth. This is mainly because structural reforms are nothing but grand transformations in the systemic functioning of the public sector and that of public service provisions oriented towards coping with grand and complex socio-economic and environmental challenges and thus being pervaded by a good deal of additional uncertainty over the outcomes. The necessity of structural reforms is unquestionable, but the issue of *sequencing the initiatives* is substantially appreciating in time of crisis and the old wisdom of the Roman '*festina lente*' (move forward, but with adequate preparation) remains the singular point of reference when it comes to dampening uncertainty. It implies that *limited discrecionalism* is in order with incremental changes (e.g. innovations) organised around clear and consistent strategy, instead of resorting to improvisations leading to hectic movements and increasing uncertainties.

*Third*, public sector should also pursue innovation.<sup>35</sup> As we discussed, despite the spike in uncertainty as a result of recent global economic crisis, there has been a vicious circle nurturing fundamental uncertainty to be endogeneous to the global market system (new techno-economic paradigm). Enormous challenges associated with this autochthonously increasing fundamental

---

<sup>35</sup> For more on public sector innovation, see Kovács (2012).

uncertainty call for good governance and innovative public sector capable of signalling its ability to cope with the challenges by creating and maintaining necessary trust. Even though the Great Recession seems to be transmogrified into a slow and rather frail recovery, uncertainties and potential uncertainties have to be diminished *by increasing the legitimacy of public intervention at national levels*. This is in line with the *festina lente* principle described above that would consist of *growth-friendly fiscal consolidations and public sector innovations (PSI)*. Public sector should serve as a demonstrator being in conjunction with an approach that cultivates innovation, and eventually tries to address as well as alleviate wicked problems. PSI can be regarded “[...] as the process of generating new ideas and implementing them to create value for society, covering new or improved processes and services” (European Commission, 2013:7). PSI may help to maintain the quality of service provision, to reduce excessive expenditures while not imposing additional burdens on labour and the economy as a whole by fostering trust building in time when painful measures (e.g. fiscal adjustments, structural reforms) are inevitable.

## References

- Aizebeokhai, A. P. (2009): Global Warming and Climate Change: Realities, Uncertainties and Measures. *International Journal of Physical Sciences*, Vol. 4., No. 13. pp. 868-879.
- Akerlof, G. A. – Schiller, R. J. (2009): *Animal Spirits: How Human Psychology Drives the Economy, and Why It Matters for Global Capitalism*. Princeton University Press, Princeton
- Alesina, A. – Ardagna, S. (2010): Large Changes in Fiscal Policy: Taxes versus Spending. In: Alesina, A. – Ardagna (ed.) (2010): *Tax Policy and the Economy*. Vol. 24., The University of Chicago Press
- Alesina, A. – Favero, C. – Giavazzi, F. (2012): The Output Effects of Fiscal Consolidations. *CEPR, Discussion Paper* No. 9105
- Arrow, K. (1972): Gifts and Exchanges. *Philosophy and Public Affairs*, Vol. 1., No. 4. pp. 343-362.
- Atkinson, R. D. – Ezell, S. J. (2012): *Innovation Economics: The Race for Global Advantage*. Yale University Press
- Bachmann, R. – Elstner, S. – Sims, E. R. (2013): Uncertainty and Economic Activity: Evidence from Business Survey Data. *American Economic Journal: Macroeconomics, American Economic Association*, Vol. 5., No. 2. pp. 217-249.
- Baker, S. R. – Bloom, N. – Davis, S. J. (2013): Measuring the Economic Policy Uncertainty. Working Paper, Available: <http://www.policyuncertainty.com/media/BakerBloomDavis.pdf> Accessed on: 10.20.2013
- Banfield, E. C. (1958|1967): *The Moral Basis of a Backward Society*. Free Press (February 1, 1967)
- Barrel, R. – Holland, D. – Hurst, A. I. (2012): Fiscal Consolidation Part 2: Fiscal Multipliers and Fiscal Consolidations. *OECD Economics Department Working Paper* No. 933
- Beck, U. (1992): *Risk Society*. Sage: London
- Berg, A. G. – Ostry, J. D. (2011): Inequality and Unsustainable Growth: Two Sides of the Same Coin? *IMF Staff Discussion Note*, No. 08
- Bernanke, B. S. (1983): Irreversibility, Uncertainty, and Cyclical Investment. *The Quarterly Journal of Economics*, Vol. 98., No. 1, pp. 85-106.
- Bhatta, G. (2003): Don't just do something, stand there! – Revisiting the issue of risks in Innovation in the Public Sector. *The Innovation Journal: The Public Sector Innovation Journal*, Vol. 8., No. 2. pp. 1-12.
- Blanchard, O. (2013): Five Lessons from The Financial Crisis. Speech at What should economists and policymakers learn from the financial crisis? Conference, London School of Economics, 25 March 2013 in Old Theatre, Old Building.
- Blanchard, O. – Leigh, L. (2013): Growth Forecast Errors and Fiscal Multipliers. *IMF Working Paper* No. 1
- Bloom, N. (2009): The impact of Uncertainty Shocks. *Econometrica, Econometric Society*, Vol. 77., No. 3. pp. 623-685.
- Boulding, K. E. (1950): *A Reconstruction of Economics*. New York: Wiley.
- Bryson, J. R. – Monnoyer, C. M. (2004): Understanding the Relationship between Services and Innovation: The RESER review of the European service literature on innovation. *The Service Industries Journal*, Vol. 24., No. 1. pp. 205-222.
- Churchman, C. W. (1967): Guest Editorial. *Management Science*, Vol. 14, No. 4, December 1967.
- Clark, C. (1940): *The Conditions of Economic Progress*. London: MacMillan & Co. Ltd.
- Coase, R. (1960): The Problem of Social Cost. *Journal of Law and Economics*, Vol. 3., pp. 1-44. (October)
- Coibion, O. – Gorodnichenko, Y. (2010): Does the Great Recession Really Mean the End of the Great Moderation? *VoxEU.org* Available: <http://www.voxeu.org/index.php?q=node/4496> Accessed on: 17.01.2014
- Coibion, O. – Gorodnichenko, Y. – Kudlyak, M. – Mondragon, J. (2014): Does Greater Inequality Lead to More Household Borrowing? New Evidence from Household Data. *NBER Working Paper* No. 19850.

- Cowen, T. (2011): *The Great Stagnation: How America Ate All The Low-Hanging Fruit of Modern History, Got Sick, and Will (Eventually) Feel Better*. Dutton Adult (January 25, 2011)
- Csaba, L. (2007): *The New Political Economy of Emerging Europe*. Akadémiai Kiadó, Budapest.
- Csaba, L. (2008): Módszertan és relevancia a közgazdaságtanban. A mai közgazdaságtan és a társtudományok. *Közgazdasági Szemle*, Vol. 55., No. 4. pp. 285-307.
- Csaba, L. (2012): Revisiting the Crisis of the EMU: Challenges and Options. *Zeitschrift für Staats- und Europawissenschaften*, Vol. 10., No. 1. pp. 53-77.
- Davis, S. (2010): The Adverse Feedback Loop and the Effects of Risk in Both the Real and Financial Sectors. Federal Reserve Bank of Dallas, *Globalization and Monetary Policy Institute Working Paper* No. 66.
- De Grauwe, P. (2013): Design Failures in the Eurozone: Can they be fixed? *LEQS Paper* No. 57
- Diamond, J. (2011): *Collapse: How Societies Choose to Fail or Succeed: Revised Edition*. Penguin Books; Revised edition (January 4, 2011)
- Di Fabio, U. (2011): Europa in der Krise. *Zeitschrift für Staats- und Europawissenschaften*, Vol. 9., No. 4. pp. 459-464.
- Dixit, A. K. – Pindyck, R. S. (1994): *Investment under Uncertainty*. Princeton, N. J.: Princeton University Press, 1994.
- Duncan, R. B. (1972): Characteristics of Organizational Environments and Perceived Environmental Uncertainty. *Administrative Science Quarterly*, Vol. 17., No. 3. pp. 313-327.
- Eckles, D. L. – Schaffner, B. F. (2011): Priming Risk: The Accessibility of Uncertainty in Public Policy Decision Making. *Journal of Insurance Issues*, Vol. 34., No. 2. pp. 151-171.
- Eichengreen, B. – Park, D. – Shin, K. (2011): When Fast Growing Economies Slow Down: International Evidence and Implications for China. *NBER Working Paper* No. 16919
- empirica/Dialogic/FHNW (2013): Policies in support of high-growth innovative enterprises. Characterisation of innovative high-growth firms. *Final Policy Brief* 1. Principal authors: Stefan Lilischkis (empirica), Leonique Korlaar (Dialogic), Franz Barjak and Rolf Meyer (Fachhochschule Nordwestschweiz). Bonn/Utrecht/Olten.
- Erdős, T. (2006): *Növekedési potenciál és gazdaságpolitika*. Akadémiai Kiadó, Budapest.
- European Commission (2010): *New Skills for New Jobs: Action Now*. A report by the Expert Group on New Skills for New Jobs prepared for the European Commission. Available: <http://ec.europa.eu/social/BlobServlet?docId=4505&langId=en> Accessed on: 14.01.2014.
- European Commission (2011): *Policies in Support of Service Innovation*. An INNO-Grips policy brief by ICEG European Center. Principal Author: Olivér Kovács. Budapest.
- European Commission (2013): *Powering European Public Sector Innovation: Towards A New Architecture*. Report of the Expert Group on Public Sector Innovation. Directorate-General for Research and Innovation. Available: [http://ec.europa.eu/research/innovation-union/pdf/PSI\\_EG.pdf](http://ec.europa.eu/research/innovation-union/pdf/PSI_EG.pdf) Accessed on: 20.12.2013.
- European Commission (2014): *A policy framework for climate and energy in the period from 2020 to 2030*. European Commission, COM(2014) 15 final. Available: [http://ec.europa.eu/energy/doc/2030/com\\_2014\\_15\\_en.pdf](http://ec.europa.eu/energy/doc/2030/com_2014_15_en.pdf) Accessed on: 26.01.2014
- Fisher, A. C. (2001): *Uncertainty, Irreversibility, and the Timing of Climate Policy*. Prepared for the conference on the “Timing of Climate Change Policies” Pew Center on Global Climate Change October 2001
- Forbes, K. J. – Warnock, F. E. (2012): Capital Flow Waves: Surges, Stops, Flight, and Retrenchment. *Journal of International Economics*, Vol. 88., No. 2. pp. 235-251.
- Fostel, A. – Geanakoplos, J. (2012): Why Does Bad News Increase Volatility and Decrease Leverage? *Journal of Economic Theory*, Vol. 147., No. 2., pp. 501-525

- Fourastié, J. (1949) : Le Grand Espoir du XXe Siècle. Paris: Presses Universitaires de France. Reprinted as 'Moderne Techniek en Economische Ontwikkeling' (1965). Amsterdam: Het Spectrum.
- Frieden, J. – Pettis, M. – Rodrik, D. – Zedillo, E. (2012): After the Fall: The Future of Global Cooperation. Geneva Reports on the World Economy 14. Geneva: International Center for Monetary and Banking Studies.
- Galbraith, J. R. (1977): *Organization design*. Boston, MA: Addison-Wesley Pub. Co.
- Ghosal, V. – Yang, Y. (2013): Business Decision-Making Under Uncertainty: Evidence from Employment and Number of Businesses. *CESifo Working Paper Series* No. 4312
- Giddens, A. (1990): *The Consequences of Modernity*. Stanford University Press: Stanford, CA
- Gilbert, T. – Scotti, C. – Strasser, G. – Vega, C. (2010): Why Do Certain Macroeconomic News Announcements Have a Big Impact on Asset Prices? Working Paper, Foster School of Business University of Washington
- Gilchrist, S. – Sim, J. W. – Zakrajšek, E. (2010): Uncertainty, Financial Frictions, and Investment Dynamics. Society for Economic Dynamics, *2010 Meeting Papers* No. 1285.
- Glushko, R. J. (2008): Designing a Service Science Discipline with Discipline. *IBM Systems Journal*, Vol. 47., No. 1. pp. 15-27.
- Gordon, R. J. (2012): Is US Economic Growth Over? Faltering Innovation Confronts the Six Headwinds. *CEPR Policy Insight* No. 63.
- Greenspan, A. (2008): *The Age of Turbulence: Adventures in a New World*. Penguin Books; Reprint edition (September 9, 2008)
- Handley, K. – Limão, N. (2012): Policy Uncertainty, Trade and Welfare: Theory and Evidence for China and the US. *CEPR Discussion Paper* No. 9615.
- Hart, A. (1942): Risk, Uncertainty, and Unprofitability of Compounding Probabilities. In: Lange, O. et al. (eds.): *Studies in mathematical economics and econometrics* (Chicago: University of Chicago Press), pp. 110-118.
- Hayek, F. A. (1945): The Use of Knowledge in Society. *American Economic Review*, Vol. 35., No. 4. pp. 519-530.
- Hebous, S. – Zimmermann, T. (2013): Cross-Border Effects of Fiscal Consolidations: Estimates Based on Narrative Records. *CESifo Working Paper* No. 4311
- Hollmayr, J. – Matthes, C. (2013): Learning About Fiscal Policy and the Effects of Policy Uncertainty. Deutsche Bundesbank, *Discussion Paper* No. 51.
- Hui, G. – Kliesen, K. (2005): Oil Price Volatility and U.S. Macroeconomic Activity. Federal Reserve Bank of St. Louis, *Review*, Vol. 87., No. 6. pp. 669-683
- IMF (2013): World Economic Outlook 2013. Available: <http://www.imf.org/external/pubs/ft/weo/2013/02/pdf/text.pdf> Accessed on: 03.01.2014
- IPCC (2013): *Climate Change 2013: The Physical Science Basis*. Intergovernmental Panel on Climate Change. Available: [http://www.climatechange2013.org/images/uploads/WGIAR5\\_WGI-12Doc2b\\_FinalDraft\\_All.pdf](http://www.climatechange2013.org/images/uploads/WGIAR5_WGI-12Doc2b_FinalDraft_All.pdf) Accessed on: 26.01.2014
- IUS (2013): *Innovation Union Scoreboard 2013*. European Commission, DG Enterprise and Industry. Available: [http://ec.europa.eu/enterprise/policies/innovation/files/ius-2013\\_en.pdf](http://ec.europa.eu/enterprise/policies/innovation/files/ius-2013_en.pdf) Accessed on: 11.01.2014
- Jalonen, H. (2012): The Uncertainty of Innovation: A Systematic Review of the Literature. *Journal of Management Research*, Vol. 4., No. 1
- Kahneman, D. (2013): *Thinking, Fast and Slow*. Farrar, Straus and Giroux; Reprint edition
- Karabarbounis, L. – Neiman, B. (2013): The Global Decline of the Labor Share. *NBER Working Paper* No. 19136
- Kasparov, G. – Levchin, M. – Thiel, P. (2013): *The Blueprint: Reviving Innovation, Rediscovering Risk, and Rescuing the Free Market*. W. W. Norton & Company (March 12, 2013)
- Knight, F. H. (1921): *Risk, Uncertainty and Profit*. New York: Harper.

- Koetse, M. – de Groot, H. L. F. – van der Vlist, A. (2006): The Impact of Perceived Expectations and Uncertainty on Firm Investment. *Small Business Economics*, Vol. 26., No. 4. pp. 365-376.
- Kornai, J. (2010): Innovation and Dynamism. Interaction between Systems and Technical Progress. *Economics of Transition*, Vol. 18., No. 4, pp. 629-670.
- Kovács, O. (2012): Policies Supporting Innovation in Public Service Provision. DG Enterprise and Industry, PRO INNO Europe® INNO-Grips II.
- Kovács, O. (2013a): Message in a Battle: Austerity in Europe and Lessons for Central and Eastern European Member States. ICEG European Center, *News of the Month*, November 2013, pp. 8-18.
- Kovács, O. (2013b): Black Swans or Creeping Normalcy. An Attempt to a Holistic Crisis Analysis. *Eastern Journal of European Studies*, Vol. 4., No. 1. pp. 127-143.
- Lensink, R. – Paul van der, S. – Elmer, S. (2005): Uncertainty and Growth of the Firm. *Small Business Economics*, Springer, Vol. 24., No. 4. pp. 381-391
- Levi, M. (1998): The State of Trust. In: Braithwaite, V. – Levi, M. (eds.) (1998): *Trust and Governance*. New York: Russell Sage Foundation.
- Lucas, R. E. (1988): On the Mechanics of Economic Development. *Journal of Monetary Economics*, Vol. 22., No. 1. pp. 3-42.
- Lundvall, B. A. (2002): The University in the Learning Economy. *DRUID Working Paper* No. 6
- Luo, F. – Florence, C. S. – Quispe-Agnoli, M. – Ouyang, L. – Crosby, A. E. (2011): Impact of Business Cycles on the U.S. Suicide Rates, 1928–2007. *American Journal of Public Health*, Vol. 101., No. 6. pp. 1139-1146
- Lusch, R. F. – Vargo, S. L. – O'Brien, M. (2007): Competing Through Service: Insights from Service-Dominant Logic. *Journal of Retailing*, Vol. 83., No. 5. pp. 174-191.
- Lutz, K. (2005): Exogenous Oil Supply Shocks: How Big are They and How Much do They Matter for the US Economy? *CEPR Discussion Paper* No. 5131
- Lu, I.-Y. – Lin, L.-H. – Wu, G.-C. (2005): Applying options to evaluate service innovations in the automotive industry. *International Journal of Technology Management*, Vol. 32., No. 3-4. pp. 339-349.
- Maggio, M. D. (2013): Market Turmoil and Destabilizing Speculation. MIT, Job Market Paper, Available: <http://economics.mit.edu/files/8469> Accessed on: 20.01.2014
- Meese, R. A. – Rogoff, K. (1983): Empirical Exchange Rate Models of the Seventies: Do They Fit Out of Sample? *Journal of International Economics*, Vol. 14, No. 1-2. pp. 3-24.
- Mellers, B. – Schwartz, A. – Ritov, I. (1999): Emotion-based choice. *Journal of Experimental Psychology: General*, Vol. 128., pp. 332-345.
- Miles, I. (2005): Innovation in Services. In: Fragerberg, J. – Mowery, D. – Nelson, R. (eds): *The Oxford Handbook of Innovation*. Oxford University Press, pp. 433-460.
- Milliken, F. J. (1987): Three Types of Perceived Uncertainty about the Environment: State, Effect, and Response Uncertainty. *The Academy of Management Review*, Vol. 12., No. 1. pp. 133-143.
- Mises, L. von (1929 | 1996): *A Critique of Interventionism*. Irvington-on-Hudson, New York: Foundation for Economic Education.
- Mulcahy, D. – Weeks, B. – Bradley, H. S. (2012): We Have Met The Enemy... And He Is Us. Lessons from Twenty Years of the Kauffman Foundation's Investments in Venture Capital Funds and The Triumph of Hope over Experience. Available: [http://www.kauffman.org/~/-/media/kauffman\\_org/research%20reports%20and%20covers/2012/05/we%20have%20met%20the%20enemy%20and%20he%20is%20us.pdf](http://www.kauffman.org/~/-/media/kauffman_org/research%20reports%20and%20covers/2012/05/we%20have%20met%20the%20enemy%20and%20he%20is%20us.pdf) Accessed on: 12.01.2014
- Musto, I. (2010): Kvantofrénia? Néhány megjegyzés a társadalom- és gazdaságtudományok formalizálásának feltételeiről. *Competitio*, Vol. 9., No. 2. pp. 5-18.

- Nye, J. S. (2013): Governance in the Information Age. Project-Syndicate, Available: <http://www.projectsyndicate.org/commentary/joseph-s--nye-examines-three-potential-scenarios-for-governance-in-2050> Accessed on: 12.01.2014
- OECD (2013): How's Life? Measuring Well-being. OECD Publishing. Available: [http://www.oecd-ilibrary.org/economics/how-s-life-2013\\_9789264201392-en](http://www.oecd-ilibrary.org/economics/how-s-life-2013_9789264201392-en) Accessed on: 03.01.2014
- Oriani, R. – Sobrero, M. (2008): Uncertainty and the Market Valuation of R&D within a Real Options Logic. *Strategic Management Journal*, Vol. 29., No. 4. pp. 343-361.
- Ortony, A. – Clore, G. L. – Collins, A. (1988): The Cognitive Structure of Emotions. New York: Cambridge University Press.
- Paquet, G. (2013): Tackling Wicked Policy Problems: Equality, Diversity and Sustainability. Invenire, 2013
- Perez, C. (2002): Technological Revolutions and Financial Capital: the Dynamics of Bubbles and Golden Ages, Elgar, Cheltenham
- Perez, C. (2009): Technological Revolutions and Techno-Economic Paradigms. *TOC/TUT Working Paper* No. 20
- Pollack, H. N. (2003): Uncertain Science, Uncertain World. Cambridge University Press, London
- Pollitt, C. (2003): The Essential Public Manager. Berkshire: Open University Press.
- Raddatz, C. – Schmukler, S. L. (2012): On the International Transmission of Shocks: Micro-evidence from mutual fund portfolios. *Journal of International Economics*, Vol. 88., No. 2. pp. 357-374.
- Reinhart, M. C. – Rogoff, K. S. (2011): This Time Is Different: Eight Centuries of Financial Folly. Princeton University Press; Reprint edition (July 18, 2011)
- Rittel, h. W. J. – Webber, M. M. (1973): Dilemmas in a General Theory of Planning. *Policy Sciences*, Vol. 4, pp. 155-169.
- Roach, S. (2011): China's 12<sup>th</sup> Five-Year Plan: Strategy vs. Tactics. Morgen Stanley Asia. Available: [http://www.law.yale.edu/documents/pdf/cbl/China\\_12th\\_Five\\_Year\\_Plan.pdf](http://www.law.yale.edu/documents/pdf/cbl/China_12th_Five_Year_Plan.pdf) Accessed on: 20.12.2013
- Romer, D. (2012): What Have We Learned about Fiscal Policy from the Crisis? In: Blanchard, O. – Romer, D. – Spence, M. – Stiglitz, J. (2012): In the Wake of the Crisis. Leading Economists Reassess Economic Policy. The MIT Press, Cambridge, Massachusetts, pp. 57-66.
- Rosenzweig, P. (2009): The Halo Effect: ... and the Eight Other Business Delusions That Deceive Managers. Free Press; Reprint edition (January 6, 2009)
- Röpke, W. (1964): The Wort und Wirkung. Ludwigsborg: Hoch. pp. 207-227
- Samuelson, P. A. – Nordhaus, W. D. (2004): Economics. McGraw-Hill/Irwin; 18 edition (July 27, 2004)
- Sawhney, M. (2006): Going Beyond the Product. The Service-Dominant Logic of Marketing: Dialogue, Debate, and Directions. In: Lusch, R. – Vargo, S. (eds.) Armonk, NY: M.E. Sharpe, pp. 365-380.
- Schuknecht, L. (2011): Solving the Fiscal Crisis via Limiting Government Commitments. German Ministry of Finance. Available: [http://winst.org/events/economic\\_challenge/papers/Schuknecht\\_SolvingTheFiscalCrisisViaLimitingGovernmentCommitments.doc](http://winst.org/events/economic_challenge/papers/Schuknecht_SolvingTheFiscalCrisisViaLimitingGovernmentCommitments.doc) Accessed on: 01.01.2014
- Shafik, N. (2013): Smart Governance: Solutions for Today's Global Economy. Speech delivered on 5 December 2013 at the University of Oxford. Available: <http://www.imf.org/external/np/speeches/2013/120513.htm> Accessed on: 13.12.2013
- Simon, H. (1957): A Behavioral Model of Rational Choice. In: Models of Man, Social and Rational: Mathematical Essays on Rational Human Behavior in a Social Setting. John Wiley & Sons, New York
- Simon, H. (1986): Rationality in Psychology and Economics. *The Journal of Business*, Vol. 59., No. 4, Part 2: The Behavioral Foundations of Economic Theory, pp. 209-224.

- Skidelsky, R. (2013): The Incompatibility of Austerity and Economic Reform. Economic Rebalancing Acts. Project-Syndicate. Available: <http://www.project-syndicate.org/commentary/the-incompatibility-of-austerity-and-economic-reform-by-robert-skidelsky> Accessed on: 1.01.2014
- Solow, R. (2012): Fiscal Policy. In: Blanchard, O. – Romer, D. – Spence, M. – Stiglitz, J. (2012): In the Wake of the Crisis. Leading Economists Reassess Economic Policy. The MIT Press, Cambridge, Massachusetts, pp. 73-78.
- Sorokin, P. A. (1956): Fads and Foibles in Modern Sociology and Related Sciences. Henry Regnery, Chicago.
- Spence, M. (2012): The Next Convergence. The Future of Economic Growth in a MultiSpeed World. Farrar, Straus and Giroux, New York
- Stock, J. H. – Watson, M. W. (2003): Has the Business Cycle Changed? Evidence and Explanations. Paper for FED Symposium „Monetary Policy and Uncertainty”. Available: <http://www.kansascityfed.org/PUBLICAT/SYMPOS/2003/pdf/Stock-Watson.0902.2003.pdf> Accessed on: 20.01.2014
- Stein, L. C. D. – Stone, E. (2010): The Effect of Uncertainty on Investment, Hiring, and R&D: Causal Evidence from Equity Options. Available: <http://ssrn.com/abstract=1649108> Accessed on: 11.01.2014
- Stuckler, D. – Basu, S. – Suhrcke, M. – Coutts, A. – McKee, M. (2009): The Public Health Effect of Economic Crises and Alternative Policy Responses in Europe: An Empirical Analysis. *The Lancet*, Vol. 374., No. 9686. pp. 315-323.
- Temin, P. – Vines, D. (2013): The Leaderless Economy: Why the World Economic System Fell Apart and How to Fix It. Princeton University Press
- Ueda, M. – Hirukawa, M. (2008): Venture Capital and Innovation: Which is First? Working Paper, Available: <http://ssrn.com/abstract=1242698> Accessed on: 10.01.2014
- Vihriälä, E. (2013): Effects of austerity revisited – how GDP surprised and why? Bruegel. Available: <http://www.bruegel.org/nc/blog/detail/article/1050-effects-of-austerity-revisited-how-gdp-surprised-and-why/#.UVRIgnVUSSp> Accessed on: 28.12.2013
- Wagener, H. J. (2011): Wirtschaftsordnung im Wandel. Zur Transformation, 1985–2010 (Marburg: Metropolis Verlag).
- World Bank (2008): Structure and Performance of the Service Sector in Transition Economies. Derived from a background paper for the World Bank flagship study Unleashing Prosperity: Productivity Growth in Eastern Europe and the Former Soviet Union.
- WTO (2010): Measuring Trade in Services. A training module produced by WTO / OMC. Update includes changes in the Manual on Statistics of International Trade in Services 2010.
- Yong, L. – Mahoney, J. T. (2011): When Are Venture Capital Projects Initiated? *Journal of Business Venturing*, Vol. 26., No. 2. pp. 239-254.