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Description

Creative and Knowledge Society journal's mission is to be recognized worldwide as the premier human creativity and transfer knowledge publication providing theoretical and practical articles which address new, controversial, and potential developments in creative society and related fields. The journal's central idea is how to challenge, facilitate and protect creative potential in knowledge and creative society.

Creative and Knowledge Society is a scientific journal, that publishes original scientific articles and scientific studies based on theoretical and empirical analyses. The journal is comprised of **main section:** Economics/Creative Economy; International Business/Knowledge Transfer; Management/Knowledge Transfer/Creativity; Marketing/Knowledge Transfer/Creativity; Management Intellectual Property/Creative Economy and related section: Marketing Communication/ Media /Creativity; Psychology/Creativity/Knowledge; Sociology/Creativity/Knowledge; Art/Science/Creativity

The Journal publishes high-quality papers based on the interdisciplinary characters and integrative literature reviews, original submissions on a wide range of related topics to creativity and knowledge transfer.

Articles are welcomed from all parts of the world. If possible, article should demonstrate theories, report empirical and analytical research, present critical discourses, apply theories to case studies, and set out innovative research methodologies.

The journal publishes two issues annually; one in the spring (July) and one in the fall (December).

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Knowledge Society: Entering a Post Capitalist Era?

Marc Luyckx Ghisi

Abstract

Worldwide and certainly in the EU, we are silently rather advanced in a new economic logic, a new economic paradigm. This is a huge transformation of the very tool of production, comparable to the shift from agriculture towards industry, last century. And at least in the positive scenario, this post capitalist logic represents a huge shift towards human and nature centred economic logic. Our society is exposed to radical changes in basic paradigms, dealing with challenges that were unknown few decades ago. E.g.: The negative scenario of manipulation of human body and mind is also prospering and very active today. The widely discussed topic is sustainability of current quantitative growth and the shift into qualitative character of economic growth. The valuation of capital is influencing both micro and macro levels. The value of human capital is becoming primary and machines are becoming secondary. Advancements toward the knowledge society lead to fundamental changes in the nature of power, trade, economy, money, and management. The paper introduces positive role of competent human beings (body, minds & souls), who produces knowledge from knowledge, their opportunities and their achievements. The paper deals with the new definition of economy, new way of understanding of a value adding a special value to objects composed of raw materials. Accepting a complexity of a creation process, most observers now agree that humans use their bodies, their minds and their souls, to create. The importance of abstract values rises in importance. We are shifting from the machine and factory towards the human person. Under the trial and error approach, we are supposed to allow errors and cover them. The innovative management must respect the body mind and souls of his personnel.

Introduction

In the beginning of this year 2013, many citizens around the world are feeling that something is changing. Most of us are aware that our children will live in a world which will be quite different from the actual one. Or to put it otherwise, the credibility gap is widening between the world citizen on one side and the actual economic order symbolized by the National States, the European Institutions and the Big Banks, on the other. Many thinkers are saying that we should imagine a new economic logic, which should be more sustainable and socially inclusive. And they express the mentality of an important group of citizens in our European countries.

This article starts exactly there.

- 1. Yes we need a new economic system, which should be much more human and environmentally friendly. Yes we need an economic system which is genuinely sustainable. Otherwise we are in danger of collective suicide... This is very important.
- 2. And perhaps the *knowledge economy and the knowledge society*¹⁾ could be at lest in part this new economic system, because it is a new economic paradigm.
- 3. Indeed *this knowledge economy, is potentially genuinely and 100% sustainable,* because it is based on *qualitative growth* and because enterprises are pushed to be sincerely and pro-actively sustainable and socially inclusive... if they want to acquire *intangible assets* on the stock market. Incentives towards a sustainable world, are for the first time really strong.
- 4. But this new economy is a <u>new economic paradigm</u>, <u>because we are radically</u> <u>changing tool of production</u>, which means that we are changing our vision of the world. (Karl Marx).
- 5. Our EU economy is already minimum 40% in this new economy²⁾
- 6. The main difficulty for European Governments are today, is that they have signed and paid for the official entry into this new knowledge society, since 2000. (Lisbon Strategy, and Europe 2020), *but they seem unable to understand that this is a completely new economic logic...* Apart of Finland, no European Government seem to have launched a serious debate on this knowledge economy...probably because we all are trying to put this new wine (paradigm) in our old "industrial" baskets.
- 7. Indeed in this new economy, *almost everything changes.* The value creation process, the tool of production, the management, the nature of trade, the strategies, the value measurements, the nature of growth, the patenting, the company's very structure, transparency, and ethics. Everything is different. We are in a new world.

2) A recent report done for the European Council of Ministers shows that a minimum of 40% of the European Union economy already is in the non-material, in the knowledge society. This estimate might be very low—some believe it is the range of 60–70%. There we are. <u>"THE WORK FOUNDATION": The knowledge economy in Europe: a report prepared for the 2007 EU Spring Council.</u>" http://:www.theworkfoundation.com/Assets/PDFs/KE Europe.pdf London, 2006.

¹⁾ The famous "Forward Studies Unit" of the European Commission's president Jacques Delors, where I have worked almost 10 years, has written in 1993, a white book announcing the transition towards a new economic logic, leading towards a new type of society: <u>the knowledge society</u>: "Growth, competitiveness, employment: the challenges and ways forward into the 21st century" White Paper, Office for Official Publications of the European Communities, L 2985 Luxembourg. ISBN 92-826-700-7. But this very advanced document has been neglected by the European governments, in spring 2003, until an exceptional Portuguese Prime Minister called Guttierrez, convinced the other Head of State in March 2000, to sign for this new society...telling them this was a paradigm shift. They have signed but did not seem to have understood or accept this paradigm shift. Hence the difficulty.

As Peter Drucker, one of the highest world authorities in Management theory, clearly explains in his latest book before he died, this new economy is post-capitalist because knowledge becomes more important than capital, in this new context.

"That knowledge has become <u>the</u> resource rather than <u>a</u> resource, is what makes our society <u>"post-capitalist."</u> This fact changes—fundamentally—the structure of society. It creates new social and economic dynamics. It creates new politics." (p. 45).

Drucker explains his view further.

"The economy will, to be sure, remain a market economy, and a worldwide one. It will reach even further than did the world market economy before World War I, when there were no "planned economies" and no "Socialist" countries. Criticism of the market as organizer of economic activity goes back all the way to Aristotle. Most of the charges against it are well founded³⁾. But as no less than Karl Marx pointed out more than hundred years ago, the market, for all its imperfections, is still vastly superior to all other ways of organizing economic activity—something that the last forty years have amply proven. What makes the market superior is precisely that it organizes economic activity around information. But while the world economy will remain a market economy and retain the market institutions, its substance has been radically changed. If it is still 'capitalist,' it is now dominated by 'information capitalism.'" (pp. 181-182)

The trend is the same all over the world—as Jeremy Rifkin showed very well.⁴⁾ The major political problem accompanying this change is that, if the agrarian and the industrial sectors cannot provide more than 20–30% employment at the most (along with 30% in the services sector), what can be done with the rest of the population, particularly with those who are not qualified for other types of jobs? That is the very difficult question, which confronts the politicians all over the world.

This change in the production tool contained in the advancement toward the knowledge society leads to fundamental changes in the nature of power, trade, economy, money, and *management*. But with it also comes mutations in the concepts of patents, work, justice, sustainability, ecologic durability, education, and culture—that is, in society itself.

Finalities themselves are changing, evolving toward *something else*. An important trend of centring again toward human is developing becoming apparent at all levels. A centring, however, which could easily become perverted by means of sophisticated manipulation, as I shall also show.

To explain the nature of the transition from the industrial society to the knowledge society, let me first define a few terms.

- 1. **Data** are pieces of raw information, as they arrive in our mailbox in the morning, or on the Internet. The problem with the data we typically receive is that they are too many (overabundant), and they are not sorted.
- 2. <u>Information</u> is <u>sorted data</u>. The sorting can be done mechanically—for example, by Google, postal employees, or your secretary (if you are fortunate enough to have one).

4) Rifkin Jeremy. The end of work. Tarcher Penguin 1995, 2004.

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³⁾ Peter Drucker quotes here Karl POLYANI (1886-1964) *<u>The Great Transformation</u>* (1944) as being the most cogent of the critics of capitalism.

- <u>Knowledge</u> is data that has been creatively sorted and, by careful reflection, given value or a set of values. The reflection is carried out in the human brain and cannot be mechanised and leads to action: I choose this, reject the other Google entry. <u>Knowledge always leads to action.</u>
- 4. <u>*Wisdom*</u> is the ability to make decisions with <u>maximum concern for the common</u> <u>good</u>, including that of future generations, <u>and social cohesion</u>.

Using these terms, I have summarised the transition as shown in Table 1.

1. The positive scenario of this knowledge society

Our economy is radically changing. Peter Drucker is right—we no longer are 100% in the capitalist and industrial logic. Human beings, referred to in the new management circles as "human capital," are becoming important again, at least in the positive scenario. The machine becomes secondary and is put into the service of humans. We see a possible rising again of humanism in the heart of business.

Is it not incredible news for industrial ears? And look at the new strategic approach of business. It refuses warlike strategies and chooses instead to employ new "win-win" strategies. And yesterday's rivals start sharing the knowledge in networks and in "communities of practice." In doing so, they shift away from the warlike values of patriarchy. The whole relationship to violence (patriarchal) and exclusion is completely reversed.

And we enter another world.

But before considering the details of this new vision of economy, let's look at a concrete example of a business that functions in this new vision of the knowledge society.

1.1 Definition of what "economy" is.

"Economy," in its present form, was invented to establish <u>management</u> standards for the new power emerging form the industrial society—<u>capital technology and private</u> <u>property</u>.

In the new knowledge society, the power is displaced, and trade is redefined in an exchange system, which works in a different way. Thus, we likely are moving toward a new approach to economics, which will be transdisciplinary, more open to qualitative analysis and to constant dialogue with the civil society. This new economic logic might be inclusive and might have to respect the environment absolutely.

Thus, one should not oppose or criticize industrial economics, because it is still valid and working.

But rather one should urgently start writing new chapters on the knowledge economy, and on intangibles.

EXAMPLE : ASKO–Management of the website of the European Commission.

Consider a company called ASKO, which was recently created with very little initial money. It was performing very well in the construction and management of Internet websites for large businesses and institutions when, a few years ago, it obtained a managing contract from the European Commission. When it received the contract, the value of its stock shot up 75%.

The contract specified that each day all translations of all texts produced by the European Commission must be placed on the Web every day in all official languages of the Union and that the placement must be performed within 48 hours of production of the text and with an impeccable presentation,.

The "factory" in this case is a set of computers and intellectuals who have one or two university diplomas and speak three or four languages fluently. The role of financial capital and technology is 20% at the most. The remainder is the competent human beings (body, minds & souls), who produces knowledge from knowledge.

The director of the company was aware that his function is not one of "conquest, command, and control." It was simply not possible to control the translators of Greek, Finnish, Slovenian, Hungarian, etc. Instead, the director has six basic functions:

1. Care for the production tool: his precious personnel...

The director must take care of the intellectuals who do the work and who are more competent than he is in their respective spheres—namely, the languages that they are translating. They must enjoy their work environment and want to keep working for the firm. In brief, he must motivate them to return the next morning with their production tool, their intelligence.

2. Control the work quality.

He must control work quality. But how? He is incapable of knowing all languages. To accomplish the task, he put his team members in touch with a *network of people outside his organization* who have written speeches, are responsible for official translating systems, and/or are ambassadors or associated with political parties, trade unions, media etc. By doing so for each translator (and each language), he created a new system of quality control that manages itself by means of linguistic networks of "consumers". All of the Greeks inside the Greek network, for example, want the Greek text to be perfect—because it is dangerous for a political debate to be based on inaccurate text.

- 3. Make sure that good communication exists within the business and with the outside—that is, with the other translators of other languages. If there is a problem with one language, it is very possible that some, and perhaps all other languages, have the same problem. It is absolutely indispensable, therefore, that the politic of translation be harmonious and that each translator be in good standing with the corresponding Commission cabinet members and with those producing the documents.
- 4. *Watch over the continuous formation* He must provide them with possibilities for continued education—meetings, trips, contacts, etc.
- 5. *Watch over the non-material value of the business.* The quality of the surroundings, the staff relations, the social environment of the business must be good.
- 6. Attend to the career plan of each person. His work in the business is part of a personal career plan ...within the business itself... and not somewhere else.

This type of management represents a complete departure from the norm... but the story is not finished. The director of ASKO was offered millions of euros to sell his business. He accepted. The next day, the new director arrived and began functioning along the classic model of industrial management of "command and control"—barking orders. Two days later, part of the staff resigned. One week later, the Commission contract was suspended and the stock crashed!

Under pressure to fix the problem, the new director rehired the previous director who accepted to come back, but only with higher pay! The contract with the Commission was resumed, and the stock price rose again.

Conclusion:

This is an excellent example of the transition from the industrial society management to the knowledge society one. It illustrates that one cannot act like an "industrial" business executive in a knowledge business. Those who ignore such advice and do not understand the change must beware! This seems to me the clearest example of management change in the knowledge society.

We will now briefly comment our Table 1. Many concrete differences between the industrial society and the knowledge society are obvious, but let's examine them in greater detail. Specifically, let's look at the differences with respect to the following subjects.

1.2 A New Definition of economy

Our hypothesis is that the very definition of economy is changing. We are shifting from an <u>economic science</u>, which was in charge of the management of the ownership of <u>financial capital and technology at the service of the shareholders only</u>.

And we are shifting full speed towards a new <u>human centred discipline (science?)</u> which is managing the creative process of the human persons of this new type of <u>companies</u>. And this management is not anymore only at the service of the shareholders. It is broadly at the service of the stakeholders: clients, providers, but also the community at large and a sustainable world!

The shift is important. Unhappily very few economists are aware of this change⁵).

1.3 New Creation of economic value

The heart of the economic engine of a society is the way it creates value.

In the industrial society, man does not need Nature. He builds objects in the factory from raw materials. From a block of steel, he builds an automobile. *Value production consists in adding value to the object,* or in other words producing "added value." The great political debates of the 20th century were about deciding who the added value belonged to. The left held that it belonged to the worker who, otherwise, "would become estranged of the fruit of his work," whereas the right asserted that this added value should go to the entrepreneur.

⁵⁾ See for example Arthur W. Brian. *The second economy* in "Mc Kinsey Quarterly" October 2010, pp 1-8.

In the knowledge society, one produces value *by applying knowledge to knowledge*. And the value produced is knowledge, no longer value added to an object. It is, therefore, *"added, co-created value."* And it is not possible to alienate workers from the fruit of their work, since knowledge remains in the brains and in the mind of the creators of this same knowledge. Indeed, *the human brain becomes the new tool of production*. Moreover, knowledge becomes *the* resource, so that it allows the worker to acquire all the goods that he or she needs.

The challenge is to produce new knowledge by communicating and filtering, intelligently and creatively, data and information to produce knowledge. It is true that computers can facilitate this process, but *the human individual contribution is central and indispensable.* As much as man could be replaced by machine in the industrial society, here he becomes again absolutely indispensable. This transformation is so rapid and fundamental that it is difficult to grasp.

It is possible, however, to also envision using those new technologies to manipulate and domesticate the human brain—to begin with the feeblest and the poorest. This is the negative scenario that is developing also. We have to have no illusions.

1.4 New tool of production: the human person: mind body & soul

The creation process is very complex. But most observers now agree that humans use their bodies, their minds and their souls, to create. An artist will tell you: "I have put al my soul in this creation !"

Now it is clear that with this new tool of production, we are changing landscape. We are shifting from the machine and factory towards the human person.

As Marx said if we are this shifting tool of production, we are also shifting "Weltanschauung", vision of the world and paradigm.

It is this new paradigm we are trying to explore with our readers...

1.5 New Management:

This changes naturally the whole management strategy. To manage a machine or a factory is one type of job. But enable human persons to be and remain creative is a completely different job. Progressively we see some managers becoming aware of this fundamental change.

- One element is to *allow errors and cover them.* It is rather clear, that if you are trying new ideas you will make errors. This is unavoidable. If you as a member of the personnel, are criticized by your manager for this error, you will not dear to create anymore. If a manager wants to enable creativity he *has to cover this team's errors completely*.
- The second very new element is that <u>the management must respect the body mind</u> <u>and souls of his personnel.</u> Because in real creation the body, mind and souls are involved. This is really new. And how to do?

1.6 New CEO's function:

In order to respect the souls and the personalities of their personnel, the managers discover *that they have to learn to respect their own souls first.* And thus go into

internal or spiritual growth. I have seen some managers who are going along this completely new path. This is also completely new. But it is very interesting.

Now, let us go back to the example of ASKO. This new CEO jealously cares for his new production tool—the human persons working with him. Everything depends on the human persons, who are the only ones capable of applying knowledge to knowledge in order to create new knowledge.

The new CEO must also increase his staff's creativity by introducing them to the "networks of excellence" and the "communities of practice" where knowledge is exchanged to create new knowledge. Thus, he helps the sharing of the network knowledge.

He can also help networks develop an auto-control of the production quality of his staff—as in the above ASKO example, the head of a translating venture who involves all of the concerned users by creating a users-network around his staff.

This new function is certainly not easier, but it is less violent and less patriarchal. There is still competition, but also collaboration in networks. Some writers are beginning to speak of "coopetition."

1.7 New Trade as sharing

In the knowledge society, if I give information to someone else, I do not lose it. My reward for doing so does not necessarily take the form of money, but the return of the information that comes back to me enriched with the creativity of the person to whom I gave it. It might well provide me with things that I did not know, thereby enriching me. That is why new businessmen insist so much on the sharing inside of networks.

Thus, in the knowledge society there is a radical departure regarding the basis itself of the modern concept of trade. It is no longer a situation where I cannot, by definition, ever "have the butter and its money" but only lose what I exchange.

In adopting this new concept of trade, we are returning to a logic of debt, exchange, and gifting as in the Middle Ages. This cannot be without consequence on the role of money in the world, because in the knowledge society, money no longer occupies the centre of the transaction. Transactions can occur without money.

This could result in a new definition of the role of money in tomorrow's society. We could go towards an alternative money systems, along the lines of some new experiments⁶.

The more we progress in the description of the knowledge society, the more we shall see that it is built on exchange and gifting. Thus, it potentially is a more humane society.

1.8 New Measurements: intangible assets.

Knowledge is intangible, non material and qualitative. So it is difficult to measure it, to put numbers on it. How to proceed? We are in uncharted waters..

So we observe that the Stock Markets have progressively adopted a new concept⁷): *the intangible assets.* What are those new intangible assets?

⁶⁾ Like "LETS" (Local exchange trade systems), or "the Swiss "WIR" system for the Business. But Lufthansa "Miles and More" points represents also an alternative money system.

⁷⁾ This concept has been invented in Sweden by Karl Erik SVEIBY in 1986.

Verna ALLEE is also the first author in the world to have graphically described the intangibles in her book, *The Future of Knowledge*. She shows that a classical industrial company can be presented with a rather classical map, meanwhile if this new type of company has a lot of intangible assets it appears clearly on the map: a lot of new links with consumers, with producers, with other users, with the environment actions, with the neighbourhood, with the social activists, etc. are appearing and enriching the map. Verna gives us the first "radiography" of the intangible assets of a company. This is really new.

No let us go in detail on the content of those intangible assets:

- 1. Assets linked to the internal structure of the business:
 - Research and development
 - Internal structures of the business
 - The strategic plan of the business
 - The internal communication inside the company
 - The relationship with the staff and the response of the latter
 - How the business manages conflicts
 - The quality of internal management
 - The know-how of the business and its implicit knowledge
 - The structure of the business, pyramid? or network?
 - The balance of its strategy ("balanced scorecards", for instance)
- 2. <u>Assets linked to individual competencies:</u>
 - Diplomas, education, experience of the personal and staff
 - The implicit know-how of each staff member and worker
 - How the business capitalises on the implicit knowledge of its members (see Nonaka⁸⁾)
- 3. <u>Assets linked to the business external structure:</u>
 - The reputation, the public trust in the business
 - The trust in the product (Iliouchine or Airbus?)
 - The brand (for example, Coca Cola)
 - Relationship with suppliers and consumers
 - Relations with civil society
 - The *quality of the "value networks"* to which the business participates
- 4. Assets linked to a sustainable world and Common Good

As a matter of fact, those last items linked to a Sustainable future are becoming increasingly *more and more important year after year*. They could become dominant in a few years.

- SUSTAINABILTY: Is the company really working towards a sustainable world?
- 8) Ikujiro NONAKA and Hirotaka TAKEUCHI: *The knowledge-creating company: How Japanese companies create the dynamics of innovation*" Oxford University Press, New York, Oxford, 1995.

 SOCIAL INCLUSION: Is the company really efficiently working towards social inclusion in the neighbourhood?

We find ourselves immediately in an incredible situation—the stock exchange is modifying in depth how it quotes businesses. Before, brokers were taking into account what is called in jargon "business *tangible* assets"—their bank holdings, their debts, their stock value, their real estate interests. In brief, *businesses were measured on their financial assets, and it gave a past-oriented image*, because it was like scanning the past and the present of the enterprise.

For the last few years, however, stock brokers have started to scrutinise the "*intangible assets*" of a business. Why? Because they are more and more conscious that we are shifting to the knowledge society. And those new assets are giving a *picture of the evolution of this company in the future!* This is extremely precious and one of the reasons of the importance of those new assets.

This concerns not only the new knowledge businesses; it affects all businesses.

In brief, the stock market is becoming more and more a strong vector of change. It seems to be pushing more and more businesses toward this new "intangible" logic and the knowledge society. How does this all function? The new measuring tools are still at their outset and, thus, many brokers confess that they use their intuition to measure the intangible assets. But what are these intangible assets? A partial list is as follows:

An example of the importance of intangible assets: Coca Cola.

A recent series of minor crises for the Coca-Cola Company illustrates this matter. The crises occurred most notably in Belgium around 2001, where a few children became sick after drinking cans of Coca-Cola. Coca-Cola managed this crisis *as if it were a crisis of a product. They did not realise that Coca-cola is* only 10% of brown water with sugar and *90% intangible assets.* So they recalled millions of cans from the Belgian market only to turn around and *send them to the African market*, where they produced no harm.

When the transfer was discovered by the newspapers, it produced a scandal, naturally. Materially, this might be considered good "management" because it spared much money and did not appear to have caused any problem in Africa. But, an intangible image is not managed as a material product, and the CEO did not understand this.

For many, the Coca-Cola brand represents a way to participate for a few moments in the "American dream"—a worldwide symbol of liberty, equality of opportunities, ability to become prosperous no matter one's race, sex, culture, or religion. There is a high level of ethics and hope in this brand. It is a very strong and mobilizing dream, which still fascinates millions of people. But those who buy the American dream of equality and justice cannot accept a cynical behaviour that gives the impression of scoffing at the dignity of another race on earth, even if it were not the case.

To manage an intangible image, one must take into account a content, a meaning. For example, Coca-Cola could have invested in a free aid to poor schools in Belgium and, thus, give back to the business a positive image tied to the values of the brand—social promotion, equality of cultures, equality of chances.

This example shows us that, even in businesses that *a priori* appear distant from knowledge production, intangible assets are increasingly important.

The consequence was that Coca-Cola stock lost 40% of its value on the world market in a few days, and forced its CEO to resign. Thereafter, when a new CEO was chosen, the stock bounced back. The sanctions against the top management have been terrible. Ten years ago, the outcome might have been different.

This example shows clearly that this new knowledge society logic is also touching deeply traditional "industrial" sectors. It is really permeating slowly every sector of our world economy.

1.9 New win-win strategies

We are accustomed to hear in business management circles market strategies explained with war-like concepts like "killing your concurrent" in order to "appropriate his market shares". This has become "normal" in our daily business lives.

It is not anymore in the knowledge society. Because when we have to produce knowledge the *strategy changes completely*. Humans cannot create alone. They need networks of similar people who are confronted with similar challenges. The environment should be dynamic, and certainly not a win-loose atmosphere. So the shift towards a win-win strategy is unavoidable.

Those new strategies are much more human. They suppose and represent a higher level of consciousness.

In 1996 some authors began to speak of "coopetition"⁹, which combines "cooperation" and "competition". Elisabeth Sathouris, in a publication called *Earthdance*¹⁰, compares businesses with living organisms. And she observes that these *organisms take an enormous leap in evolution* when they move from *competition to collaboration*. In a mature living system, each party, entity or individual pursues its own interest in a manner that does not compromise the health of the group. Thus, there is collaboration that hurts neither the individual's personal interests nor the network's interest.

Verna Allee¹¹, in her book explains how this collaboration functions in the midst of a value network.

"The first principle of a healthy network is that individual participants pursue negotiated self-interest with consideration of the health of the other levels of the system. The value network perspective and approach suggested in this book supports and encourages negotiated self-interest between all the participants, with careful consideration for the next level of holarchy—that of the value network itself. People will want others to succeed when they appreciate that their individual success is directly linked to the health and vitality of the entire network. In a successful network, everybody supports the success of others as well as themselves."

And she continues, regarding the absolute necessity of fairness in the network.

"Every participant in a value network needs to contribute and receive tangible and intangible value in a way that sustains both their own success and that of the value

⁹⁾ Adam M. BRANDENBURGER & Barry J.NALEBUFF: <u>*Co-Petition, a revolutionary mindset that combines competition and cooperation.* Currency, Doubleday, US, 1996.</u>

¹⁰⁾ Elisabeth SATHOURIS: *Earth dance* 1999, editor: "iUniverse.com", 432 pages.

¹¹⁾ Verna ALLEE: *The future of knowledge: increasing prosperity through value networks* Butterworth-Heinemann, Elsevier Science USA, 2003, page 237.

network as a whole.... When people feel they are being fairly rewarded for the value they contribute, they become willing to offer even more value... It is essential that everyone in the network operate with an ethic of giving and receiving value in a way that build good relationship and trust." (p. 238.)

Thus, we are entering a new logic which is no longer warlike or violent, but whose outlines are still unknown. We shall consider them later.

Example IBM & SAP: enemies working together in a win-win relation...

One IBM responsible for Europe told me recently that for knowledge creation process, they are more and more collaborating with their biggest concurrent SAP. *"It is less expensive to create together than to fight against each other"*. This is win win logic

1.10 New Qualitative growth: allowing a sustainable world !!

When you are on the web, you are not at all interested by quantity. Quantity is *not* the issue anymore. So it is easy to understand that in this knowledge society, quantitative growth is interesting nobody. Your company is expected to provide <u>a new level in the</u> *quality of knowledge* which is not yet existing on the market.

Example: Apple

Apple's strength on the knowledge market is that they produce new objects which are of better *quality:* more beautiful, more human friendly and easy to handle, quicker. Because they create objects they are still industrial/capitalist, but those objects are coming with new creative ideas, like the I-pod, I-pad, I-phone, etc. *This is qualitative growth of the knowledge content included into the object* ... which gives them, by the way, also a *huge quantitative amount of cash!* Apple is an excellent example of a company which is one foot in the classical industrial production and the other foot in the knowledge society.

Excellent news: sustainability is possible in the knowledge society

Let us remember that the cornerstone of the industrial capitalism is quantitative growth. We understand more and more clearly that this is <u>the deep reason why the</u> <u>industrial society in its essence unsustainable</u>, because it is not possible to grow infinitely in a finite environment: our earth.

Now if we understand that this knowledge society is really changing cornerstone <u>and</u> <u>going to a new quantitative type of growth and uses thus a new cornerstone</u>, this is really excellent news. Because with qualitative growth it is really possible to go towards a sustainable world. <u>If the world economy would be shifting towards qualitative growth it</u> <u>becomes possible to imagine a sustainable future for Humanity on earth, otherwise it is not possible.</u>

This is excellent news. But are we aware of it ?

Example: Interface's new approach to sustainable carpets

A few years ago, I had the opportunity and the pleasure to meet Ray C. Anderson, Chairman and CEO of Interface, a carpet factory in the U.S. He told me the following story at a meeting at the Esalen Institute in California. One day, a customer abruptly addressed him, as director, and accused him of being a polluter and accelerating the climatic change on earth. Ray started to think. This customer was right, and it was inexcusable that the hundreds factories of his company were dumping tons of toxic products in nature (rivers and atmosphere). In fact, carpet manufacturing uses a great deal of acids and other chemicals to treat tropical fibres, their raw material.

He decided to completely change the entire production method of his carpets in all the factories of the group. It represented a huge investment and the business went into debt. Thankfully, the board of directors supported his audacious strategic choice, without too many problems. Within a few years, even though the financial situation of the group was still fragile, it became number one in its industry, and its stock rose to an historical high. Why? How? Because it was the first carpet on the market the production of which was designed to both respect the environment and sell at a competitive price. Thus, buyers would choose Interface, since it was the same price as other carpets the production of which polluted the environment.

The analysis of his situation, according to the knowledge economy, is simple. Interface's tangible assets were still very weak because its debt. But suddenly the value of its *intangible assets* increased so much that its shares became star on the New York Stock Exchange. Thus, this was the very interesting case of an "industrial" business, which becomes the king of the market even though it is deeply in debt. We are no longer in the industrial logic. Due to their intangible value, the shares increased enormously, even though the tangible assets were still weak or even negative. The "intangible assets" made the whole difference. As seen, the intangible value is tied to the respect of the environment. *The environmental dimension really becomes a preponderant intangible value*. Ray Anderson'¹² book gives more information on this story.

1.11 Patenting? or ... Open Source

The actual "industrial" system of competition is based on the secret of manufacture. If somebody has the technology that the competitor does not know, the one who has the technology earns part of the market. Similarly if, during a war, one of the enemies owns a new weapon unknown to the adversary (whether gun powder or atomic bomb), he will have an advantage in battle. Is this not, in fact, one of the keys of the history of Western conquests in the world?

However, as Harlan Cleveland¹³⁾, statesman and member of the intellectual elite of the U.S., observed already in 1985, the secret tends to disappear in the knowledge society because "information always leaks." This means that secrecy will become less and less possible in the years ahead. As he wrote,

"Information is porous, transparent. It has an inherent tendency to leak. The more it leaks, the more we have, and the more of us have it. The straitjackets of government 'classification,' trade secrecy, intellectual propriety rights, and confidentiality of all kinds fit very loosely on this restless resource."

¹²⁾ Ray C. ANDERSON: <u>"Mid-course correction: toward a sustainable enterprise: the Interface model.</u>" 1998, Chelsea Green publishing company. www.chelseagreen.com

¹³⁾ Harlan CLEVELAND: <u>Leadership and the information revolution</u>, "World Academy of Art and Science" publications, 1997, page 16. Harlan Cleveland has been Vice-Secretary of State of President John F K Kennedy. He died in 2008.

The consequence is that "*hierarchies based on exclusive ownership of knowledge and intellectual propriety are crumbling, quietly but rapidly.*" Harlan Cleveland and the World Academy of Art and Science, of which he was the president for years, announced the twilight of patents as long ago as 1990.

In addition, public opinion appropriates to itself faster and faster that which just yesterday belonged to the world of "secrets." The Internet has contributed greatly here, the most striking example being that of the Apple iPod® and the direct uploading of music through the Internet—with of all the resulting ownership fights. Note that Apple itself is not an "Open Source" company. IBM for example is more going towards Open Source than "Microsoft" and Apple.

Another example is the battle of the Third World governments (Brazil, India...) for the *generic medicines* that the pharmaceutical companies are quietly in the process of losing step by step.

In my opinion this trend toward Open Source is unstoppable, precisely because we are changing logic, and are not any more into the "classical industrial frame".

It is also evident that we will have to invent new ways to honour artists and give them a reward for their very important contribution to our societies. Not all those new ways are yet invented. But I am rather certain that we will not go back to the industrial logic anymore...

1.12 New Business Structure from Pyramid to flat networks...

Our current structures are almost all pyramidal, whether we realise it or not. We do not even pay attention to them anymore, they are so "normal." We have been in patriarchal structures for thousands of years now and are not even conscious, anymore, that we are in them. And we only become aware of the fact when the need arises to create a new organization. Then we notice how many natural tendencies we still have toward the pyramid—at least men (in their great majority) do. But within the last few years, pyramidal structures have begun to show themselves as problematic—as much in business as in politics, international organizations, religions, trade-unions, NGOs, etc.

The knowledge economy *cannot function in pyramids* because knowledge cannot circulate freely inside a pyramid. It requires flat network structures wherein information can move in all directions, because the new mechanisms of value creation require it. To produce new knowledge, one needs creative humans. And for them to remain creative, they need to be in a network where they can exchange knowledge and where interactions can take place from all sides and all directions. Through interaction, knowledge progresses and develops. There is no other way. We are at the heart of the mechanism of creation of value. *Knowledge is like love. The more it is exchanged, the more it is received.*

The only really prosperous businesses that survived the financial shocks of the last few years are those that were transformed from pyramids to networks. It is for this reason that we are leaving the pyramidal society... silently but very quickly. Most businesses *did not understand the need to pass from the industrial to the knowledge society*. They simply kept their industrial vision, their pyramidal structure, and their traditional approach to profit, to customers, and to society. Only their products were becoming more and more non-material. <u>They all collapsed</u> in the "dot-com crash." A small minority realised the need to change structure (from pyramid to network) and to transform their world vision. Thus, they included in their intangible network their customers, their suppliers, the public, the environment, and their society. They transformed themselves fundamentally and <u>survived the dot-com crash without problems</u>. That is a cruel fact. Her examples showed the danger of choosing the wrong kind of management.

1.13 New crucial importance of culture

In the present industrial and capitalist society, culture is, unfortunately, often considered by political groups like the "cherry on the cake," a luxury rather than a central value.

In the future, this central place might be offered to culture in a society dedicated to favour creativity at all costs. Why? Because, if you cut people off from their culture, you eventually kill the roots of their creativity, and the creativity will slowly wilt in conformity. This would negate the benefits of the knowledge society.

Thus, we are also possibly on the verge of a repositioning of culture as it comes back to the heart of the knowledge society. In this new vision, *culture becomes one of the main ingredients of the production tool.* Once again, this is difficult to believe, as it is so different from the actual marginalisation of culture, and its submission to strictly commercial criteria.

Richard Florida¹⁴ in his important book shows a completely new phenomenon in US and Europe. Knowledge companies are looking for culture-rich cities to establish new centers. Because their creative employees are looking for a rich cultural environment, in order to foster their own creativity and the creativity of their children. There is thus a new requirement for all cities to have an excellent school system, excellent and tolerant cultural life, and an open-minded and tolerant mentality.

In a nutshell the new competition between cities in the post indsutrial world <u>happens</u> <u>at the level of culture</u>. This is completely new. It changes completely the culture policies around the world.

1.14 Women are twice more performant in this new knowledge society.

Everyone actively involved in this knowledge society will agree: women are twice more efficient in this more soft and feminine strategies, set of values and principles.

Everywhere I had the same experience. The more I explain this new logic, the more I see the women's eyes opening and deeply understanding my presentation, meanwhile I see only a minority of men understanding and following this new logic.

Why? It seem to me rather simple to understand. The underlying values of this new society are much more oriented towards *life* and Humanity's survival and towards values of care and respect, towards fostering of creativity and respect for bodies minds and souls.

14) Richard FLORIDA: "The rise of the creative Class" Basic Books 2002.

But most women are living those values in their children's education everyday. One could say that the family is a "community of practice" as we have defined it. Or we could also say that the family is the first basic network of solidarity and love, without which societies would collapse immediately.

So whenever I describe this new environment, I see and I feel that this is deeply received by most women, because it corresponds to what they are trying to achieve in their daily lives anyhow.

Meanwhile for us men, it take a little time to depart from our intuitive command control and conquer (CCC), pyramidal approach. And most of us men are not satisfied, because nobody has explained us clearly anything about this change of vision of the world. There is almost no debate about those topics. Nobody told us that we are since 5000 years in a patriarchal society. Nobody speaks about this change of tool of production, which implies a drastic change of values. Everyone remains silent, because nobody in our society has a mandate to speak about those issues. Men are accustomed to be dominant in society since a long time, and this profound change seems to come from below and not to be controllable...

There is thus a deep malaise among most men, because they feel intuitively that they will have to go through a deconstruction phase of their "normal" behaviour. They will have to learn and to listen to women in order to catch up with those new values and those new strategies...

Meanwhile women are like confirmed in what they always were intuitively feeling and enacting in their daily lives. And they go forward...if they are given the right conditions to work and innovate.

In the Business, the few CEO's who dared to give real power to women in charge of HR for example, have been extremely successful. Simply because those key-women have been able to create a "spirit" of respect and care, enabling authentic and sincere enhancement of human creativity, and quality of life. They have been able to develop the "intellectual capital", but also the bodies and souls capital of their businesses.

Example CEO of Stanford University

I had the occasion to meet the new CEO of one Faculty in Stanford University. He told me that the most daring decision he took the day he was appointed, was to install a rule of majority (52%) of women in his Board. Because he explained to me that women begin really to intervene when they see that they are in a majority. And when they do, the first thing they do is to modify completely the agenda. With this new type of Board the conversation has completely changed. And a lot of unthinkable innovations have been introduced very successfully.

After 4 years I was outvoted. My follower maintained all our innovations...but surpressed the 52%....

1.15 Social Inclusion: Knowledge works like human love.

One of the major characteristics of knowledge production is that it enriches itself through information sharing. *Knowledge works like human love.* The more one gives, the more one receives. And what is given is not lost. The more that knowledge includes different people in the sharing, the more the network becomes diverse and inclusive, and the more it enriches itself. Consequently, *we really find ourselves in front of a completely*

new inclusive logic. Nevertheless, we are still so strongly impregnated by our dominant industrial creed of exclusive economy that we have great difficulty to see the new inclusive logic appear.

Fortunately, I have excellent news on this front—it is possible to orient this new knowledge society toward an inclusive logic. One may consider that tomorrow's business leader might want to hire non-qualified individuals on his staff in order to increase the potential for creativity and for implicit knowledge in his business.

Example of social inclusion: "Men's Wearhouse"

In a meeting of the Club of Rome in Brussels sometime back, Mr. Rinaldo Brutoco, president of the World Business Academy, told the story of an important U.S. men's suit factory called "Men's Wearhouse", of which he is member of the board.

The philosophy of this factory is rather exceptional and ahead of its time. It values human resources, creativity, and staff responsibility at the maximum, and gives maximum employment stability, which results in a lowering of capital revenues to a stable level of 3%. After all, this is an intelligent choice because the reason for me to choose between two men stores will be how I am greeted and helped in my selection of clothes.

The New York Stock Exchange initially was cool toward the stock as if it were without value. Its yield (3%) was considered unacceptable. But after a few years, it became obvious that it was one of the only viable businesses in the sector which, moreover, produced a stable income—whereas, most other concurring stores were going through a serious crisis or going bankrupt, at great loss for the shareholders. The retirement funds were the first to discover the stock, and heavily invested in it. The stock speculators followed them.

Within a few years, this new "social" concept of business was accepted at the New York Stock Exchange. This new vision was not only profitable, but one of the only exits out of the full blown credibility and identity crisis which causes havoc among American business¹⁵.

Another example: The Colgate Staff... and the cleaning Lady

Similarly, in the 1950s, the whole of the Colgate board was in deep reflection because they had problems with a pink soap they were selling as toothpaste. And after many hours of discussion, they were going nowhere, unable to decide what to do?

Suddenly, the Spanish-speaking cleaning lady, who was finishing cleaning the meeting room, asked if she could say a word. The board chairman gave her the floor for one minute, which she took to ask, "Why are you not putting the soap in a tube, people will prefer this." Doing so became the path to world success for Colgate.

The story does not tell if they even thought to reward this Lady for this huge gift to the company !

The conclusion is clearly indicating that people with Ph.D.'s are not always the most creative ones. Sometimes they need other people with a lot of implicit knowledge that they can use and spread in the network.

¹⁵⁾ More information is available at http://menswearhouse.com/aboutus/our<u>community/giving</u> back.jsp

And there is a second reason for a CEO to be inclusive. We have seen that a socially inclusive policy is fostering creativity inside his team. But there is a second powerful incentive: *intangible assets.* If a CEO shows a new coherent socially inclusive policy, he will increase the intangible assets of his company and thus be rewarded by a drastic increase of stock value of his company's shares !!

This is the new logic coming more and more to the front.

1.16 Transparency:

As Harlan Cleveland warned us 25 years ago, information always leaks. And it is not possible to stop it. In a world of objects it has been possible to install a patenting system. We have seen that in the knowledge society it is probably not anymore possible.

But this new logic has also a second very important consequence: transparency. People know more and more about the so called secrets. And they know more quickly than before.

Companies, Trade Unions, Churches, International organisations are all confronted by a rising degree of transparency. Transparency obliges you not to sheet anymore, and to be coherent between what you say and what you do.

And if you do not observe this ethical rule of coherence, you reputation, your "brand", your "intangible assets" will be negative, which today is extremely dangerous for your company.

This is true for Business but also in politics. Political transparency is increasing and as a politician you better say immediately the truth, otherwise you could loose everything...

1.17 Ethics

This leads us to the last item of table 1.: ethics. Ethics has been considered as a non issue in the industrial society because we were supposed to be only rational, make rational decisions about rational items, in a context of rationalist scientific approach of reality. When one is able to reach The Truth through the rational scientific method, like Descartes told us to do, there is no space for an ethical reflection whatsoever.

In simplifying a little we could says that ethics has not been considered as an important issue in the techno-scientific approach of reality in the industrial society. We had not to debate about ethics because we were approaching the very Truth through the rational techno-scientific approach.

Now in this "knowledge society" one is working with knowledge which is an intangible thing like for example TED (<u>Technology</u>, <u>Entertainment</u> (i.e. radio TV, literature, theatre, music, education, etc) and <u>Design</u>.)¹⁶⁾. Ok but knowledge has always a content and a meaning. Thus we can conclude that knowledge contains always ethics.

The industrial modern society has thrown ethics from the door. Now it is coming back through the window. In other words it will be impossible to avoid ethics in this new society. People will definitely try to do so, but they will not succeed in the long term.

¹⁶⁾ There are TED conferences all around the world centred on new approaches in economy, design, and technology. This is the first visibility of this new Knowledge society world Wide.

Ethical debates will be more and more important in the coming years. They will be unavoidable.

| | INDUSTRIAL SOCIETY | KNOWLEDGE SOCIETY | | | |
|---|---|---|--|--|--|
| | INDUSTRIAL SOCIETY | POSITIVE SCENARIO | NEGATIVE SCENARIO | | |
| 0.DEFINITION OF ECONOMY | I OF Manages the ownership of capital and capital and capital and creative for the common g | | Manages humans to make them subservient to machines | | |
| | <u>Shareholders</u> approach | <u>Stakeholders</u> approach | <u>Shareholders</u> approach | | |
| 1. CREATION OF ECONOMIC VALUE | Value is added to the object (from steel to automobile). | Knowledge is applied to knowledge in order to create new <i>Knowl</i> . | Human mind is manipulated and made submissive | | |
| 2. TOOL OF PRODUCTION | 1. Financial Capital + 2. new technology + 3. patents Humans = cost | "Human persons (body, mind, & soul), in networks = "human capital" = N°1 | Subtle manipulation of human brain or possible replacement by computers | | |
| 3. MANAGEMENT | Centred on machines and their logic. Humans must adapt to machines (Taylorism) | Centred on humans Machines must adapt to Humans (Apple) | Manipulation of human mindor replacing Humans by computers | | |
| 4. ROLE OF CEO | Commands Controls and conquers (CCC) | Enables human creativity | Manipulates human brain without problems | | |
| 5. TRADE & COMPETITION or COOPERATION | "Free Trade" is the only way forward. Competition is the rule | Knowledge cannot be traded !"Free sharing" thus Collaboration | Free Trade & Monopolization of knowledge. | | |
| 6. VALUE MEASUREMENTS | <i>Quantitative</i> measures and <i>tangible</i> assets only | <i>Qualitative</i> measures with <i>intangible assets</i> | Reduction of the qualitative to quantitative | | |
| 7. STRATEGY | Win-loose, and CCC | <u>Win-Win approach</u> | Win Loose. | | |
| 8. GROWTH & PROGRESS | Quantitative growth = unsustainable in a finite world | <u>Qualitative growth is</u> <u>Sustainable !!</u> | <i>Quantitative remains the norm.</i> Not sustainable | | |
| 9. PATENTING or OPEN SOURCE | Business + defence = based on secrecy and patents | Open source, no patents, free sharing of knowledge | Closed systems capable of controlling in subtle ways | | |
| 10. PYRAMIDS VS. NETWORKS | Industrial structures are pyramidal | Knowledge can only be created in networks | Tries to maintain pyramids of power | | |
| 11. NEW ROLE OF CULTURE | Culture has a peripheral role | <u>Central role of culture</u> <u>= root of all creativity</u> | Manipulation of the souls of cultures | | |
| 12. WOMEN | Peripheral role | Are more efficient in this new logic | Are manipulated | | |
| 13. SOCIAL INCLUSION | A burden imposed | <u>Double competitive</u> <u>advantage</u> | A burden. Manipulation is a right | | |
| 14. TRANSPARENCY | Not important. | Increasing+ unavoidable | No transparency | | |
| 15. ETHICS | Excluded | Unavoidable Excluded | | | |

Table 1: The transition from industrial society to the knowledge society

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2. The Negative scenario of the Knowledge society

We have examined the positive scenario of the knowledge society in detail. We also showed that there are important indices indicating that this scenario is silently emerging in the present-day world. But, there is yet another column in Table 1, above. The rightmost column of that table represents a negative scenario. In this second part, I will show how the scenario is already developing and is present worldwide.

This negative scenario is really very easy to understand. It starts from the idea that there is *no paradigm change*—that everything continues as before... "business as usual" in the world... that the world maintains, in businesses and in society, the vision and the behaviour of the industrial society and economy.

In short, the negative scenario arises from <u>the vision in which there is no transition</u> <u>toward the knowledge society</u>. The industrial society simply continues with new, more-powerful tools, many of them electronic tools, called Information and Communication Technology (ICT). Thus, industrial strategies hold their places as the most common strategies employed in the world. More capital and more technology, protected by patents, continue to be needed. The competitive nature of business is strongly reaffirmed as a necessity and no "futurists" talking about networks and win-win collaboration are listened to. New concepts, such as that of the knowledge society, are considered hazy, even dangerous, because they might endanger the structures of competition and industrial competitiveness. (And it is true that some network collaboration practices endanger the industrial strategies of competitivity.)

2.1 What do to about the environment? Almost nothing

In the world as described above, it is neither necessary nor urgent to occupy oneself with concerns for the environment. First, since one's competitors don't worry about such concerns, doing so will result in a loss of advantage in comparison with them. Second, to care for sustainability is considered by "industrial" economists as a *cost* to be *subtracted from profit*. Thus, there is competition between the demands of competitiveness and those of environmental respect. The environment loses out in terms of investment. (In technical terms, this is called a "trade- off," and no one thinks in terms of a win-win scenario—only a win-lose scenario).

2.2 What to do with humans? Two ways.

The classical "industrial" approach will <u>tend to prioritise machine over man</u> as it has done for centuries. It also will try to do without humans. This is deeply ingrained in its logic, and it seems that there are two ways in which it will manifest.

1. The first way is to replace humans with machines.

Since a computer beat the world chess champion Gary Kasparov, many scientists believe that the computer will, one day, be able to replace the human brain in all its functions, even the most intimate ones. And they massively invest in more and more powerful and performing computers to be able, some day, to get rid of man. Thus, one could some day progressively reach a society without a human dimension. Like it or not, this seems to these scientists *rational, unavoidable, and perhaps most disturbingly, ethically acceptable.* This is the result of a "modern" vision in which the scientific and rational approach is, by itself, above ethics, since the use of reason and the scientific

method is a direct and warranted way toward objective truth. From this point of view, it is perfectly logical and acceptable to replace humans with machines.

2. <u>The second way, in my opinion, is even more dangerous–that is, to manipulate the human brain.</u>

Indeed, by remaining in the industrial and rational paradigm, and as much as the human brain cannot be replaced by computers, the most "rational" way to employ it is to manipulate the human brain to produce the knowledge that we want as much, when and how, we want it.

2.3 Engineering of the human brain?

Let us now consider the second way to treat humans in this new technological "industrial" vision Humans are manipulated to continue to adapt themselves to the logic of the machines which remain preponderant. Here one talks of "engineering of the human brain."

Let us take an example that was called upon during the Brussels public meeting in the European Commission in 2004:

"We are in 2035. The school principal summons the parents and tells them, 'Your child is having difficulties in our school. You are totally free; however, I suggest that you give him a small injection, at school expenses of course, of a mix of nanocomputers the size of a cell. We have observed that often the children increase their performance and become quieter. But, if you do not accept, and I repeat that you are totally free, I regret that the school no longer can assume the responsibility of your child's education."

This is a possible scenario. Moreover, it indicates the second danger of the negative scenario—manipulation of human mind, beginning with the weak and defenceless.

Is this the direction in which we want to take our world civilization? Are we ready to subject our children or grandchildren to these types of "experimentations"? This certainly merits discussion. Let us go to one of the highest world authority in astronomy—Sir Martin Rees¹⁷, professor at the University of Cambridge. In 2003, he published a book that is a serious warning about the actual evolution of science and technology. He is much referred to by Jeremy Rifkin in the "European Dream" (p. 315). According to him, "the odds are no better than fifty-fifty that our present civilization on Earth will survive until the end of the present century." Rees warns against the construction of small nanorobots that replicate like viruses and that race out of control, devouring matter and turning the Earth' surface to a "gray goo"¹⁸. Rees worries also about similar threats posed by genetic engineering and computer technology—especially as technology in the high-tech field spreads rapidly.

According to Rees, it is urgent to organise a global discussion on scientific research. Many scientists reply that if the same warnings existed when man discovered the fire, we would have remained primitives. But Rees replies that the major difference is that the prior discoveries only had a limited and local impact, whereas the progress of the converging technologies may have a <u>global and lasting impact</u>.

¹⁷⁾ Sir Martin REES:" *Our final century*" Random House 2003,UK, published in US with the title: "*Our Final Hour*", by Basic Books 2003

¹⁸⁾ Sir Martin REES: ibidem. P.132.

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So that Rifkin concludes (p.320):

"The divergence in views on science and technology between Americans and Europeans is growing and is now coming to the fore in a myriad of public policy debates, threatening a schism as significant as the divide over our different sense of how best to pursue foreign policy and domestic security."

It is time now to go to the European position represented by the European Commission. This leads us into another atmosphere, another vision of the world, another scientific and technologic paradigm.

2.4 Innovative and critical position of the European Commission¹⁹⁾

One must acknowledge the European Commission and specifically Mr. Paraskevas Caracostas and his think tank on Scientific and Technological Foresight in the General Direction of Sciences, who initiated a high quality reflection on these crucial questions. They asked a group of experts to provide a report on the converging technologies. This intelligent and in-depth report²⁰ was published in September 2004 in Brussels. It includes the following items.

- 1. It clearly warns against any danger of manipulation of the human brain.
- 2. Involvement of citizens since the first day as a new strategy.
- 3. Ethics is completely integrated inside the creative development process, and scientists shall be educated in ethics.
- 4. A new contract between society and science.

Conclusion

I hope the reader will have understood that we are shifting toward an new knowledge society. This represents a new vision of the world, a new economic and ethical logic.

But evidently there are two scenarios. One I call positive and one I call negative. But please be aware that the actors of this negative scenario are not conscious that their scenario happens to be the negative one. They are *not* aware of the industrial paradigm in which they are imprisoned.

Hence one of the most important topics is thus the *vision*. This is the most crucial debate to come...

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What Explains the Size of Sovereign Wealth Funds?

Antonia Ficova, Juraj Sipko

Abstract

Reasons for the rapid appearance and growth of SWFs is contributed by increase in oil prices and the accumulation of large balance-of-payments surpluses.

Purpose of the article is to investigate size of observed Sovereign Wealth Funds in 2013. Moreover, to describe what explain differences in the size of SWFs, on the other hand what determines the amount of foreign exchange reserves. Is the size of observed funds closely related to rate of growth of the countries? Is return of observed funds is closely related to fund value bn USD, GDP growth (annual %) and inflation rate of the country?

Methodology/methods deployed in this paper has been done illustrations by using available data from official websites of funds, Sovereign Wealth Fund Institute, International Monetary Fund, CIA The World Factbook and author's calculations due the fact that most of funds do not provide data to the public. In addition to this, we present the estimations by using regression analysis, transferring observed data using the least squares method, The two-sample t-test for mean value, ANOVA, TINV.

Scientific aim is to examine whether AUM of SWFs, moreover the size of 14 observed funds is closely related to rate of growth of the countries at 90 percent of probability. Second, if return of 14 observed funds is closely related to fund value bn USD, GDP growth (annual %) and inflation rate of the country at 95 percent of probability. Third, if there are significant differences between return in 2010 and 2013.

Findings indicates that paper came to the conclusion that the return of 14 observed funds is closely related to fund value bn USD, GDP growth (annual %) and inflation rate of the country at 95 percent of probability. Furthermore, there are significant differences between return in 2010 and 2013.

Conclusions (limits, implications etc) pointed out that the influence of SWFs has become undeniable, with total assets topping 6,585tn USD in June 2014, these investors have reached a size comparable to that of the entire alternative assets industry.

Keywords: Sovereign Wealth Fund, Assets Under Management, Foreign Exchange, Return

JEL classification: C12, F31, G10

1. Introduction

Sovereign Wealth Funds (SWFs) are controlled by a government or government linked entity similar in stature to an independent central bank, relationship between the government and SWF varies from country to country, that represents ownership. Second, a SWF's seek returns above the risk free rate of return. Id est, they exist to invest capital seeking a return in excess of the risk free rate of return, rather than purchasing a basket of currencies or risk free assets such as government securities, that represents purpose and style of investment. Third, every single SWF depend by funding, mainly from exchange reserves or export revenues. On the one hand, source of funding is connected with size of SWF's, trend of reserve surplus and on the other hand investment direction as funding stability and sustainability determine long-term investment, it means whether the SWF will be use active investment, in sum source of funding.

The question is: From where SWF's derive their capital? First, their capital is based on natural resource earnings, include intended exporting countries, such as Norway, Abu Dhabi, Kuwajt, Russia, Qatar, Libya, Azerbaijan, Kazakhstan and Oman. Second, they are among the nations that channel funds from commodity royalties into SWF's. Third, countries such as Australia, Malaysia, France, Ireland built theirs from continued fiscal surpluses. Fourth, trough the transfer of assets from foreign exchange reserves finance their SWF's countries like Singapore, China, Republic of Korea.

Exempli gratia, SWF's work with investment banks, hedge funds, private equity firms, and internal staff to seek out higher yielding investment opportunities. Countries with high levels of reserves of foreign exchange and gold include countries such as People's Republic of China 3.821tn USD, Japan 1.268tn USD, Russia 515.6bn USD, Saudi Arabia 739.5bn USD, Republic of China (Taiwan) 414.5bn USD, Brazil 378.3bn USD, India 295bn USD, South Korea 341.8bn USD, Switzerland 536.3bn USD, Hong Kong 311.2bn USD in 2013 according to the data from International Monetary Fund, are no longer content to accept money market returns offered from large international banks, but seek to increase their returns. The main research objective is to describe what explain differences in the size of SWFs? What determines the amount of foreign exchange reserves? Is the size of observed funds closely related to rate of growth of the countries? Is return of observed funds is closely related to fund value bn USD, GDP growth (annual %) and inflation rate of the country?

1.2 Data and Methodology

This paper explores the size of observed SWFs. We present what determine growth of SWF's, what are the implications if a country has large reserves of foreign currency. We examine whether AUM of SWFs, moreover the size of observed funds is closely related to rate of growth of the countries at 90 percent of probability, and if return of observed funds is closely related to fund value bn USD, GDP growth (annual %) and inflation rate of the country at 95 percent of probability. This has been done by illustrations by using available data from official websites of funds, Sovereign Wealth Fund Institute, International Monetary Fund, CIA The World Factbook and author's calculations due the fact that most of funds do not provide data to the public. In addition to this, we present the estimations by using regression analysis, transferring observed data using the least squares method, The two-sample t-test for mean value, ANOVA, TINV.

2. Literature Review

There are many different definitions of a SWF. On the one hand, the EU Commission (2008) describes SWFs as state owned investment vehicles, which manage a diversified portfolio of domestic and international financial assets. On the other hand, SWF's are mainly created when countries have surplus revenues, reserves and their governments feel it would be advantageous to manage these assets with a view to future liquidity requirements and as a way of stabilising irregular revenue streams argued by Gugler, P.; Chaisse, J. (2009). Alter, technical definition of SWF's is that, they are government -owned and controlled (directly or indirectly), have no outside beneficiaries or liabilities and that invest their assets, either in the short or long term, according to the interests and objectives of the sovereign sponsor argued Monk (2009).

It is important to mention a number of studies on the subject of SWFs since 2007. In particular, Jones, S. G. - Ocampo, J. A., (2008) presented in details the evolution of foreign exchange assets in different parts of the developing world, optimal reserves, developed a broader framework for the analysis of the motives for the accumulation of foreign exchange assets. Matoo, A. - Subramanian, A. (2008) described imbalances between undervalued exchange rates and SWFs. They proposed new rules in the WTO to discipline cases of significant undervaluation that are clearly attributable to government action.

Furthermore, Beck, R.; Fidora, M. (2008) provided background of the impact of sovereign wealth funds (SWFs) on global financial markets, impact of a transfer of traditional foreign exchange reserves to SWFs on global capital flows. Among authors examined subject of SWF, Baptista, A. M. (2008), Miracky et. al. (2009), Bernstein, S.; Lerner, J.; A. Schoar (2009), Knill, A.M.; Mauck, N. (2013), Al-Hassan, A.; Papaioannou, M.; Skancke, M.; Chih Sung, Ch. (2013), Bodie, Z.; Briere, M. (2013), Lee, B. S.; In, F. H. (2013), Gilligan, G.; O'Brien, J.; Bowman, M. (2014), Gelb, A.; Tordo, S.; Halland, H.; Arfaa, N.; Smith, G. (2014), Al-Kharusi, Q. A; Dixon, A. D.; Monk, A. H. B., (2014).

2.1 Size of SWFs

What explains the size differences of SWFs? The size of a SWF's depend primarily on its purpose and the size and wealth of the state funding it. Nevertheless, the exact size of the funds is uncertain due to the opaque nature of SWF's. However, Sowereign Wealth Funds tracks 78 of AUM in 2014. Total AUM of SWFs increased by 38.28 percent from October 2011 to *6.585 trillion* USD in June 2014. Moreover, the top five (Norway, UAE – Abu Dhabi, Saudi Arabia, China CIC, China SAFE) account for over 53.62 percent of total holdings. Otherwise, the world's largest sovereign wealth fund, the Norway, manage 878bn USD, accounting for 13.33 percent of total SWF's assets in 2014.

"SWFs can induce macroeconomic moral hazard effects when they become large." Noted Karin Lissakers, Director of Revenue Watch Institute. In other words, there are two primary reasons for the rapid appearance and growth of SWFs: the rapid increase in oil prices (like Middle Eastern Countries, Russia, and Norway) and the accumulation of large balance-of-payments surpluses (mainly by Asian exporting countries).

Exempli gratia, macro stabilization/saving funds include Kuwajt Investment Authority, source oil revenue. Saving funds Kiribati - Revenue Equalization Reserve Fund, source phosphates revenue, Alberta Heritage Savings Trust Fund, source non-renewable resource revenue, Abu Dhabi Investment Authority, source oil revenue, The Government Pension Fund – Global, source oil revenue. Pension reserve fund, California Public Employees Retirement System, Australia's Future Fund source fiscal surplus. Reserve investment funds SAFE Investment Company, source FX reserves.

2.2 Self-insurance in relationship the accumulation of reserves

It is argued that, a significant factor which determine growth of SWF's is amount of foreign exchange reserves. In other words, accumulation of FX Reserves is significant balance of payment deficit run by Western Countries (not only the US but also Australia, New Zealand, the United Kingdom, Spain, Greece and Portugal). Anyway, the exchange rate management policies can be adopted by some Asian countries (firstly China) in order to preserve their *exports'competitiveness*, all compounded with *integration* and *liberalisation of international flow of capital* presented by Mezzacapo (2009).

Nevertheless, real effective exchange rates in surplus economies like China, Korea, *continue to build up their foreign reserves*. In this case, when these economies has a stronger exchange rate, combined with structural reforms would raise domestic purchasing power and contain inflation pressure. So the fact is that, if prices of commodities will be rise, governments in commodity-exporting countries will be continue accruing foreign assets, even part of these assets is devoted to cover *domestic investment needs* or purchase back part of their *outstanding debt*. For example, Singapore's Government Investment Corporation was set up in 1981 to manage the country's foreign exchange reserves.

Viewed in this light, for countries is important reason for obtaining *sovereign credit rating*. First, to attracts foreign direct investment, it means to give investors confidence in investing in *bonds* issued in currencies other than traditional global currencies and second countries trying to improve their *credit standings* may opt for more conservative fiscal policies, like cut spending, sell assets, obtain foreign currency. So supply of international capital may be restricted for low-rated countries. Third, affects ability to borrow money through financial institutions such as banks.

Xie, Ping – Chao, Chen (2009) pointed what are the implications if a country has large reserves of foreign currency. In the 1998 Southeast Asia financial crisis, for example, Hong Kong protected itself from the attacks of global financial speculators with sufficient reserves and maintained the stability of the Hong Kong dollar. Nevertheless, the countries still face the dilemma between the stable currency and the imbalance of payments. Moreover, the reserve holder increases reserves (such as China) while the currency issuer keeps running a bigger deficit (like USA), which in turn leads to the depreciation of the currency and loss of wealth for the holder. As a result, if the more reserves one holds, the bigger depreciation risk you assume. In sum, the surge in forex reserve may also result in excess liquidity and asset bubble in the reserve holder.

In other point of view of Jones, S. G. - Ocampo, J. A. (2008) desribed that as a result of "second Bretton Woods" is that Asian countries want to maintain on the one hand *export competitiveness*, on the other hand the context of an export-led growth model has led them to run *massive* current account surpluses. By the way, the main counterpart is the US deficit. In short, the economic benefits of stable and weak exchange rates exceed, typically for the Asian countries, the costs of reserve accumulation will be increased. Nevertheless, accumulation of dollar reserves by central banks allows the United States to rely on domestic demand to drive its economic growth. So first motive for accumulation of foreign exchange reserves is competitiveness, as well as the absence of

appropriate coordination mechanisms for exchange rate policies in export-led economies, and second is self-insurance. It means that the spread of financial globalization to developing countries, and the growth of banking systems and financial markets, explain much of the increase in foreign exchange reserves of these countries.

Graph 1 highlights some emerging countries, such as China, lead export Asian economy, chine's foreign reserves increased by 19.36 percent from 2011 to 3,821tn USD in 2013. Second Russia accumulated 515,6bn USD and third Saudi Arabia, oil-producing countries, accumulated 739,5bn USD, that is an increase by 52.78 percent from 2011. It is expected that the process of transferring these accumulated reserves to its SWFs will result in continued growth in the total size of SWF assets. However, China and Singapore, accumulated reserves as a result of current account surpluses.

■ Foreign Exchange Reserves ■ Size SWF in country

Graph 1 Foreign Exchange Reserves vs. Size of SWF



Source: Author's, according to the data from IMF 2013, SWF Institute June 2014

- ^a Foreign Exchange Reserves, bn USD, 2013
- ^b Size of SWFs; bn USD, June 2014; China includes CIC, SAFE funds; Russia includes: National Welfare Fund, Reserve Fund; UAE: Abu Dhabi Investment Authority, Abu Dhabi Investment Council, Investment Corporation of Dubai

In this context, the accumulation of official external assets, several of which are SWF's, tends to underestimate the importance of capital inflows as a source of reserve accumulation, as the accumulation of such official assets abroad is accounted for as a negative contribution to the capital account. This is the case of Venezuela, Chile, in Latin America. Matoo, A. and Subramanian, A. described (2008) that China and other East Asian countries have responded to current account surpluses and capital inflows with reserve accumulation by the central bank rather than allowing these surpluses both to be self corrected and lodged in private hands through currency appreciation.

As a result, China has accumulated 3,821bn USD of foreign exchange reserves. Nevertheless, countries have set up SWFs to manage these reserves. The question is: How we can explain that China has massive foreign reserves? Basically China maintain the same exchange rate, on the one hand increase demand, on the other hand the central bank issue more of the domestic currency and purchase the foreign currency. A result of that is will be an increase the sum of foreign reserves. Otherwise, if the value of the currency is being down (weak of currency), the domestic money supply is increasing (because money are being printed) that resulted into inflation (spiking of food prices). Anyway, China holds huge U.S. dollar-denominated assets, but the U.S. dollar has been weakening on the exchange markets, and resulting in a relative loss of wealth. Viewed in this light, in case fluctuations in exchange rates, defense before inflation so a central banks must continually increase the amount of its reserves to maintain the same exchange rates.

3. Hypotheses

Based on data analyzed for the paper, we developed hypothesis and preliminary results are demonstrated in this section. Presented calculations are the best author's estimation. We start by examining the following hypothesis.

3.1 Testing Hypothesis I.

At this point we want to examine whether AUM of SWFs, moreover the size of observed funds is closely related to rate of growth of the countries, and if return of observed funds is closely related to fund value bn USD, GDP growth (annual %) and inflation rate of the country. We use regression analysis, transferring observed data using the least squares method. First, let 's analyze the impact of GDP growth rate at 90 percent of probability on the size of the funds. Second, we examine the values of three independent variables on the value of the dependent variable values: Influence of fund value bn USD, GDP growth (annual %), inflation rate on the return of observed funds at 95 percent of probability.

We categorized 14 observed funds (by countries) as follows: Norway includes The Government Pension Fund Global; Singapore includes Singapore – Temasek; Canada includes Alberta Heritage Savings Trust Fund; USA includes Alaska Permanent Fund Corporation; New Mexico includes New Mexico State Investment Council; East Timor includes Timor Leste Petroleum Fund; Iran includes National Development Fund of Iran; Hong Kong includes Hong Kong Monetary Authority Investment Portfolio; Ireland includes National Pensions Reserve Fund; Australia includes Australia Future Fund; New Zealand includes New Zealand Superannuation Fund; China includes China Investment Corporation; Singapore includes Government of Singapore Investment Corporation and Korea includes Korea Investment Corporation. On the other hand, more variables are illustrated in Table 1 below.

| Country | SWF | Return % a | Fund value bn USD b | GDP growth (annual %) c | Inflation rate d |
|------------|-------------------------------------|---------------|---------------------------|----------------------------------|---------------------|
| Norway | The Government Pension Fund Global | 15.9 | 878 | 1.6 | 0.6 |
| Singapore | Singapore - Temasek | 9 | 173.3 | 4.1 | 4.4 |
| Canada | Alberta Heritage Savings Trust Fund | 11.6 | 16.4 | 1.6 | 1.8 |
| Alaska | Alaska Permanent Fund Corporation | 10.93 | 51.7 | 1.9 | 1.5 |
| New Mexico | New Mexico State Investment Council | 13.28 | 18.4 | 1.2 | 4.1 |

Table 1 Observed Variables, N=14 (continued on the next page)

| Country | SWF | Return % a | Fund value bn USD b | GDP growth (annual %) c | Inflation rate d |
|-------------|--|---------------|---------------------------|----------------------------------|---------------------|
| East Timor | Timor Leste Petroleum Fund | 5.51 | 15.7 | 8.1 | 9 |
| Iran | National Development Fund of Iran | 6.5 | 58.6 | -1.5 | 32.1 |
| Hong Kong | Hong Kong Monetary Authority Investment Portfolio | 2.7 | 326.7 | 2.9 | 3.7 |
| Ireland | Ireland, National Pensions Reserve Fund | 4.7 | 19.4 | 0.6 | 1.3 |
| Australia | Australia Future Fund | 15.4 | 90.2 | 2.5 | 2.1 |
| New Zealand | New Zealand Superannuation Fund | 25.83 | 21.8 | 2.5 | 1.2 |
| China | China Investment Corporation | 10.6 | 575.2 | 7.6 | 3.1 |
| Singapore | Government of Singapore Investment Corporation | 4 | 320 | 4.1 | 4.4 |
| Korea | Korea Investment Corporation | 11.83 | 72 | 1.3 | 2.2 |

Source: Author's calculations, available data from CIA The World Factbook, SWFs websites, reports.

- ^a New Zealand 2Q 2013, China Investment Corporation and Korea Investment Corporation 2012
- ^b AUM of funds according to data from SWF Institute; June 2014
- ^c 2013, except Korea 2012
- ^d 2012, except Alaska 2013, East Timor 2010, Iran 2014 est.

Graph 2 Linear regression



Source: Author's estimation.

By using method of least squares in graph 2 and regression statistics ANOVA below, we found regression function, y = 23.868x + 122.75. The results coming out from Graph 2 above and Table 2-4 below show that the correlation coefficient is 0.239 (Multiple R) and is low. The coefficient of determination R^2 = 0.057 means that 5.7 percent of changes of fund value are attributed changes of growth rate, on the other hand value 94.3 percent is
not attributed from changes of growth rate. In short, the independent variable growth rate <u>does not</u> correlate high with fund value, in other words their assets under management. Mean error indicates that the average prediction error in fund value is 2.607. The significance F value is 0.411 what represents that 0,411 > 0.05; moreover model <u>is not</u> statistically significant. P value of variable 1: is 0.411 > 0.05; therefore these output is statistically insignificant.

| Multiple R | 0.238650214 |
|----------------------------|--------------|
| R Square | 0.056953925 |
| Adjusted R Square | -0.021633248 |
| Std. Error of the estimate | 2.607181912 |
| Observations | 14 |
| Observations | 1 |

Source: Author's estimation.

Table 3 ANOVA

| | Difference | SSsum of squares | MS-mean squares | F | The significance of F |
|------------|------------|---------------------|--------------------|------------|--------------------------|
| Regression | 1 | 4.926229717 | 4.926229717 | 0.72472291 | <u>0.411265611</u> |
| Residues | 12 | 81.56877028 | 6.797397524 | | |
| Total | 13 | 86.495 | | | |

Source: Author's estimation.

Table 4 ANOVA

| | Coefficients | Standard Error | t Stat | P-value |
|-----------------------|--------------|----------------|-------------|--------------------|
| Intercept | 2.300479148 | 0.874271591 | 2.631309504 | <u>0.021922625</u> |
| GDP growth (annual %) | 0.002386173 | 0.002802953 | 0.85130659 | <u>0.411265611</u> |

Source: Author's estimation.

At this point, we want to examine impact of independent variables: X_1 = Fund value bn USD; X_2 = GDP growth (annual %) and X_3 = Inflation rate on the on dependent variable: return of observed funds at 95 percent of probability. In this context, we also use regression statistics what is presented in following Tables 5-8 below.

Table 5 *Regression statistics*; $\alpha = 0,05$

| Multiple R | 0.394030461 |
|----------------------------|--------------|
| R Square | 0.155260004 |
| Adjusted R Square | -0.098161995 |
| Std. Error of the estimate | 6.360510768 |
| Observations | 14 |

Source: Author's estimation.

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Table 6 ANOVA

| | Difference | SSsum of squares | MS-mean squares | F | The significance of F |
|------------|------------|---------------------|--------------------|------------|--------------------------|
| Regression | 3 | 74.3567706 | 24.7855902 | 0.61265401 | <u>0.622119861</u> |
| Residues | 10 | 404.5609723 | 40.45609723 | | |
| Total | 13 | 478.9177429 | | | |

Source: Author's estimation.

Table 7 ANOVA

| | Coefficients | Standard Error | t Stat | P-value |
|-----------------------|---------------------|----------------|--------------|--------------------|
| Intercept | <u>13.64743569</u> | 3.264449983 | 4.180623308 | <u>0.001885841</u> |
| Fund value \$bn | <u>2.86141E-06</u> | 0.00710372 | 0.000402805 | <u>0.99968653</u> |
| GDP growth (annual %) | -0.584315437 | 0.728343198 | -0.802252893 | 0.441055167 |
| Inflation rate | <u>-0.290846182</u> | 0.230796372 | -1.260185243 | 0.236215296 |

Source: Author's estimation.

Table 8 Residual output

| Observation | Predicted Y (Return %) | Residuals | ei^2 |
|-------------|------------------------|---------------------|--------------|
| 1 | 12.5405356 | 3.3594644 | 0.602212446 |
| 2 | 9.972515079 | -0.972515079 | -0.174331565 |
| 3 | 12.18905479 | -0.589054788 | -0.10559306 |
| 4 | 12.10111502 | -1.17111502 | -0.209932286 |
| 5 | 11.75384047 | 1.526159531 | 0.273577022 |
| 6 | 6.296909935 | -0.786909935 | -0.141060271 |
| 7 | 5.187914094 | 1.312085906 | 0.235202511 |
| 8 | 10.87772487 | -8.177724871 | -1.465926444 |
| 9 | 12.9188019 | -8.218801901 | -1.473289849 |
| 10 | 11.57612821 | 3.823871787 | 0.685461404 |
| 11 | 11.83769406 | 13.99230594 | 2.508239348 |
| 12 | 8.306661086 | 2.293338914 | 0.411100424 |
| 13 | 9.972934848 | -5.972934848 | -1.070699159 |
| 14 | 12.24817004 | -0.418170042 | -0.074960522 |
| | E (u) | <u>-2,79142E-15</u> | |

Source: Author's estimation.

According to the results coming out from regression statistics and analysis of variance ANOVA above, the correlation coefficient increased from 0.238 to 0.394. Coefficient of determination increased as well from value of 0.056 to 0.155. In this regard, 5,6 percent of changes in value of funds may be caused by changing growth rate. On the other hand, 15,5 percent of changes in return of observed funds may be caused by changing in fund value bn USD, GDP growth and inflation rate. Coefficient of fund value is 2.86141E-06, that means positive impact on return of funds. On the other hand, coefficient

of GDP growth is -0.584 and coeficient of inflation is -0.290. In short, we may say that coeficients of growth rate and inflation has negative impact on return of observed funds.

Value of error mean dropped to 6.360, the significance of F is 0.622; that represents 0.622 > 0.05 what <u>is not</u> statistically significant. If we look at P value, we see P value of variable 1: 0.99968653 > 0.05; variable 2: 0.441055167 > 0.05; and variable 3: 0.236215296 > 0.05; ergo these outputs are statistically insignificant, so it is necessary to change variables.

Regression function is now: $y = 13,647 + 0.00000286141x_1 - 0.584x_2 - 0.290x_3$. If we want to calculate the return of the fund, for example that has value of 326,7 bn USD, growth rate at 2,9 percent and inflation at 3.7 percent; we get after substituting into the regression function; y = 13.647 + 0,0000286141 * 326.7 - 0.584 * 2.9 - 0.290 * 3.7 = 10.881% of return in case of Hong Kong sovereign wealth fund.

At this point, we examine that the assumption of mean value of random residuals will be zero, according to the results from Residual outputs that were mentioned earlier. We formulate hypothesis as follows:

$$\mathbf{H_0}: E(\vec{u}) = 0$$

 $\mathbf{H}_1: E(\vec{u}) \neq 0$

$$\bar{x}_{e} = \frac{\sum e_{i}}{n} = -2,79142E - 15 \tag{1}$$

We use formula above. As a result coming out from these formula we can say that average residuals is low, the mean value is close to zero, so we accept null hypothesis.

3.2 Testing Hypothesis II.

In this section we observe returns of 9 SWFs that include USA - Alaska Permanent Fund Corporation; Norway – The Government Pension Fund Global; Singapore – Temasek; Ireland, National Pensions Reserve Fund; Australia Future Fund; New Zealand Superannuation Fund; China Investment Corporation; Government of Singapore Investment Corporation; Korea Investment Corporation. Details are provided below. We start by formulating hypothesis as follows:

 H_0 : Increase of SWFs return in 2013 is due the fact that, that funds did not implement different asset allocation after 2010. (NO changes in portfolio)

 H_1 : Increase of SWFs return in 2013 is due the fact, that funds implemented different asset allocation after 2010. (changes in portfolio)

We examine if an increase of returns of observed funds is statistically significant and whether that could be as a result to the effects of changes in asset portfolios after 2010, moreover after crisis.

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|--|-------|-------|-----|-----|------|-------|------|-----|-------|
| Return % in 2013 | 10.93 | 15.9 | 9 | 4.7 | 15.4 | 25.83 | 10.6 | 4 | 11.83 |
| Return % in 2010 | 9.6 | 11.77 | 4.6 | -3 | 12.8 | 15.45 | 11.7 | 3.9 | 8.46 |
| $\mathbf{d} = \mathbf{x}_1 - \mathbf{x}_2$ | 1.33 | 4.13 | 4.4 | 7.7 | 2.6 | 10.38 | -1.1 | 0.1 | 3.37 |

| =9 |
|----|
| |

Source: Author's estimation.

We create new variable d-observed difference, the difference returns current year of 2013 and after the crisis, year of 2010 are described in Table 10.

| 1,33 | | | | | |
|--------------------------|--------------|--|--|--|--|
| Average | 3.9475 | | | | |
| Error page. Value | 1.323726814 | | | | |
| Median | 3.75 | | | | |
| The standard deviation | 3.744064827 | | | | |
| Variance | 14.01802143 | | | | |
| KURT | -0.045995983 | | | | |
| SKEW | 0.475081015 | | | | |
| Minimum | -1.1 | | | | |
| Maximum | 10.38 | | | | |
| Sum | 31.58 | | | | |
| Number | 8 | | | | |
| The largest (1) | 10.38 | | | | |
| The smallest (1) | -1.1 | | | | |
| Confidence level (95,0%) | 3.130116526 | | | | |

Table 10 Numerical characteristics for the value of d

Source: Author's estimation.

Indicates significance at the 5% level, $\alpha = 0.05$. We formulate another hypothesis as follows:

H₀: $m_1 = m_2$ / $\mu_d = 0$ /

 $H_1: m_1 > m_2 / \mu_d > 0 /$

If we assume that the mean of values of X_1 and X_2 sets are equal, then the value will be $/\mu_d = 0$ /. We use method The 'Student' t-test distribution with (N-1) degrees of freedom, mean test of correlation with a known constant.

$$t = \frac{d - \mu_d}{s_d} \cdot \sqrt{n} \tag{2}$$

Table 11 The two-sample t-test for mean value

| | 10,93 | 9,6 |
|--------------------|-------------|-------------|
| Average | 12.1575 | 8.2 |
| Variance | 49.44562143 | 36.52488571 |
| Observations | 8 | 8 |
| Pearson coeficient | 0.846559434 | |
| Difference | 7 | |
| t stat | 2.982110778 | |

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| | 10,93 | 9,6 |
|-------------------|--------------------|---|
| $P(T \leq t) (1)$ | 0.010226802 | |
| t krit (1) | <u>1.894578604</u> | ← Critical value for one-sided alternative hypothesis |
| $P(T \le t) (2)$ | 0.020453603 | |
| t krit (2) | <u>2.364624251</u> | |

Source: Author's estimation.

Results coming out from t-test depicted in Table 11 show:

 $2.982110778 > 1.894578604 \rightarrow t > t_{c.}$

We accept an alternative hypothesis, that means this method showed an increase, what is a statistically significant. In sum, an increase of SWFs return in 2013 could be caused through changes in portfolios, in financial markets due to the fact of implementing different asset allocation after 2010. Because the differences are not random.

4. Conclusion

We observed 14 funds, we examined if size of funds is closely related to rate of growth of the countries. Moreover, we analyzed the impact of GDP growth rate at 90 percent of probability on the size of the funds. We found regression function, y = 23.868x + 122.75. The results coming out show that the correlation coefficient is 0.239 (Multiple R) and is low. The coefficient of determination $R^2= 0.057$ means that 5.7 percent of changes of fund value are attributed changes of growth rate, on the other hand value 94.3 percent is not attributed from changes of growth rate. In short, the independent variable growth rate does not correlate high with fund value, in other words their assets under management. The significance F value is 0,411 what represents that 0.411 > 0.05; moreover model is not statistically significant. P value of variable 1: is 0.411 > 0.05; therefore these output is statistically insignificant.

Second, we examine if return of 14 observed funds is closely related to fund value bn USD, GDP growth (annual %) and inflation rate of the country at 95 percent of probability. In this context, the results coming out from regression statistics and analysis of variance ANOVA showed the correlation coefficient increased from 0.238 to 0.394. Coefficient of determination increased as well from value of 0.056 to 0.155. In this regard, 5.6 percent of changes in value of funds may be caused by changing growth rate.

On the other hand, 155 percent of changes in return of observed funds may be caused by changing in fund value bn USD, GDP growth and inflation rate. Coeficient of fund value is 2.86141E-06, that means positive impact on return of funds. On the other hand, coeficient of GDP growth is -0.584 and coeficient of inflation is -0.290. In short, we may say that coeficients of growth rate and inflation has negative impact on return of observed funds. Value of error mean dropped to 6.360, the significance of F is 0.622; that represents 0.622 > 0.05 what is not statistically significant.

We observed differences of 9 SWFs return between in 2010 and 2013. The two-sample t-test for mean value showed an increase, what is a statistically significant. In sum, an increase of SWFs return in 2013 could be caused through changes in portfolios,

in financial markets due to the fact of implementing different asset allocation after 2010. Because the differences are not random.

However, the influence of SWFs has become undeniable, with total assets topping 6,585tn USD in June 2014, these investors have reached a size comparable to that of the entire alternative assets industry. According to International Sovereign Wealth Fund Institute 2012 report comparing the AUM of these funds with the market capitalization of 16 top stock exchanges of the world suggests, that the AUM of SWFs are more than all the exchanges except NYSE Euronext (US) with market capitalization of 12.6 trillion USD.

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Cityness and Informativeness of the Emerging Informational Cities in Japan

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Abstract

Based on the concept of Informational Cities, which are the highly developed prototypical cities of the 21st century, we conducted a regional comparison of four Japanese cities in terms of their "cityness" and "informativeness". The purpose of our articles is to specify the theoretical framework for measuring the informativeness and cityness level of any desired city, to quantify the chosen indicators in order to compare the investigated cities, and finally, to conclude what is their advancement level in terms of a modern city of the knowledge society. Our methodology is based on a new approach to measure the position of a city in a national or a global scale, originating from information science and its indicators of the knowledge society. It includes such procedures as desktop research and bibliometrics, ethnographic field study, or grounded theory method. The investigated aspects under the notion of the informativeness level are the distinct labour market and mix of companies located in the city (concerned with creative, knowledge and information economy), as well as the progressive e-governance and advanced e-government. The notion of cityness level oscillates around the concept of space of flows in the city, including the flow of money, power, information, and human capital. In order to make our model practical and grounded on available evidence, we have chosen four Japanese cities to undergo the process. Tokyo, Yokohama, Osaka and Kyoto are big and economically significant Japanese metropolises. However, our results show that they differ from each other regarding many important aspects. We were able to quantify their performances and create a ranking. The limitation of our approach appears to be the strict quantification method that makes the cityness and informativeness levels of the cities dependent on other cities' performances, and that does not precisely reflect the actual dimension of the differences between them. Hence, in the future work we will develop a more flexible and independent approach, enabling us to make more accurate statements on cities' advancement unregarded the advancement level of the other metropolises.

Keywords: Cityness, Global City, Informational City, Informativeness, Japan, Knowledge Society.

JEL Classification: J01, J21, J24, J44, L86, L96, L98, N35, N45.

Introduction

Informational Cities (IC), Digital Cities, Knowledge Cities, Smart Cities – there are many new concepts of cities in the modern age. These cities are nodes in the worldwide network; they play a leading role in the world economy and try to reverse the negative environmental changes by introducing sustainable energy solutions. These cities have an advanced ICT as well as the knowledge and creativity-promoting infrastructure. If we want to model the significance of a metropolis, parameters for trade or industrial production will no longer be enough. Rather, we must work out their placement in the global space of flows. Here, too, we cannot stop at their administrative borders, as important companies may well shift their activities (or parts thereof) to the periphery of the city instead of remaining doggedly within the city limits. As the main indicator for the informational city, Peter Hall proposes access to information (both face-to-face and transmitted via ICT), accompanied by further values. The goal is to develop alternative procedures for measuring the state of the art of different kinds of information activity in the city. "The outcome should be a new urban hierarchy of centers and sub-centers, based on position within a set of global information flows" (Hall, 1997, p. 320).

Our approach is based upon concepts and methods of information science (Stock & Stock, 2013), which is an interdisciplinary science studying knowledge representation, information retrieval, and the environment of knowledge and information such as the information or knowledge society. This article is part of a comprehensive project on cities in the knowledge society. Besides our theoretical considerations on prototypical cities of the 21st century (Stock, 2011; Khveshchanka & Mainka, 2011; Mainka, Khveshchanka & Stock, 2011; Linde & Stock, 2011, pp. 87-92) empirical results are available concerning the characteristics of Informational Cities, e.g. on measuring Informational World Cities' degree of cityness (Nowag, Perez & Stuckmann, 2011), on job polarization in Informational Cities (Dornstädter, Finkelmeyer & Shanmuganathan, 2011), about Singapore as a "prototype" of an Informational City (Khveshchanka, Mainka & Peters 2011), on digital libraries in selected Informational Cities (Mainka & Khveshchanka, 2012), on the role of physical and digital libraries in Informational World Cities (Mainka et al., 2013b) and upon the state of e-government in such cities (Mainka et al., 2013a; Mainka et al., 2014).

In the present case we investigate four Japanese cities relying on the work on the cities in the Information Age by Castells (2010), and the concept of indicators for an Informational City (Castells, 1989; Stock, 2011). We defined two main aspects we intended to measure. The first one is the cityness level, which refers to the World or Global City research (Friedmann & Wolf, 1982; Friedmann, 1986; Sassen, 2001) and includes the theory of space of flows introduced by Castells (1989; 2010). The second aspect is the informativeness level of the city, which is indicated by the cityness level itself, as well as such factors like the distinct labour market (knowledge economy, creative economy, and information economy) and the e-governance and e-government. With e-governance we mean the political willingness to create an Informational City, measured by the amount and effectiveness of political initiatives aiming at development of digital, smart, creative or knowledge infrastructure of the city. The term e-government refers to the governmental services offered via the Internet, preferably not only information dissemination oriented, but most importantly transactional participatory services. Ensuing from these main categories, we investigated indicators contributing to the cityness and informativeness levels of the cities, and quantified them in order to estimate if the investigated metropolises may be labelled as (emerging) Informational Cities.

1. Japanese informational cities

During the last decades many large Japanese cities have emerged as places of social, technological, institutional and economic networks. Japan has become one of the most urbanized countries in the world (Karan, 2009, p. 236). According to Karan (2009), there are six great metropolitan areas merging to an axis of the greatest urban concentration in Japan - Tokyo, Yokohama, Kyoto, Osaka, Nagoya and Kobe. This so-called "Japanese Megalopolis" dominates the services sector and the labour force sector, and is the emerging post-industrial informational and transactional area (Karan, 2009, p. 249). Tokyo, Yokohama, Osaka, and such cities like Kobe, Hiroshima, Fukuoka and Nagasaki are emerging as electronic hubs for telecommunications and telematics networks (Karan, 2009, p. 252). Hence, there is a transformation from an industrial (manufacturing-based) urban society into a society dominated by information, high-tech manufacturing, services, and leisure industries, which leads to further changes in the urban labour market and urban socioeconomic dynamics as well (Karan, 2009, p. 253). Knowledge and information are becoming a dominant aspect of the economies in many cities of the Megalopolis (Karan, 2009, p. 254); hence, they become the post-industrial "informational cities" (Hepworth, 1987; Karan, 2009).

In our research we investigated Tokyo, Osaka, Kyoto and Yokohama. These are the cities of the Japanese Megalopolis. Tokyo is already defined as a global and world city (Friedmann & Wolf, 1982; Sassen, 2001). There were also further evidences for Tokyo's digital, smart, creative and knowledge infrastructure. Osaka was for a long time the centre of Japanese economy. It is still referred to as a global city (Sassen, 2001). It also improves its position in the city hierarchy by different projects, e.g. enhancing its knowledge or creative infrastructure. Kyoto is the former capital as well as former centre of Japanese economic development. It is interesting to investigate if it still keeps up in the modern global world. Yokohama is the second largest city in Japan, and it is interesting to examine if its size actually fosters globalization and transformation into an Informational City. Also, Yokohama's location in the near proximity to Tokyo may either enhance or limit its potential for becoming an Informational City. We studied the level of informativeness and cityness level for these four cities in order to examine if they can be already considered as Informational Cities, or at least as emerging Informational Cities. Our choice of the cities is based on the references of global cities as well some other possible infrastructures of Informational Cities given in these Japanese metropolises.

2. Methods

To investigate the Informational Cities' infrastructures we had to define which data is interesting for us. However, we also had to use general methods of ethnographic or empirical studies, in order to gather and analyse the needed information.

2.1 Ethnographic field study

The ethnography deals with research on people and can be translated as characterization of ethnic groups. The ethnographic field study aims at a deep and diversified analysis of specific fields and cultural scenes. It enabled us to personally experience the everyday life in the investigated cities and better understand the people living there. We completed the ethnographic field study in all investigated cities. During our stays (for each city 3-4 days), we conducted semi-standardized interviews and

collected self-made data (photos, videos and voice recordings). After the field study, we worked on further literature and the Internet research, which we partially based on the outcomes of our interviews and personal experience gained in the field.

2.2 Interviews

Interviews contribute to the empirical social studies. Methods used during the empirical study are e.g. interviews, inquiries, observation, content analysis, or experiments. In our research we combined the qualitative and quantitative methods of the empirical social research. During the interviews we used a questionnaire, which consisted of closed questions (standardised technique) to quantify the outcomes and analyse them statistically. Additionally, the qualitative aspects were not neglected, i.e. during the interview, the interviewe was involved into an open discussion. During our research the amount of the interviews was rather low; hence, the outcomes are statistically insignificant and cannot lead to conclusions about the main unit. However, it is possible to identify some tendencies in the interviewes' answers, and to gain first impressions.

The interviews were conducted between 27 March and 03 April 2013 in Tokyo, Osaka and Kyoto. We did not have any interviews in Yokohama. However, this gap will be closed during the further research. All in all, we interviewed thirteen interviewees (including university professors, the German ambassador, and employees of international organisations) during eight interviews.

2.3 Grounded theory

The framework of the Grounded Theory Method (GTM) was presented by Glaser and Strauss (1967). The basic notion of this method is to discover a theory from data (literature, statistics, or interviews), which are systematically obtained and analysed in social research. Even though GTM originates from medical sociology, it is currently used in many other fields, like education, psychology, business management, social work, as well as library and information science (Mansourian, 2006; Tan, 2010). Generation of a theory is a process that combines the operations of collecting data, analysing (coding) and constructing a theory. GTM is a constant shifting between acting (data collection) and reflexion (data analysis and theory generation).

Major part of our empirical procedure were interviews we conducted in particular cities, as well as personal impressions gained during our field research in those cities. We have chosen the GTM because of its great flexibility. Globalization, changes in the world economy and society are significant and partly unpredictable. The classical theories are not sufficient enough to explain these changes, as they do not suit current circumstances. Apart from that, worldwide research on different cities cannot be based on one rigid theory. The theory has to evolve in the process so that it is not divorced from the reality.

2.4 Desktop research

We also integrate the quantitative data like official statistics or the amount of granted patents. These measures can be statistically evaluated and are as important as the outputs of the empirical approach. Mainly, we used official (ministerial) statistics, because they deliver a sufficient informational infrastructure. An official statistic is based on the respondents' obligation to give information, truthfully and exhaustively, and therefore, one can trust in the validity and credibility of it.

In order to analyse and to compare the industrial groups or labour infrastructure in the cities, we had to analyse the Japanese industrial/occupational classifications, and define classes relevant to us. In Japan none of the common European or international classifications, like e.g. the Statistical Classification of Economic Activities in the European Community (NACE) or the North American Industry Classification System (NAICS) is being applied. In official statistics the industries are classified based on the Japan Standard Industry Classification (JSIC) (MIC, n/a) and the Japan Standard Occupational Classification (JSOC). Furthermore, we used professional databases like Web of Science or the Derwent World Patent Index hosted by STN International, in order to analyse the knowledge output of each city.

The analysis of the online content complements our methodical strategy. In the present project case a major part of online content analysis aims at investigation of e-government development in the cities. To estimate the governmental activities in this context we analysed the municipal governments' websites, based on the five-stage model by Moon (Moon, 2002). Taking into consideration the critical revision of stage models by Coursey and Norris (2008) as well as our results of E-Government maturity of 31 Informational World Cities in our prior research (Mainka et al., 2013a), we decided to define the stages rather as five pillars, and equally important components of an E-Government. The five pillars include: information, communication, transaction, integration, and participation. Each one includes diverse aspects, which concern services provided by the government for different stakeholders. To enable a quantifiable result we weighted each aspect appropriate to its importance and complexity. The cities could obtain 100 points for each pillar and 500 points in total.

3. Results

In this section we conduct the concrete definition and argumentation of investigated indicators regarding the cityness and informativeness level, as well as the actual investigation of the four cities in terms of these indicators.

3.1 Cityness

Friedmann and Wolf (1982) proposed the concept of the so-called World Cities. Afterwards, Sassen (2001) defined London, New York, and Tokyo as the leading Global Cities (Sorensen, 2003). The World Cities research by Friedmann (1986) concerns the placement of a city in the world economy. The increased integration of world commodities and financial markets, as well as growing interconnection through communication networks have some spatial as well as social impacts on the cities (Sorensen, 2003, pp. 519 f.). According to Friedmann (1986, p. 72), the selection criteria for the world city hierarchy are major financial centres, transnational corporations (TNCs), and regional headquarters, as well as a rapid growth of business service sector. Regardless these positive (economic) aspects, there may also occur some negative (social) consequences, as e.g. gentrification, which is a relocation of wealthy urban community in the city-centre, whereas of the less-wealthy and socially-weaker inhabitants in the city suburbs.

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According to Castells (2010), the societal structural transformation leads to the emergence of new spatial forms and processes. The society is constructed around flows: of capital, of information, technology, organizational interaction, images, sounds, and symbols (Castells, 2010, p. 442). We can define the placement of a city in the world cities' hierarchy through its placement in this space of flows (Stock, 2011, p. 968). The measure for the economic significance of a city, i.e. the flow of capital is the turnover of nearby stock exchanges, and for the flow of power, the profit of companies having their headquarters in the city. We focus on companies from the Fortune-500 list, which is an annual ranking issued by the American Fortune magazine with the 500 most successful companies in the world (Nowag, Perez, & Stuckmann, 2011, p. 105). According to Nowag, Perez and Stuckmann (2011), Global Fortune 500 is an appropriate source because companies registered there have a leading role in the global economy and have the highest turnover in the world (indicating high level of money flow). Furthermore, the headquarters control and coordinate the company's branches in other cities; hence, they have a certain power (indicating high level of power flow).

The international flow of information can be measured in different ways, e.g. the information connectivity related to business (Stock, 2011, p. 968). The connectivity of business information is created, for example, through the connectivity between different branches and offices of the same company. This approach to measure the business information connectivity is provided by GaWC, the Globalization and World Cities Research Network, which publishes studies on connectivity between World Cities and the companies (Taylor, 2004). In our study we revert to the GaWC research. We also analyse further indicators, like barriers for information flows (censorship), information exchange through international meetings, incentives, conventions and events (MICE), or the amount of international non-profit organizations (NPO).

We investigated diverse indicators in order to measure the cityness-level. Regarding the population size, Tokyo has the most residents and is followed by Yokohama, Osaka and Kyoto. Even though the population size itself is not necessarily an attribute of a global city, it can be seen as a consequence of the city's attractiveness. An important and significant indicator for a city's attractiveness is definitely the amount of foreign inhabitants. In absolute numbers, the most foreigners live in Tokyo, whereas the highest percentage relative to the whole population is given in Osaka, followed by Tokyo, Kyoto and Yokohama. We also studied the phenomenon of gentrification as a negative consequence of modern city development. Indeed, in Tokyo and Osaka the most expensive rents were for apartments located in the city centre (for Tokyo over 70 % of the mean monthly nominal per capita income and for Osaka between 17 % and 35 %), whereas apartments in the suburbs were cheaper (9-19 % in Tokyo, 11-22 % in Osaka). In Yokohama the tendency was smaller, but recognizable; still, the apartment rents appear relatively high as the cheapest accounted to 17-24 % of the mean monthly nominal per capita income. In Kyoto the small central districts were one of the most expensive regions in the city, but there are also other non-central districts with the same apartment prices; hence, the gentrification is not recognizable.

Regarding the capital and power flows we looked at the stock exchange turnovers as well as the revenues of the international firms with headquarters located in the cities. There are stock exchanges in Tokyo and Osaka, and the first one has by far the highest turnover in Japan (and – although declining over the last years – one of the highest in the world). Regarding the headquarters of the firms listed in the Global Fortune 500, the most headquarters (and the highest revenues) are in Tokyo. There were headquarters of 56

listed companies in year 2005, and 45 in year 2013. The second most headquarters are located in Osaka (8 in 2013). Both Yokohama and Kyoto have only one headquarter, whereas the revenues of the company with headquarter located in Yokohama are higher. In order to analyse the information flow, we looked at the total number of international conferences and meetings (MICE) held in each city. In this regard, the most MICE were hosted in Tokyo (55 in 2011), followed by Yokohama (32) and Kyoto (28). The fewest MICE considering the four cities were held in Osaka (13). Another important factor is the number of NPOs located in the cities. Here, the ranking of the cities is very similar, as the most international organisations are located in Tokyo. Second most organizations are in Kyoto, whereas Yokohama and Osaka are behind.

In terms of short distances (hence, easy and/or fast access to the city), we measured the distance between the city centre and the nearest airport(s). The shortest distance and travelling time is given between Osaka and its nearest airports (in average 32 km). Second shortest distances are between Tokyo and its airports (approx. 47 km), followed by Yokohama (59 km) and Kyoto (69 km). The flow of people was measured by the number of passengers attending international flights, as well as the total number of international flights. In this regard, the most international flights and passengers attending these were from/to Narita airport (Tokyo and Yokohama). In 2012 there were 148,265 international flights, with total 29,719,560 passengers. Far behind was the Kansai airport, in Osaka and Kvoto area. There were 68,733 international flights in 2012, with total 11,253,210 passengers. The most flight connections to the World Cities (defined by Friedmann) were from the Narita airport (Tokyo and Yokohama) as well. Far behind were Haneda and Kansai airport. Another important factor of people flow is the number of visitors. In this manner, Tokyo was on the top. Far behind were Osaka, Kyoto and Yokohama. The attractiveness of the city can be also measured by the number of foreign students willing to study in the city. Even though the most universities are in Tokyo and Kyoto, the most foreign students (relatively to the total amount of students) are in Tokyo, followed by Osaka Prefecture, Kyoto Prefecture, and Kanagawa Prefecture.

In terms of openness and tolerance in the city, we considered such factors as number of religious entities represented in each city. The most are located in Tokyo (4,267) and Kyoto (2,416), even though the second one has the smallest population of the investigated cities. Behind were Osaka (2,084) and Yokohama (1,101).

A city that can be definitely called a Global City is Tokyo. It succeeded in almost all aspects of our analysis. It is a big metropolis, with flows of power and capital (one of the biggest in the world), as well as the flow of information (due to many connections between companies, high amount of MICE and NPOs). Nonetheless, the other cities succeeded in some aspects as well, which indicates they are also global cities or, at least, on their way to become one. Osaka can also be regarded as a Global City. Even though the flow of information is not as good as in other cities (less MICE and NPOs), there is still a bigger flow of power and capital than in Yokohama or Kyoto.

Yokohama and Kyoto are behind Tokyo and Osaka. However, Yokohama could be seen as an emerging Global City, as some aspects of cityness are already present. This port-city aims at strengthening its flow of power and capital by attracting big companies. Yokohama manages to host a lot of MICE, which ensures its good flow of information and people. Kyoto is a totally different type of city. Even though in some regards it accomplishes few global properties, it is not its main objective to become a global city. On the one hand, it is a historical city with a great amount of Japanese heritage, which is supposed to attract many visitors. On the other hand, it is a Knowledge City with many universities and research institutions. These infrastructures and goals may have some common aspects with the global dimension of a city, like e.g. many visitors, MICE and NPOs or foreign students. However, it should not be regarded as a Global City, but at most as an emerging Global City, when some serious steps are taken.

3.2 Informativeness

In terms of the cities' informativeness we analysed further factors like the labour market and mix of companies (with focus on knowledge and information economy), the knowledge output as well as the e-government and the e-governance in the city. We analysed the labour market situation in the cities, i.e. the labour force (employees) in diverse fields as well as the mix of companies located in the city. We focused on three main fields: information economy ("infonomics"), knowledge economy, and creative economy. The main drivers of the Knowledge Economy are the globalization, technological advance (ICT revolution), and knowledge (based on the World Wide Web), which created ubiquitously networked economies and societies (Asian Development Bank, 2007, p. 1; OECD, 2001, p. 100). Another important factor is the changed consumer demand and rising living standards in advanced economies, where consumers are richer, more sophisticated and, therefore, increasingly interested in an intellectual content as well as technologically advanced products (Brinkley et al. 2009, p. 9; Levy, 2011, p. 6). Not only do the knowledge and information drive the economic growth and development, but also the creativity. It contributes to the entrepreneurship, fosters innovation, and enhances productivity. There are different types of creativity, like e.g. artistic and cultural creativity, scientific creativity, and economic creativity (Florida, 2003; UN, 2008, p. 9). Florida (2003) argues that the Information or Knowledge Economy is powered not by information or knowledge itself, but by the human creativity. He defines it as the ability to create meaningful new forms. All in all, creativity involves the generation of new ideas or recombination of known elements into something new, providing a valuable solution to a problem (Sefertzi, 2000, p. 2).

We precisely analysed the markets of the individual cities and compared their establishments and employees ratios. The most establishments in all of the investigated cities are active in wholesale and retail trade (24 % for Tokyo and Yokohama, 27 % for Osaka and Kyoto) as well as real estate and goods rental (8 % for Kyoto, 9 % for Tokyo and Osaka, and 10 % for Yokohama). The biggest ratio of companies in ICT sector is located in Tokyo (4%), followed by Osaka (3%), Yokohama (2%), and Kyoto (1%). In the scope of the Knowledge Economy Tokyo with 22 % was again on the top followed by Yokohama and Osaka with 19 % each, and Kyoto with 15 %. Taking into account the labour force distribution, the most workers are employed in the wholesale sector (20 % - 24 %), followed by manufacturing (10 % - 14 %) and medical care (7 % - 11 %). The labour force in ICT sector was the biggest in Tokyo (10 %), followed by Osaka (6 %). Yokohama and Kyoto are behind with 4 % and 2 % respectively. In the Knowledge Economy unchanged Tokyo was on the top with 30 %. Surprisingly, Osaka did not score as well as expected from the establishments ratio and took the last place with 23 %. Yokohama accounted for 25 % and Kyoto 24 %. The structure of the labour market and the mix of companies located in the city can depend on many factors. The most internationally operating firms most probably favour cities having a higher level of cityness. Professionals and skilled job-seekers will most probably choose cities also attractive to live in (and not only work). Hence, the last important factor we investigated is the political initiatives to create Informational Cities or at least to enhance some important aspects of an IC and thus, make the city more attractive to companies and professionals.

Regarding the Knowledge Economy, there is one further factor enabling us to compare the four cities, namely the knowledge output – i.e. the amount of published patents or the amount of scientific publications. The innovativeness is an important part of the Knowledge Economy and should be therefore included into our findings. We analysed the amount of patents for each city between 2000 and 2012. Tokyo has had, by far, the most publications over the years. In total, 39,433 patents have been published since 2000. Kyoto took the second place regarding the amount of patents with total 10,376 ones since 2000. Osaka followed Kyoto with most patents, at the amount of 2,054 since 2000, and Yokohama has the fewest patents, namely 1,191. According to Web of Science, the most scientific publications in 2012 came from Tokyo (24,882), followed by Kyoto (7,805), Osaka (4,930), and Yokohama (4,656) (Pyka, 2013). Hence, Tokyo has the biggest output referring to the knowledge and innovativeness sector. The other cities are far behind. As for Kyoto, in spite of its smaller size and resources, it still manages to maintain its big knowledge cluster. Osaka and Yokohama, compared to Tokyo and Kyoto, did not perform very well.

In many growing informational cities, there have been or are political programs to build necessary infrastructures and to coordinate the way toward them. As our society is increasingly mobile, it demands a spatial and temporal unrestricted access to information and transactions. Therefore, in many areas of the world municipalities are adopting E-Government in order to improve their public service delivery and provide a "one-stop" government access to citizens (Holzer, Manoharan, & Van Ryzin, 2010, p. 104). The highly developed ICT tools and applications boost the emerging explosion and utilization of e-commerce and e-business models in a private sector and consequently force the public sector to revise its bureaucratic organizational models (Ndou, 2004, p. 2). The Internet encourages reinvention of local governments, i.e. its transformation from the traditional bureaucratic paradigm to the E-Government paradigm (Ho, 2002, p. 434). The first one is characterized by functional rationality, departmentalization, hierarchical control, rule-based management, standardization, and operational cost-efficiency. The later one, the e-government paradigm, is based on competitive, knowledge-based economy and is characterized by flexibility, coordinated network building, vertical and horizontal integration, innovative entrepreneurship, organizational learning, external collaboration and customer service (Ho, 2002; Ndou, 2004; Holzer, Manoharan, & Van Ryzin, 2010, p. 104).

We investigated the political willingness of the national and local governments by analysing their latter initiatives and programs aiming at developing and/or reinforcing diverse infrastructures. Hereby we focused on goals relevant to our research, i.e. knowledge, digital, creative or smart infrastructure. The majority of political programs were unsurprisingly initiated by the national government. This is not an unusual phenomenon and it indicates a strong centralisation of political power. Tokyo's government offers a big variety of projects. It mainly tries to attract even more international investors and companies. Nevertheless, it is also interested in other areas of development, like i.e. Creative Economy. Finally, it conducts a smart city project, trying to diversify energy sources and to guarantee a sustainable and undisturbed (e.g. by natural disaster) energy utilization. Osaka focuses rather on the revitalization of its former economic and commercial importance. The plans involve the development of large complexes or districts containing a variety of facilities for international businesses, research centres and places where creative people can meet and interact. Yokohama also provides special facilities and incentives to attract foreign businesses, but its main focus lies on smart city solutions, which are already appreciated at the international level. Kyoto is far behind in matters of big projects aiming at discussed infrastructures. One reason can be the historical value of Kyoto and some constraints regarding urban development (like changes of the city's appearance). However, it should not prevent from creative programs or smart city solutions. In matters of capital and power flows, Kyoto is also behind the other investigated cities. Nevertheless, it has an excellent R&D, knowledge centre and a relatively strong IT market.

Japan scores very well at the international level as for e-government readiness and e-participation. However, the local results are less satisfactory. The investigated five pillars of e-government include the information dissemination, communication, transaction, integration and participation. The most important aspects belonging to these pillars can be seen in figure 1. In result, Tokyo scored 304.15 points (out of 500) and Osaka 261.76 points. Apparently, the shift from a bureaucratic paradigm is not yet completed. There is a big amount of information available on the websites, also regarding carrying through administrative transactions. But, all in all, many of them have to be conducted personally and not online. The integration between departments is advanced and leads to portals offering information from diverse sources ("one-stop" government). The participation options are rather limited, possibly because of a small demand in this regard. Yokohama's e-Government is international-oriented (due to the exact translation of the city's website into English) and focuses on supporting foreign investors. Probably because of this main priority, other factors as transactions and participation are not as developed as in Tokyo or Osaka. It scored only 129.69 points. In Kyoto, the focus lies on supplying the citizens or visitors with news, alerts with upcoming events or living information. This portal design is highly information-oriented and lacks transaction services. It scored only 112.94 points, and its performance is comparable to Yokohama.

| Information dissemination | Communication | Transaction | Integration | Participation |
|---|---|--|---|--|
| information types user types contact information current affairs emergency number city map accessibility (e.g. mGovernment) transportation | social media services fixing appointments online email response feedback | online forms for filling-in online payment oftaxes, penalties etc. library services personalized portal for residents | •vertical (possibility to obtain imformation and services from other agencies, departments or offices from just one portal) •horizintal (common database, intranet and standardized software for all departments) | giving feedback about political matters filing a complaint participating in a opinion survey online elections |

Figure 1 The five pillars of e-government. Adapted from Mainka et al. (2013a).

Conclusion

In this regional comparison of Tokyo, Osaka, Kyoto and Yokohama, we analysed many different indicators of two categories constituting the concept of an IC: the degree of *cityness*, and the degree of informativeness (in terms of the labour market and mix of companies, E-Governance, and E-Government). The main goal was to investigate if the

cities may be regarded as (emerging) ICs. In order to compare the metropolises we quantified all investigated indicators. For each indicator (like e.g. distance from the city centre to the airport) we created a rank-list of the cities and valued each with points between 0 and 1 (0; 0.25; 0.5; 0.75; 1), where 1 means the best city (i.e. best performance or simply the presence of an important aspect) and 0 means the worst performance (i.e. 0.25 for the worst performance compared to other investigated cities or 0 points in case of non-existence of an important aspect). If there were no data available for all the cities or the data was incomplete, we did not assign any points. For each group of indicators and for all indicators we calculated the mean value of a category.

In terms of the Global City we measured the level of cityness of each city. All in all, we analysed five groups of indicators. The mean average of the results for each group is showed in Figure 2. As we can see, Tokyo succeeded in all categories. Osaka stayed behind Tokyo, and was overtaken only by Kyoto in terms of "tolerance and openness". In other aspects, Yokohama was the 3rd best city. The mean average of all groups leads to a conclusion that Tokyo has the highest level of cityness (average value of 0.963 points from 1) and is the best example for a Global City among the investigated Japanese cities. Osaka stayed behind Tokyo, with a quite good result of 0.725 points. Hence, it can also be considered as a Global City. Yokohama (0.525) and Kyoto (0.45) did not perform that well, as the flows of power and money are not as strong as in the top two cities. However, it is important to keep in mind that the results are relative to the performance of other cities, and that e.g. Kyoto's rather unsatisfactory score results from the much better results of Tokyo, Osaka and Yokohama.





Cityness level is only one indicator for an informational city. In order to examine which of the four cities are (emerging) informational cities we had to take further factors into account. Figure 3 presents the mean values for categories investigated in this case study, which indicate city's level of informativeness. These categories are: cityness, labour market, mix of companies, e-government and e-governance. The resulting

ranking is similar to the ranking regarding the single aspects of cityness. Considering all investigated categories, Osaka did not perform very well. Osaka's result (0.592 points) is closer to Yokohama's (0.540 points) than Tokyo's result (0.919 points). Kyoto's performance was the last one of the investigated cities – only 0.334 points.

In this case study only a part of indicators contributing to the city's informativeness was analysed. Further aspects as the knowledge city, digital city, creative city or smart city infrastructure would most probably influence the results. Nonetheless, the investigated categories are very important components of an informational city and consist of a great variety of significant indicators. Therefore, we can formulate an initial conclusion that Tokyo may be considered as an informational city (because of its high level of cityness indicating an advanced space of flows), whereas Osaka and Yokohama at least as emerging informational cities. Kyoto needs to improve some aspects in terms of its cityness level as well as the political initiatives establishing or strengthening the infrastructures of an informational city.

Figure 3 The mean values of investigated categories in terms of the cities' informativeness level.



We investigated the cityness and informativeness level of four Japanese cities applying concepts and methods of the information science. Our aim was to specify the theoretical framework for measuring the informativeness and cityness level of a city, and to determine if the four investigated metropolises might be considered as the (emerging) Informational Cities. Our further research aims are: the investigation of additional indicators (e.g., infrastructure of the knowledge, digital, creative, or smart city), possible impacts on the high informativeness level (like e.g. political, religious or legal underpinnings) as well as its positive outcomes (like enhanced entrepreneurship). Furthermore, a successful application of our new model on further cities (in Japan and over the world) is targeted. Finally, we will adjust our strict quantification method in order to more precisely reflect the differences between the cities (hence, change the rigid rating with 0.25 intervals), as well as to make the scores more independent from other cities performances.

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Global Imbalances

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Abstract

Purpose of the article The aim of the paper is to analyze the global economic imbalances and factors that contributed to their deterioration in developed and emerging countries, primarily in the United States and China. The article assesses the main inevitable factors of the global economic imbalances that have driven the recent evolution of current account balances. In addition, the paper describes the theoretical framework of global imbalances and the relevant fundamental theories for better understanding in theoretical aspect of international economics and finance. Furthermore, provides overview of the fundamental causes and drivers of global imbalances, namely current account.

Methodology/methods In relation to the subject and purpose of this paper have been used the logical methods of examination which mainly include analysis, correlation and regression analysis, abstraction, synthesis, induction and deduction, the methods of descriptive and mathematical statistics, comparative and empirical methods and the selected forecasting methods (causal prognosis methods). Scientific aim The global imbalances are considered as the most disputable and well known of the global current economic problem, which possibly explain the causes of the global financial crisis. The global financial imbalances were quite massive even before the outbreak of the global financial crisis in 2008. Therefore, the main scientific goal of this paper to analyse what is behind the current account imbalances in both countries, e.i. the USA and China. Findings The persistent current account imbalances reflected the imbalances in the world investment and savings ratios. Whereas the U.S. national savings rate kept falling, the Chinese savings rate rose. Current account imbalances will keep on growing due to a problem of insufficient global saving. Conclusions (limits, implications etc) The size of global imbalances has become narrow compared to the prior crisis's level, but it did not vanish due to the implementation of global rebalancing process. Putting the current account imbalance to cooperation of all participating countries is strongly necessary. The policy response will need to involve many more countries, even G20 process, and coordinating this response will require considerable efforts of every party members.

Keywords: global imbalances, current account, savings, investment, foreign exchange

JEL Classification C23, C33, F32, O57

Introduction

The global imbalances have been discussed by very many economists, researchers as well as policy makers. In 2003, the annual summit of IMF and WTO brought the new policies to tackle the risk of unwinding global imbalances. As far as the imbalances have become the top list of its agenda, the multilateral consultation process was later derived to be an outcome for major economies. The adjustment of global imbalances has been put in place, particularly for the United States and China, defying other economics to follow the same direction in order to strengthen and boost their economic growth. For example, a depreciation of US dollar and the shrinkage in domestic demand in USA was potentially drafted alongside restructuring scheme for the European Union (EU) and rising consumption in emerging economies and Middle East, but the appreciation and more flexible exchange rate might be the key solution for China to assist other states on addressing imbalances.

After 2007, countries with current deficit and surplus have been somewhat underlined as the areas of imbalances. The most well-known imbalance was pointed figure at the current account, with the developed countries led by the USA, Spain and the UK having moved heavily into deficit in recent years. On the another side to this was the substantial and still rising surplus being posted by the emerging markets, led by China but being strongly backed up by the oil producers in the Middle East and Russia, plus other large commodity producers. The global imbalances seem to be one of the main factor influencing sustainable growth of world demand and even more driving the global financial crises.

In the G20 communique at Pittsburgh cited by Gurria (2009), he argued that in order to support the future growth and reduce the potential risk of next crisis, all economies should agree with the G-20 Framework for Strong, Sustainable, and Balanced Growth. It was described as the global leader vowed to "promote more balanced current accounts".

1. Literature overview

Besides the first issue like current account imbalances, the economists analyzed the second problem as the impact of savings and investment on current account imbalances and see how international capital movements are shaped by different propensity to save and invest in different countries. The volatility of the saving-investment gap, from deficit to surplus, has led to the well-known hypothesis of "the global saving glut" (WEO IMF, 2005) because a large saving in emerging Asia is claimed to be a factor that accelerated the huge current account imbalances, although the United States potentially did finance it current account deficit too (Bernanke, 2005). It is not simple just to exemplify a big picture as current account deficit solely without perceiving its structure.

Simultaneously, the origin of current account imbalances was also derived from a recent bounced back of investment and a decrease of national saving in the United States (Roubini and Setser, 2005). Thus, it is impossible to avoid the fact that the core of global imbalances is associated with the current account, showing the difference between savings and investment. In saving case, the household and corporate savings, particularly in many emerging economies, has mounted for a couple of decades. The case of investment may be driven by policies and institutions that lead to stark cross country differences in the cost of doing business.

Wade (2009) pointed out that the Post Bretton Woods international monetary system associated with the flexible exchange rates and free capital movements was not able to strengthen economic completely and push the foreign exchange rates to the right path (appreciation in deficit countries and depreciation in surplus countries).

While the United States trade deficit was rising against other countries, US investment inflow or outflow was referred to be a single factor that distinguished the capability of US investment from other nations. For instance, the major current account surplus countries in 2006 were China, Japan, Germany, Russia and Saudi Arabia. China's current account surplus were equivalent to more than Russia and Saudi Arabia¹⁾ together in 2006 (Siebert, 2007 and Ferrucci and Cappiello, 2008). Such investment in those years was taken into account of the fact that investment demand in the US has been claimed to be the hub of drawing many investors all around the world because of high performance in financial market, strong property right, and so on (Edwin, 2007). Additionally, Lai (2007) also argued that "the US current account deficit is determined factors beyond the US border and has very little to do with large budget deficit of the United Sates". It is possible to highlight that the low level of US interest rates has been striving the capital inflow as it conversely impacted on the surplus countries and their saving-investment behaviour.

At that time, the global saving glut hypothesis was claimed to be the explanation that could rationally argue and complete the missing of conventional classical macroeconomic concept of trade deficit (Palley, 2011). For better understand the global imbalances, the current account of both the USA and China should be analysed.

2. United States Current Account Deficit

Global imbalances seem to refer to the voluminous literatures in current account imbalances during this decade, and one of the theories has considered a large current account deficit in the United States. Between 1997 and 2005, the current account deficit increased from 1.7% to 6.1% of GDP as reported on the U.S. current account deficit to the U.S. Congress by The Congressional Budget Office (CBO). Averaged the US current account deficit at 2.69 % of GDP²⁾ from 1980 until 2012, recorded the peak at 0.20 Percent in December of 1981 and USD 803 billion in 2006 (or -6.1 Percent) (BEA, 2013 and CRS Report for Congress, 2010). The situation has change quite considerably though current account deficit started shrinking in 2007 due to being financed differently.

The United States is the world's largest economy and the major military power and at the same time the world's largest debtor. In 2005 it absorbed at least 80% of the savings that the rest of the world did not invest at home (Roubini and Setser, 2005). The U.S. current account reached the low of 6% GDP or USD 803.5 billion in 2006 (Elwel, 2010). This trend has been a major deviation from the historical pattern, where world's largest economies tended to credit the rest of the world. The only region was the euro area, which ran modest current account surpluses between 2002 and 2006. However, these were wiped out by the oil price increases and the financial crisis, which began in 2007.

United States ran a current account deficit of USD 518 billion in 2003 and seemed to be a huge current account deficit of the country's economic superpower. It certainly has a

¹⁾ USD 190 bn

As a percent of GDP provides an indication on the level of international competitiveness of a country.

major impact on the global economy, including the financial system and world trade. The crucial component of the current account deficit is dominated by US trade deficit such as amount of USD 4.97 billion in 2003 and would reach to USD 6.09 billion in 2004 (Roubini, 2005 and CBO, 2011). Economists concurred that the major cause of the U.S. trade balance and the current account deficit during the years 2000 - 2004 was the government's budget deficit. This led the overall US savings to decline.

When it comes to international trade, the U.S is globally the most important nation. One of the top three exporters of the world is proclaimed by US despite leading the world in imports for decades. Here is some main US exports; machinery and equipment, industrial supplies etc. Major trading partners are: Canada, European Union, Mexico, China and Japan. By trading across countries, the financial inflows and outflows are taking place. As a result of significant revisions to net financial inflows, the direction of change from 2007 to 2008 was reversed: in the revised statistics, net financial inflows increased, but in the previous statistics, they decreased (Graph 1).

The US running current account deficit for most years was revised down, but the revised statistics show nearly the same widening of the deficit through 2006, declines for 2007–2009, and a pickup for 2010 (Graph 1). Following a considerable reduction from 6% of GDP in 2006 to 2.25 % in 2009, the current account deficit has begun widening again slightly as the fiscal deficit, consumption and investment growth have risen. The current account deficit is likely to continue to increase somewhat as consumption and investment rise, but the increase should be attenuated by the fall in the value of the dollar and the overall balance should remain much improved from its pre-recession levels (OECD, 2011).

Grapf 1 Current Account Deficit, 2000-2012



Source: Author's adjusted data based on US Bureau of Economic Analysis (BEA), IMF and Survey of Current Business, 2012

The United States reported a current account deficit equivalent to increase to USD 475 billion in 2012 from USD 465.9 billion in 2011 (Graph 2), but Bureau of economic

analysis's annual report (BEA, 2012) revised the data of U.S. current account deficit at amount USD 440.4 billion in comparison to USD 457.7 billion³⁾. As a percentage of U.S. GDP, the deficit fell to 3.0 percent in 2012 from 3.1 percent in 2011. A downward revision of USD 4.6 billion for 2012 has not changed much the recent picture of U.S. current account in contrast it reversed a growing of the current account deficit.



Graph 2 Net Financial Inflows 2000-2012



The U.S. current account deficit is large because foreign investment in United States is large thanks to a strong economy and legal protection for investors. The U.S. trade deficit (goods and services deficit), it also reflects to size of the current account deficit relatively. At least, it can be explained by one of current account component is derived from the balance of trade (exports minus imports of goods and services).

The US trade gap represented in term of the goods and services deficit with amount of USD 540.4 billion in 2012 (3.4 % of GDP), compared to a current account deficit of USD 475 billion (BEA, U.S. Census Bureau, U.S. Department of Commerce 2012). Nevertheless, the U.S. government and its citizens don't adequately save to invest. Combined, the U.S. saved only 2% of its income last year. However, an amount equivalent to 8% of total U.S. income was invested last year (IMF WEO, Oct 2012). That means that foreigners invested an amount equivalent to the difference. Another way to look at it is that foreigners invested 3-times as much in the U.S. as domestic investors. In a way, this is a compliment to the strength and security of the American economy.

As far as it goes with the current account imbalances, the U.S. economy has been affected by the U.S. trade deficit with China for a while. The U.S. trade deficit with China makes U.S. itself no choice to race due to China's dumping price with its exports. China becomes the largest lender to U.S. Government due to holding a great number of U.S. Treasury notes. The latest data of U.S. debt to China was USD 1.26 trillion, 8.4 % of the U.S. government debt in January 2013 (U.S. Treasury, 2012).

³⁾ According to US Bureau of Economic Analysis (BEA) in associated with Department of Commerce, it shows Preliminary estimates of U.S. international transactions, July 2012

China aided U.S. by holding interest rates low through these treasuries that stimulated the U.S. housing boom until the Subprime mortgage crisis. Nevertheless, China will not do any unwise activity to harm its economy such as stop buying U.S. treasuries. It is later accompanied by rising of interest rates, making U.S. customers would buy less Chinese exports, and might encounter with the potential recession. However, the accelerating of U.S. current account (trade) deficit can become symptoms of a problem unless the proper economic policy will respond soon. Several U.S. companies seek the solution either lower their costs or go out of business. Low their cost can be considered as outsourcing, leading to U.S unemployment. During 1998-2010, not even other industries have shrank but also manufacturing fell to 34%⁴ as measured by the number of jobs.

Interestingly, author disagrees on these factors and thinks that major factors influencing on current account surplus should be opposite at least one factor like the appreciation of the exchange rate due to the percentage of appreciation of RMB from 2005. The growth of China's exports of goods and services decreased from a peak of 38.3% of GDP in 2007 to 27.5% of GDP in 2012 (Morrison and Labonte, 2013).

China has been struggling throughout the critical development as we can notice from a less intervention from Central bank as regards the appreciation of renminbi with 31.68 % from July 2005⁵⁾ and up to 0.25 % against USD by 2012 with average annual rate of 6.31 RMB (PBOC, 2012). The recent small number of current account surplus in China can be interpreted as the less influx of foreign funds from the outside world, but represents net outflows of investment capital via a capital and financial account deficit. Simultaneously, its small percentage of surplus can facilitate the revaluation of renminbi.

As China has continued a slow recovery with all the efforts invested, somehow the "rebalanced" process has shown in the Chinese economic growth that will make it sustainable in the future. Similarly, the IMF forecasted that China's current account will start a firm upward trend to 7.2% of GDP by 2016 due to a decline in level of import growth in 2012 and its gradual recovery (IMF WEO, September 2011).

As have been discussed the current account deficit and surplus (current account imbalances) as a key explanation of global imbalances for a while, we want to highlight that Global imbalances have been calling for a huge attention before the financial crisis unwound. Current account deficit signifies countries tend to have their spending over producing. Then, deficit countries will have to rely more on overseas borrowing or selling its assets abroad in order to exploit its capital to run their economy and smooth their consumption for an individual. Positively, it current account will smooth their countries' investment in case of inconsistent saving but it has certainly its edge how to ease their investment. Nonetheless deficit country won't be able to escape from debt and bigger issues. Current account surplus is opposite of those deficits. Some economists believe that the surplus countries' export-led growth strategy has been used to generate and leverage among other deficit countries.

⁴⁾ The Bureau of Labour Statistics (BSL), Employees by Industry 2011

⁵⁾ China allowed its currency to fluctuate against a basket of currencies, stop pegged to USD

3. Current Account Surplus in China

In comparison to other Emerging market economies (EMEs), China was the least influenced by the Asian financial crisis. It is not a big surprise why EMEs have been accumulating the current account surpluses, especially in China. Huge the current account surplus in China was a result of a combination of the export-led growth and the fixed exchange regime.

Reviving to the past, most other economies took off with current account deficits through international saving in order to finance their chances of investment. Except that China has been resisting with its current account surplus for a couple of decades. To compare with another Asian economy, like Japan, China's surplus accounted for amount of USD 20.5 billion till 2000 but Japan's current account surplus ranked between 8 trillion and 18 trillion yen during 1991 – 2005 (Yongding, 2008, 2013; Marchetti and Juan et al., 2012).

China's current account surplus was running quite smooth and stable for some periods as far as China taking one step further was to join the membership of the WTO in late 2001, thereby reflecting an expected growth. Since then, China's economy has grown essentially and some sectors, as technology industry or hard manufactures⁶, have been underscored its significance facilitating the shift of the supply chain of individual industry (Amiti and Freund, 2008).

The accession of WTO gave China an attractive domestic investment climate for export-oriented production. Thanks to this improvement, the offshoring to China has been significantly relocated for the final assembling products among communication and technology industries (Anderson, 2008). In 2003, China started showing its robust growth in current account surplus reaching the peak of 10.3 percent of GDP by 2007 (Graph 3). It is unavoidable to not mention a higher income surplus which also contributed to its mounting trade surplus in the past. Apart from above stated industries, the increase in exports resulted in a large trade surplus with various world regions.

After 2004 China had been piling up large external surpluses, recorded at amount of USD 69 billion (3.57 % of GDP in 2004) in comparison to an average percentage of the period 2005 – 2008 at 9.39 % of GDP (IFS IMF, WEO IMF, 2008). China was unaware of its unwinding external imbalances because the persistent current account surpluses surprisingly deteriorated its many trading partners by exporting capitals to advanced countries and later caused its unsustainable economic (Yongding, 2008, 2013). Due to the large volume of China's trade surplus, it is resulted the unsatisfactory for several developed countries a couple years ago. Recently the United States have launched a complaint to the World Trade Organization in the two cases (Office of the United States Trade Representative, 2007).

The first was the copyright infringement and the second was to ban the U.S. goods. In the sense of U.S products in the second case, we comprehended as media, entertainment, DVDs film and music video and books in which the contraband were produced. Simultaneously, China had restricted the copyrighted product of the United States to be sold in the Chinese market by reason of the claims about improper influence on the Chinese people. The current account surplus sharply mounted after 2004. With an

⁶⁾ such as appliances and computers, consumer electronics

increase in excess of savings and less investment, an acceleration of the rate of growth of exports, and less imports, it stressed directly many sectors of its economy (Graph 3).

According to Graph 3, China's best recognized global imbalance problem is its broad current account surplus conceivably. In 2000, China's current account surplus was only 1.7 percent of GDP. As explained above, the current account surplus had been gradually mounting till 2005, and then it started growing sharply because the revaluation of the RMB had been implemented in 2005 according to Chinese authority. Although the growth rate of net exports began to fall during the crisis, it did not pause for any source of economic growth led by net exports of goods and services.



Grapf 3 China's current account surplus, 2000 – 2012

Source: Author's adjusted data based on CEIC Data Company and State Administration of Foreign Exchange (SAFE)

China's surplus swiftly expanded in the next two following years that made the record of net exports of goods and services reaching 8.9 % of GDP in 2007. For over a fifth of China's growth was proven by an increase of exports during 2005 – 2007 in general (Ibid. in graph 3) in which economic growth reached at 14.20 % of GDP. The reason supporting the argument of massive increase of China's foreign exchange reserves in 2007 could be clarified by the result of USD 371.8 billion (10.8 % of GDP) from its current account surplus.

But some economists might argue that a large imbalance in China's favour has something to do with the latest financial crisis due to its contribution from the glut of liquidity in western financial markets (Geoff Dyer, 2009). It comes to the sense why China runs a massive current account surplus. According to Huang (2010), the finding gave us some explanations via three outstanding hypotheses; 1) capital inflows disguised by Zhiwei (2009); 2) migration of surplus; and 3) impact of the exchange-rate policy by Goldstein and Lardy (2009). His finding underscored the hypothesis no.1 and 2 because both hypotheses are quite reasonable to explain the surge of surplus but the last hypotheses could barely argue the rapid mounting current account surplus and appreciating of Chinese currency in 2005-2008.

In consequence of the global crisis and the revaluation of RMB, the share of the current account surplus in GDP moderated in 2008 and 2009. China's current account

surplus then declined over and over from 9.4% of GDP in 2008 to 5.8% of GDP in 2009 (Batson, 2010), which had ironically happened to be the first outright decline with 35 % of GDP since 2001.

According to Economywatch webpage, it illustrates the figure of Current Account Balance in year 2009 presents the world's average current account balance value at -2.68 %, which ranked China at No. 26 of the world rankings. Asian emerging markets have also been affected by the global financial crisis because of their dependence on manufacturing exports. Somewhat, China had also been impacted in the sense of low shares of its exports (IMF WEO, 2009).

Regardless of the contraction of current account surplus in 2009, China's GDP growth insisted to soar thanks to the small ratio of its trade and policy measures. Chinese authority also announced the nation's stimulus plan with 4 trillion RMB (USD 586 billion) aiding at least imports between 2009 and 2010 in spite of collapsing on global demand. China's exports of goods and services reached surprisingly at 31 % of GDP in 2010, compared to 27 % of GDP in 2009 and 35 % of GDP in 2008 (World Bank, 2013). It would require to address vigilantly whether this drop was permanent or temporary. China has followed an unusual development path, combining exceptionally rapid growth with large external surpluses. The continuation and robust growth of China need the switching of its demand and supply (Kanaga, 2010). At least, it will help its economy solve imbalances in midterm growth.

As a result of global financial crisis, China's economic performance was absolutely impressive because its GDP growth was up to 10.5 %, compared to its disaster melting down on its exports only rated at 9.2 % of GDP in 2009(National Bureau of Statistics of China 2011d, 2011e). China's stimulus plan was quite effective to drive its economy, especially for industrial production, dominated other countries. Although China's current account surplus only reached at 4.01 % of GDP in 2010 due to adopting several reforms either from domestic or international, China could still perform better than other advanced countries that still had not recovered or found the way out of the recession such as the United States or Europe.

With the Chinese strong domestic demand in 2009 being given to the world, it became a source of growth and recovery for other developing and advanced countries (Kynge, 2011). If we still recall the Chinese reform on its currency during mid-2000s, it will partially explain a lagged effect of the real effective appreciation of the renminbi pulling down China's current account surplus (Cline, 2010). Further argument supports this idea is that China's imports grew from USD 75 billion in 2007 to USD 101 billion in 2010, an increase of 35%. The country's capital and financial account surplus also increased from USD 109.1 billion in 2009 to 165.6 billion in 2010, an increase of 51 % (SAFE, 2011).

In 2011, current account balance for China was further down to one third from a year earlier to USD 201.72 billion (2.76 % of GDP) according to State Administration of Foreign Exchange (2012). Current account balance in 2011 was less than it was in 2009 and 2010. This implies there is a key change occurred here in the balance of payment which was dominated by income credit not trade balance. Because of such change, China's balance of payments has become sensitive to corporate profits overseas (Gulf Oil and Gas E-Marketplace, 2011). China's exports of goods and services narrowed to 29 % of GDP in 2011, in which the surplus contracted to about 2 % of GDP, nearly to decade low level, compared to 2010. China's exports were crimped with above mentioned percentage,

which can be explained by the result of the investment heavy domestic stimulus. This stimulus swiftly generated among commodity imports and recession to other regions (Orlik, 2012). However, few investigations were focus on how intensive countries have been affected by such a stimulus.

In the same year, China's authority introduced 12th Five-Year Plan (5YP), whose target is to boost consumer spending up to 50 % by 2015, thus promoting a rebalancing of the economy. Besides that the current account surplus had been contracting from 2007 to 2011, one biggest source contributing to its downturn was pointed figure at the appreciation of its exchange rate potentially rather than the oil price.

Basically, the rapid development of central and western China and rigidity in commodity market reflect the high domestic demand growth in order to sustain the high growth of imports, which can lately affect the level of current account surplus. Furthermore, it was a consequence from a deliberate policy of monetary tightening in 2011 that held back its growth. The point was to face the long-term stabilization hence it might have to deal with growing inflation, dampening credit growth or a revaluation of renminbi initially. Despite the shrinking of its current account surplus, China still launched an impressive GDP growth at a rate 9.2 % in comparison to U.S. economic growth only accounted for 1.8 % of GDP.

Given the structural reforms and the pace to stabilization, China's GDP growth remained subdued at by 7.8% for 2012 with its current account surplus contracted to 2.31 % of GDP (or USD 190.68 bil.), which is the lowest in eight years and 1.7% less than the 2010 figure. The current account surplus has been shrinking against domestic demand gathering renewed momentum. According to Dorrucci and his colleagues (2013), they described the most important factors as strong commodity demand and the deterioration in the terms of trade that help contracting China's current account surplus. The report also added another two minor factors helping a decline in surplus such as the appreciation of the exchange rate and the cyclical movement in external demand.

Interestingly, author disagrees on these factors and thinks that major factors influencing on current account surplus should be opposite at least one factor like the appreciation of the exchange rate due to the percentage of appreciation of RMB from 2005. The growth of China's exports of goods and services decreased from a peak of 38.3% of GDP in 2007 to 27.5% of GDP in 2012 (Morrison and Labonte, 2013). China has been struggling throughout the critical development as we can notice from a less intervention from Central bank as regards the appreciation of renminbi with 31.68% from July 2005⁷) and up to 0.25% against USD by 2012 with average annual rate of 6.31 RMB (PBOC, 2012).

The recent small number of current account surplus in China can be interpreted as the less influx of foreign funds from the outside world, but represents net outflows of investment capital via a capital and financial account deficit. Simultaneously, its small percentage of surplus can facilitate the revaluation of renminbi. As China has continued a slow recovery with all the efforts invested, somehow the "rebalanced" process has shown in the Chinese economic growth that will make it sustainable in the future. Similarly, the IMF forecasted that China's current account will start a firm upward trend to 7.2% of GDP by 2016 due to a decline in level of import growth in 2012 and its gradual recovery (IMF WEO, September 2011).

⁷⁾ China allowed its currency to fluctuate against a basket of currencies, stop pegged to USD

The current account deficit and surplus (current account imbalances) are the key for explanation of global imbalances for a while, however it is necessary to highlight that global imbalances have been calling for a huge attention before the financial crisis unwound. Current account deficit signifies countries tend to have their spending over producing. Then, deficit countries will have to rely more on overseas borrowing or selling its assets abroad in order to exploit its capital to run their economy and smooth their consumption for an individual.

Positively, it current account will smooth their countries' investment in case of inconsistent saving but it has certainly its edge how to ease their investment. Nonetheless deficit country won't be able to escape from debt and bigger issues. Current account surplus is opposite of those deficits. Some economists believe that the surplus countries' export-led growth strategy has been used to generate and leverage among other deficit countries. Current account surplus does not only indicate a sense of producing or saving over spending (investment) but it also shows that countries export more than import, thereby becoming a "lender" to the world.



Grapf 4 Global current account imbalances, 2000-2014f (as a percentage of world GDP)

Source: IMF, OECD Outlook 2013

As shown in the Graph 4, global global imbalances have still remained pressing concerns for the world economy before or after the latest global financial crisis in 2008. But one can give a slight positive interpretation from the graph that the current account imbalances and external imbalances have narrowed and fallen, but did not vanish as a result of overall weakness in global demand till mid-2013.

Looking at the Graph 8 measured as the percentage of world GDP, current account surplus presents with the bars on the top above the horizontal axis (center line) such as China, Euro area, Germany, Japan and the oil-exporting countries. Current-account surpluses among these countries were persistently large until 2008 and they currently decline owing to a slump in exports and rebalancing process. Under the horizontal axis, you can see the current account deficits are running quite large leading by countries such as United States, euro area excluding Germany (Spain and Italy), the UK and Rest of the world. If we revisit to the past of current account imbalances such as till 2008, the bar was tremendously soaring either deficit or surplus and they accounted almost 6% of world GDP (Cecchetti, 2011). It appears likely that the adjustment of imbalances has been implemented.

To this point we have to mention some quantitative data (IMF WEO, UNCTAD, OECD, 2013), the current account deficit of the United States reached at USD 475 bil. (3.1 per cent of GDP) in 2012, compared to the highest amount of USD 800 bil. (6 % of GDP) in 2006. Besides, the weakness in global demand has been taken place, the United States remained stable broadly regardless of the sluggish trade in both export and import demand in 2012. The surplus countries have also shrunk in several degrees due to a slowdown in global GDP such as in China, Germany, Japan and the oil-exporting countries.

Current account surplus in China declined to USD 191 bil. (2.31 per cent of GDP) in 2012 in comparison to the highest spot at 10 % of GDP in 2007. China's low performance in export growth had influenced on its current account balances accompanied by capital formation (volatile stock building) and decelerating of domestic demand.

In Japan, current account surplus could not rival with its peak at 4.87 % of GDP in 2005. It was able to reach only 1.59 % of GDP in 2012 because it suddenly encountered with lagging export sector, increasing energy imports, as well as tensions with China and the deceleration of the world economy. For Germany, current account surplus was recorded at 7 % of GDP in 2012 even though Germany had to deal with economic decelerating throughout 2012 and subdued activity in the euro area. By growing uncertainty among German enterprises, they have been importing goods to boost domestic investment, thereby referring as one key reason for a weakness in German import (Bundesbank and Marsh, 2013). Growing importance of structural factors has thrived on its economy recently.

In euro area, the economy slightly picked up from last year. This reflects entire current account balance swapping place from deficit to surplus with a rate at 1.8 % of GDP in 2012 thanks to fiscal austerity and structural adjustment. Under any circumstances, the lingering weakness could potentially deliver the consequence to global economy. For oil-exporting countries, economic performances have remained healthy rate but have driven into ongoing political transitions will cost its growth and sustainability in the future. As a result, the surpluses in oil-exporting countries showed quite reasonable rate at 20 per cent of GDP in 2012. However, we can observe now the ongoing current account imbalances among major economies.

Risks normally come along with these imbalances, so countries have to be prudent with the risks of disorderly adjustment. This is because the consequence of a sudden reverse funding the current account deficit can potentially affect global ramification via broad exchange rate movement. In addition, countries may struggle to efficiently take in the capital inflows financing the deficits.

Conclusion

Current account imbalances conceivably generate the global imbalances. The current account imbalances are the result of persistent international differences in trade positions. These imbalances have been underscored by vast current account deficit and surplus in USA and China.

Current account deficit in the United States has not shown any dominant sign of changes regardless of an increasing non-oil deficit and a favourable domestic supply development, but almost constant recently. The US deficit size is quite large because foreign investment in the United States is large thanks to a strong economy. The US current account deficit was averaged at 4.31 % of GDP during 2000-2012. It measured an unprecedented amount of 3.11% of GDP in 2012. The United States runs current account deficit if they expect to earn the higher future incomes by borrowing or investing primarily. Simultaneously, the US must be prudent with its high government debt owing to China before it will lead to any default. The consequence of the US current account deficit can start with the excess reliance on other finances, which subsequently affects the currency fluctuation, and can bring out an aggressive trade policy. In the worst-case scenario, such deficits could direct to another recession.

On the other hand, China's current account surplus has been mounting massively after joining the WTO in 2001. The current account imbalances were potentially derived from China's export-led growth strategy, high accumulation of foreign reserves based on a self-insurance motive, including the renminbi undervaluation. The rise in exports resulted in a large trade surplus with various world regions. Since then, the surplus had reached its peak at 10.8 % of GDP in 2007, thereby explaining a massive increase of China's foreign exchange reserves. China's current account surplus still remained steady at 2.31 % of GDP in 2012 and a huge surplus of USD 850 billion. However, nobody can blame only China for it size of current account surplus. This is because the surpluses of oil exporters, a bigger of major regions, mainly contribute also to the global imbalances. One of the main arguments against huge current account surplus in China is that country can be jeopardized by world economic shock if solely depending on the country's exports. If there is a shortfall in demand, domestic buyers might barely adjust its capability to such a situation.

As a result, current account balances provide us with helpful information on the state of the economy. The link between the financial crisis and these global imbalances is also complex but in order to better characterize these issues, it is undoubtedly to point out that the current account balances has been taken the vital role of measuring the extent of global imbalances.

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Creating New Knowledge Assisted by Computational Devices

Ladislav Andrášik

Abstract

In contemporary global knowledge based society there are scorching needs for new knowledge and unprecedented vision of future development. Author is focuses attention to new possibilities of fostering creative abilities and gaining new socio-economic knowledge by the assistance of ICT, Internet and mainly by using products and services of computational intelligence. His method used is prevailingly new knowledge creation by experimentation in virtual laboratories. In using conventional methods, he combines inductive and deductive methods as set up for developing mental models from up to down and bottom to up. Because in socio-economic branches it is very difficult and even almost wholly impossible to do experiments in objective reality the experimentation by the assistance of computational intelligence is promising advance in gaining new socio-economic knowledge in contemporary complex world. Using such new approaches, methods and tools is the main scientific aim of the author. He uses convictive demonstration of successful using these unprecedented possibilities in gaining deeper knowledge about complex evolutionary phenomena. The distinction of such knowledge is against conventional one is consisting in very deep understanding of complex socio-economic dynamics. Using meant knowledge acquisition approaches is promising in quality and in abiding knowledge and skill of single individuals but the extraordinary progress of creative knowledge based society fostered by using them in advanced webs is useful for whole society.

Keywords: creative (activity, community, corporation, economy, firm, society), fostering creativity and knowledge gaining by computational methods,

JEL Classification: B52, C61, C62, C63, D41, M15, M21, R11, R58, R59,

Introduction

In the sense of *Creative and Knowledge Society* and in such real environment the new knowledge is emerging in different types of networks. New socio-economic knowledge may create single subject and/or groups of subjects, scientific team, and so forth united into different conventional network but in contemporary world, such knowledge creation is possible in *advanced webs* working in Internet. In this sense we have good experience and particular know-how that such knowledge creation in advanced webs are

very useful for economics. We have in mind that traditional network (that is homogeneous economics network created only by human subjects) may precipitously improved by new achievements of ICT, internet and products and services of computational intelligence. To the group of people communicating in networks is entering new virtual subjects - digital creatures, in contemporary era. These are currently known under name notably as softbot and myslit. They "live" in certain domain comparatively is like such something as Kripke's world. With them, we can as human subjects are in direct sensorial contact in different time passage and in different loci of planet surface. Different single subjects, or particular scientific groups, teams creates new knowledge by building models in virtual laboratories and experimenting in them, but if there are in live cooperation with other subject and this cooperation not must be intentional there is emerging extra ordinal creative environment for not individual but social imaging and reasoning. Truth of the matter there emerging not only Platonic by philosophy proclaiming social consciousness but growing consciousness physically anchored in Internet. From such point of view there may arise several serious misunderstanding within the reality labelled by words *Creative and Knowledge Society*. Unfortunately, those terms Creative and Knowledge, notably in the function of adjectives localised in front of the term *Society* is very blurred. Maybe nobody in wide population knows what exactly the notion of *Creative Society* is and how it emerges. The same is with notion of *Knowledge Society*. These are the reasons why it is indispensible to focus scientific attention on these distort problems. Despite of great scientific efforts in last year's there all the time persisting's a lot of misunderstanding in the notion of creative and knowledge society. Problems with creative and creativity are because these terms include a multitude of definitions, approaches and different using concerning several scientific branches: - in philosophy, - in cognitive sciences mainly in psychology, in social sciences (particularly in socio-economic theories), in informatics, in network science and others. Such is taking in the relationship between creativity and general intelligence, mental and neurological processes associated with creativity among others. There are also lack of intersubjectivity regarding opportunities for promotion and cultivate creativity through education and training, particularly as augmented by ICT and advanced webs in Internet, and the application of creative resources to improve the effectiveness of learning and teaching processes. Although meant problems are serious, we pay them attention only in necessary rate. Our dominant aspiration is the problems of new knowledge acquisition in economics. In this connection we concern attention of very interesting writing of J. Kloudova et al. on Creative Economy [18]. Our main objective is focused on economic knowledge acquisition by the assistance of computational intelligence and by help of cognitive sciences all imputed in advanced webs in Internet, which we consider as excellent new opportunity for fostering creative and knowledge society. For that purpose, we are using very suitable software environment such STELLA [28], iDMC [22 - 23] and partly Excel too.

1. Creating economic knowledge in society and socially: creative potency of network

The creativity is the spontaneously emergent product of complex living network originally consisting from human subjects that is the product of human society. On the other words, that is not only group of single living entities. It is because a lot of single creative subject present in the society are not enough for emerging quality in the sense of creative society. These are two independent entities in the sense that both are different

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quality. In society may exist in neighbour's several very creative subjects but among them not must be connections of network quality, which is indispensible for creative actions. These are the traditional problems with emergency of creation of knowledge in society as a whole, accordingly with creation of new knowledge socially. There are two historically unprecedented happenings emerging in second part of former century which are progressing further. The first is ICT and the other one-advanced webs in Internet. The phenomena of fostering creativity in large and complex network and/or social network by assistance of ICT and computational intelligence are spontaneously emerging in contemporary global knowledge based society. Creative activity is ability of single and/or social subject to create and/or to make something new which have individual and social utility value in real historical context. To produce by society some new entities and qualitative events by creative activity is the ground for using term Creative and Knowledge Society although this seeming as pleonasm. Another understanding of creative society is that one as group of creative single individuals and/or society that is creative as a whole in the sense of creative activity in social connected mod: *the holistic* creative society. Computational creativity, computational intelligence is helping intensively in achieving new economic knowledge but it may note that computational creativity and creativity of single and/or social subject assisted by computational intelligence is not synonyms. Such software entities as softbots and myslits are conditioning and mediating easier connection among participants in network and doing their accession to achieving contents existing in network more efficient. These simple computation entities can regard as the first stage achieved in development of digitalised knowledge creating networks. More advanced software devices are allowing information and knowledge to reach directly in their process of emerging. Among others such primordial and/or simple entities but differenced are applets for plotting dynamics of economic mental models as 2D and/or 3D nonlinear systems. These are useful for imagination upon behaviour of biological, ecological and social systems after their primordial mental models mathematically formalized. On the other hand, in up-to-date economies the people are challenging several new complex phenomena. In such new circumstances, it is not enough for deep understanding of economics phenomena to deal only with intended simple computational entities. They need more advanced devices and tools able helping them in understanding very confused and tangled evolutionary behaviour of national and global knowledge based economies. These may be realised as virtual parallel entity to objective economic reality and create in such path some base to compare one to other. The typical and in present day current yet is routine when investigator create own authentic mental model of objective economic reality, or use such one achieved from other investigator and transform it to mathematical formula. Such formalized mental models one can find in standard economics textbooks. That via textbook is conventional mode to sharing mental models in economics. The readers of actual textbook containing the group of models and partial theories spontaneously creates network of such model among them with property of intersubjectivity. In such network, it expected that sharing idea is going to the quality of common sense. If such textbook contents are spreading not only personally among the economists in universities and research institutes but via internet, the dimension of network can be very large and the interconnections among participants even more, because the requirement of to be in same place and in same time is vanished. In such complex environment arising potencies for emerging new form and entities. A qualitative new situation may be emerging when the formalised mental model transformed to the form of digital virtual laboratory and experimentation with such devices is possible via internet.

This is, in authors approach, the first stage of hybridisation of homogenous network for achieving new knowledge for economics, which is the mode to build network by populating it with computational models built from up to down [2 - 8]. The second one, and more advanced is local network but better the internet populated by virtual laboratories of type intelligent digital organism, which built by method from bottom to up. One type of such organism can be prepared for evolution in digital world by the aid of methods and tools of multi agent science."

Figure 1 Spontaneously evolving advanced story in human/software environment



Going out from earlier conclusions there emerging enough to answer difficult question what is economic knowledge mean in contemporary complex situation? Alternatively, seeing it in another facet - what is the very subject of Economics, and what presents a wide economic reasoning in society? It looks for the first sight that widespread economic knowledge is some pell-mell product of both regular scientific research and hereby

emerging as spontaneous creations of everyday human activities, something such as "people's daedal and/or folk creativity", created similarly as folk proverb, myths, roundelays etc. However, in our opinion, the great impact on turbulent evolution of broad economic thinking has delivery time lag in creation scientific answers on new phenomena emerging in contemporary knowledge based society and the misinterpretation of former "holily truths" of mainstream economics. Unfortunately, maybe there is no one universally accepted answer to the question about very objects of economic science, also in today, as we noted beforehand. According of classics of 19th century, namely according to J. S. Mill, the object of economics (in earlier time *political economy*) is that sphere of man's action that is involved in the pursuit of wealth. However, in thirties years of last century Lionel Robbins replaced this definition of economic sciences in his famous book An Essay on the Nature and Significance of Economic Science [20] by asserting that, "Economics is the science which studies human behavior as a relationship between given ends and scarce means which have alternative uses", p.16. On the contrary, of those meanings, Carl Marx focuses explication of the object of economic investigation namely on economy as social phenomena. He emphasizes that behind relations between things, economic science should try to discover the specific relations between human beings that they cover. Actually, the object called economy is collective phenomena in the large population of people as a whole. That is, from synergetics point of view, these phenomena cannot understandable only on the base of summarized behavior of single performers. Behind every single player in economy, there stands authentic complex environment that forms his/her decisions and performance. Maybe, in every respect naturally, one can close up

that major part of that environment creates by nominal subject appropriate part of the upper declared broad economic consciousness. However, that acquiring endosomatic knowledge from such broad offer is not simple process and much more difficult is its using in decision and real acts. That is the reason that the evolution of *collective economic intelligence* is such painful process.

When we imaging about general economic knowledge in contemporary society it have to get into account the unprecedented innovative impact of ICT, product and services of AI, CI and broad offer of specialized software including new web product and services. That is, at present we can differentiate among such entities: - stock of codified economic knowledge printed on conventional media (exosomatic knowledge), individual endosomatic knowledge of single person and/or group of person in suddenly evaporating form and in highest level - network of endosomatic knowledge imprinted into live software entity with coworking virtual subjects that is in electronic form. In this sense, the petrified exosomatic knowledge is only potential economic force. Only if such knowledge fully adopts somebody for him/her it becoming of real forces to command and control the economic processes in his/her bounded environment. Collective economic intelligence, that is shared intelligence of whole members based on physically (by electronic means assisted and realized) based social networks that is on virtual intelligent devices in Internet only can serve to increasing the competitive ability of nominal group, community and/or national society in contemporary complex and turbulent world.

3. The family of introductory mental models in economics: role in new imagination

Despite of predominated inadequacies of contemporary economic reasoning declared in upper part of essay, that we are staying in the following platform. For understanding complex economic processes in contemporary global knowledge based society, it is as a *first step*, indispensable masterfully handling with a wide family of primordial models belonging to the class of economic science, at least to the branch of General Economics. That namely serves as alphabet ground for simple economic imagination. The second important step in the context of the purpose of this essay is, however, the higher-level skill in dealing with formal mathematical methods and tools. In addition, the *third step* as most important prerequisite for successful solving complex problems and percolating to the deepest roots of contemporary economic puzzles is the competence and high-level skill for self-evident use of advanced devices, tools, approaches, routines and methods from the area of IC-born products. That is, having the skill to command with them for gaining ability to create virtual metaphors upon conventional mental models and theories. These three steps are obligatory forward ordering process. It is necessary to start compulsory from the subjugation of the whole contain of the family of primordial mental models of General Economics. In the area of General Economics, there are collections of typical mental models in two divisions: i.e. the area of verbal and/or conventional of Microeconomic and of Macroeconomic mental models. Only as some examples, we bring small group of such mental models and a little more complex ones:

- 1. Relation between and among psychologically different, socio-economic groups:
 - Competition
 - Conflicts in different settings of aggression

- Symbiosis
- Cooperation and Collaboration
- Commensalisms
- Parasitism (Racketeering) and Parasitoizms (Tunneling, Asset stripping), and other black and/or shadow economic activities and so on
- Dynamic (cobweb) game between producers and consumers in different type of markets
- 2. Further noticeable socio-economic topics constructed as mental models (used in textbooks, and/or in/of wider purposes):
 - Trade-Off possibility frontiers
 - Opportunity cost
 - Monopoly, Duopoly and Oligopoly
 - Cyclical economic and social growth
 - Competitive scarcity
 - Inconsistencies in resource depletion
 - Renewable resources
- 3. Miscellaneous problems
 - *Preferences (social, economic and others)*
 - Conflicts between religion groups, communities
 - Conflicts between ethnics, races, and so on
- 4. Evolution (that is development with emergent qualitative changes) of socioeconomic network

The higher stage is the advanced mental models coming near to complexities and turbulences of contemporary national, integrative and naturally to global economic processes too. However, our enthusiasm in that respect is not as high in this essay.

4. Possible Example of Using Primitive Model of Abstract Competitive Market

Let us exhibit as a simple example the single (free-competitive) market with one homogenous good. In long time in textbooks, that case is set free in the form of cobweb model or theorem introduced by Mordecai Ezekiel before World War II [12]. May be that is the simplest occurrence suitable for realization as softbot. Even it can be easily realized in Excel. Widespread spontaneous thoughts (fabula) on happenings in such market are that a recorded real market price is an independent signal for both populations of actors, i.e. for suppliers (producers) so as for demanders (consumers). If the price level is increasing, from the point of view of suppliers, it is a signal to bring more goods on the market and for demanders the opposite behavior is right, i.e. the customers are buying less. It is vice versa if the price is diminishing. On those verbal propositions, demand and supply functions of the price of the good works with the consideration that price adjustment equation depends on the price observed in the former period (or former step of iteration) and on the difference between demand and supply. The formalism is as follows





where the third equation is the requirement of the so called market clearing, which is the result of which is synonymy of market equilibrium. After substituting the first and second equations to third and considering $D - S \neq 0$ we can receive the difference equation for evolving price

$$p_{t+1} = p_t + (a - bp_t) - c (-c + dp_t) = = a + c + (1 - b - d) p_t.$$
 (2)

Equation (2) is implicitly performative and as such it is after setting it to algorithm (and/or routine) of *virtual laboratory* too, in this case we built it in Excel. Equation (2) turns into an explicit performative only after pushing the button of softbot "Run". Therefore, in this sense the economic softbot as explicit performative is a functional constructive entirety of association of difference equation (2) transformed into appropriate routine and activated by pushing the button "Run". For more obvious understanding of the behavior in the market described by (2) it is familiar with the majority of other disciplines of science to plot a graph. Naturally, the softbot intellectual outcome is simply execution of computation and plotting the graph, but it can do it more quickly and accomplishedly than any skilful man can. From snapshots in fig. 2 - 3 it can be also intuitively clear that with linear graph of Demand and Supply functions there can be only three quality of motion, that are attraction to E, stable jumping up-down/down-up cycle of price (wage) rate. However, if one of the graphs is not line the result of motion is dramatically changes. The snapshots on fig. 4 - 6 are resulting by using so called backward bending supply curve of labour forces. In fig. 4 price is jumping in two cycle's mode. The curvature of bow arc (supply curve) and chord (demand line) positions and slopes principally affect the resulting movement. After changing them deterministic chaos is emerging as seen in snapshot of fig. 5.

Figure 3 Mutual position and slopes of demand and supply line produce very slow motion to Equilibrium



Figure 4 Succession (adaptation) of price to double cycle



Figure 5 Emerging some type of deterministic chaos





Figure 6 Eight-periodic cycle: succession emerging after comparatively long transients

Some better possibilities for creation economic softbots that is available in Excel the author found in the software STELLA. In snapshot of fig. 7 the reader can see results of simulation experiments with softbot mimic of S-shaped supply curve of labour forces in competitive market. There are two chaotic regimes, one of them in upper branch of "S" curve and the other one on bottom part. We can see that the market is extremely sensitive to the level of initial wage rate but much more sensitive act in response to the changes of parameter values that is exactly said, to the changes of positions and slopes of supply curve and demand line. Therefore, it is evident that very simple yet softbots demonstrated here can fulfill narration function in understanding phenomena that are more complex better than in conventional form neither that in verbal declamation.

The visualization of formalized mental model by softbots luckily has further impact and merits, bringing several arrangements, such as, for example, revealing former inconsistencies and mistakes in reasoning. In the upper examples, there are several such inconsistencies and mistakes even though the chosen mental models are seemingly very simple. In addition, thank to assistance of softbots much more mistakes become reveal because of living experimentation with that mental model after putting them to more advanced virtual laboratory. It is right that some of misleading connected with such approaches as upper used cobweb theorem of competitive market is obvious also if it is the result intuitive observation. Among such belongs the lack of meaningful origin of the history of evolving to equilibrium, i.e. the lack of singular point and together with this the lack of trajectory from past to present time, too. From mathematical point of view, this problem is not very heavy, because in some actual case may be evident, that may be present continuous sets of starting points for price independent from Supply and Demand quantities (the set is a straight line identical with positive part of price axis in the first quadrant of Cartesian coordinate system, i.e. with ordinate). From every point of the continuous set in question, there can start an authentic trajectory; consequently, we have again a continuous set not points but trajectories, in agreement with formulae (2).

Figure 7 Simulation experiment realized by author in software STELLA to demonstrate deterministic chaos



In mathematics, such work belongs to the branch of topology, i.e. we are dealing with topological map [1], [2 - 8], and [23]. Nevertheless, from the point of view of economics as science, the situation described brings nil knowledge or any answers to the question: "Why does it behave in such modes?", but in the MSE there is a prevailing belief that the answer rests in bringing meaningful knowledge. Actually, from the abstract viewpoint, there can be several answers, and they depend on the above-described economic presumptions. Because the nature of first and second rows of formulae (1) both graphs has straight-line form. In addition they has mutually opposite slopes (parameters *b*, and d) and they are located one to the other in relations of parameters a, and c. The possible abstract behaviour is trivial, i.e. there may be only three behaviour modes, (two modes of them, it is of attracting and repelling, like exhibits the snapshot of fig. 2, and the third, that is the periodic cycle is in fig. 3): 1. Convergence to fixed, i.e. equilibrium point E^* (E has an attractive character). 2. Divergence from fixed point and/or from any other chosen starting point of continuous rectangular $p \times amounts$ of D and S goods (the character of those points is repelling). 3. The last case is (period two) cyclical behaviour with one minimum and one maximum of price and of amount. Unfortunately, the behaviour on the economically relevant market is not such trivial. On the other hand, these inadequacies do not mean that any dealing with such trivial cases is the loss of time. Just reversal, the mistakes and inadequacies of trivial cases calling sequences of looking after better approaches and methods. Actually, the construction of, even though simple softbots and dancing with them are among such approaches that are capable of going ahead in solving difficult problems in the way of repairing primitive mental models. On the state of snapshot from Excel construction on fig. 2, one can conclude even on intuitive looking at *Supply* and *Demand* lines that the level of starting price has an impact only on the longitude of cobweb trajectory. Line shapes of graphs, their slopes and their mutual positions assign the (three possible mode) qualities of evolution. From this, it is only a step to a discovery that the decisive factors conjoined with qualitatively divers of market behaviour are economic-subjective nuances staying behind the actual shape, slope and positioning of graphs. The conclusion is that the mental model of competitive

market in the described form is wholly unrealistic and has to upgrade. The effective way to improving that mental model is a construction of a virtual laboratory with changed graphs, for example, using the so called backward bending or better yet using "S" shaped supply curve, exhibited in snapshots of fig. 4 – 7. Paradoxically, the situation also in a seemingly simple market is so complex that imaging the behaviour by continuous curves is not concise. Although the conventional print to paper, do not allow continual observation such processes, which is possible only in direct experimentation in virtual laboratory, it is no doubt that "reading", though merely the simple particular snapshot is sometimes more effective for deep understanding than classical reading of verbal texts with hand-drawn pictures [2 - 8], [9 - 10], [23]. Luckily, the above is only trivial illustration of possibilities of dancing with softbots for introductory familiarization, because there are several emergently effective software devices for such dancing with advanced creatures [1], [22 - 24], and [28], [22].

5. The Economic Mental Models Built in Softbots

There are several suitable software enabling realization of various, more or less complex economic softbot in our time. However, in Internet everyone can find several ready to use *applets*. Those we can regard as the class of the *simplest softbots*, snapshots in fig. 8. They are in general very useful but from our point of view their main drawback is



Figure 8 A cobweb plotting Applet of Logistic map from Wikipedia (left); the same from: http://math.la.asu.edu (right)

the impossibility for reconstruction by user, he/her can only realise experiment by variation of values of parameters or coordinates of chosen origin loci. In contrast to such simple devices for advance imagination and deeper economic reasoning, we need software allowing users independently from any programmer to construct own softbot and/or virtual laboratories. Such procedure free of programmer assistance allows for example Simulink in Matlab, STELLA¹ [28], Vensim, iDMC [22 – 23], and SWARM [24]

¹⁾ The author published in these journal essays where he demonstrates among other the possibilities of using software STELLA for purposes in economics.

and other software too. On the other hand, for achieving advanced stories and for dancing with more sophisticate softbot [1], [2], and [8] notably myslit for a wider use in economic community, the assistance of scholars from the community of branch of computational intelligence and/or skilful programmers are indispensible. The same is valid for creation of complex virtual stories (self-creative stories).

Figure 9 The heading page of ACE website



In running simple communication between simple subjects (top layer of scheme in fig. 1) the story spontaneously moves on governed by asking questions with human subjects. This story automatically saved in the memory of human subject and the other story, i.e. digitalized topological map, by human subject settings of starting point's coordinates, chosen values of parameter and simulation runs saved in the software. That top laver can perceived as based on phenomenological approach, i.e. by another subject predisposed built "top-down" research and/or learning system (CI "subject") serve as assistant of investigating subject. In this case, the human subject (prevailingly a student) is only in the role of user

non-intervening into mental model, map and architecture of virtual "subject" (virtual "triad"), i.e. he/she gives instructions for an experiment and is waiting for answers and working with those in his/her own mind. There can, however, arise a situation that authentic subject (he/she may be student too, but mainly is a researcher) is not satisfied with achieved information and decides to make some improvement of the "triad". After such a step, the second (middle) layer is coming into action. In this situation, the human subject is not only in the role of a person who asks questions, but he/her becoming a creator and constructor of the "triad" too²⁾. Based on these improvements he/she can create more suitable environment for problems investigated and naturally, the story is richer, but still spontaneous. In new birth possibilities, because of the human subject activation, there arises also a platform not only for writing down a verbal story, but for building a story on technologies used for improving the "triad". We are introducing one of possible primitive forms of such passing from the top to middle layer by means of two types of perplexing the "linear" market by introducing the nonmonotonic supply function. In the first case, we are dealing with another than before used "S" shaped supply curve based on squared and cubed price and in the second case, we base the supply on the arctan function of price with weighing the impact of price expectation on process of adjusting supplied amount of goods to market. For this purpose, we used price function for nonmonotonic supply and linear demand but in struggle to save area leaving out mathematical formulas of the model. The exhibitions of result of the first case of qualitative experiments are in the snapshots of fig. 11 – fig. 13. Concerning the other type

²⁾ It must note that he/her is still only economist not pretending on the role of (not act as if) PC programmer.

of non monotonic supply, the possibility for approaching more complex form of market mental model is the consideration lying on the *S*-shaped supply curve (relation between quantities of good and the levels of price) not created by the help of cubed price but by arctan trigonometric function.



Figure 10 Search realised on the Internet front page of ISEE Systems

Figure 11 Visualizing chaos (left) by connecting of dots on diagonal and on curve (cobweb graph made in Excel); Bifurcation portrait (right) with chosen bifurcation value of w generating cycle with eight periodic points



Figure 12 Comparison of two possible exposition of same event



Because of a famous special shape of arctan function graph (it enables sigmoid learning), the (two-key) economic considerations (EC) are easy (naturally follow from the shape of graph) for subsequent formulations. *First EC*: If price levels are low then supply increases slowly, because of start-up costs and fixed production costs. Second EC: If price levels are high then supply increases slowly, because of supply and capacity constraints. These two EC lead to strong bounding of possible extreme behaviour in comparison with using cubed price. Based on these considerations it is possible to create a second kind of a non-linear, increasing supply curve. By choosing the inflection-point of the supply curve to be the new origin is one of possibilities of simplifying the imagination. In such a way the coordinates change and the graph splits to upper (signed plus) and bottom (signed minus) parts. In left snapshot of fig. 11, there is a section of the supply curve against diagonal and the cobweb. The shape of the curve causes deterministic chaos. The right snapshot exposes the series of bifurcations causing different qualitative events, after increasing the value of weight parameter w, i.e. period doubling bifurcations, deterministic chaos, odd periods and their folds. We choose the value w = 0.2045 only for the demonstration of eight period event. It was also use for the exhibition of transient to succession in cobweb graph (left) and time step trajectory (right) snapshots of fig. 12. By these results of experiments, we showed that some simple mental model could investigate also by means of Excel, i.e. by a device popular among economists. Nevertheless, such job is too complicated and the construction of such triad takes a great part of memory even in the simplest cases. For it is more favourable to use better devices for such jobs. We are successfully using iDMC, which is, in subjected cases very friendly to a constructor and economical to PC [22 - 23].

Figure 13 The corresponding of periods in bifurcation portrait wit Lyapunov exponents



In snapshot of fig. 13 we combine the bifurcation portrait (upper snapshot) with the graph of Lyapunov exponents (bottom) for a clear presentation of coincidence of bifurcation values with Lyapunov coefficients lying on zero level. The third (bottom) layer of the scheme in fig. 1 is an entirely different case. There are two decisive innovations against two upper levels. The first is the change of method creating mental models and the second is the construction of computational environment. In the first innovation, the

top-down method changes its form from bottom upwards, i.e. in this approach the mental model not created by the mental reconstruction of objective reality with using of former

perceptions and empirical net data, but there is left room for autonomous self-creation. For these purposes, there used among other such methods as MAS, ANN, also cellular automaton, percolation theory, classification theory, genetic and evolutionary algorithms and similar methods and approaches. In the second innovation they used for the construction of virtual subject methods and tools of "computational life" and "computational intelligence" in sensu stricto. As for the potential content of advanced softbots, we can focus our attention on the products of community of socio-economics scholars working in the area of Multi-Agent-Based Simulation organizing workshops under label MABS³, [9 - 10], [14], [16], [26], [28]. Other very interesting direction producing topics appropriate for the imputation to the advanced softbot bodies is the community of scholars collaborating under the title Artificial Economics. Similar and very successful ensemble cooperates with L. Tesfatsion. That community is facing the problems of Agent-Based Computational Economics (ACE) [1]. Special economic entities may create using means of theory, approaches, methods and tools of ANN. In economic and financial modelling based on ANN, the seminal work in this area was the publication of Beltratti, Margarita and Terna [31]. There is a wide collection of models in scientific literature and pragmatic too, usable after a suitable adjustment as contents blocks to building bodies of variable economic softbots. Therefore, in such a way there are opening entries to very heterogeneous softbot population occupied with comparable simple to highly advanced computational creatures. That circumstance is very beneficial for heterogeneous users ranging from students to researchers, teachers and economists in real practice too, for talking/dancing. Obviously, the students have the greatest utility from talking with softbot population, because they can penetrate into deep tangled coves of complex economic entities by this nonconventional method. The mutual conversation between researchers and softbots forced by a two-sided improvement of the mental model of research subject is going ahead not only in the quality of knowing complex economic phenomena but also in involving their new brainwaves.

Talking with Softbot alone and with Structured Computational Story

The new technologies of learning and investigation of complex economic phenomena assisted by ICT, applied informatics, computational intelligence and cognitive science bring at least three levels of conducting a dialogue with softbots as we showed in scheme of fig. 1. From another viewpoint, it ought to emphasize that such process in all cases begins with endosomatic investigation and/or learning by authentic subject. Only after mastering all the knowledge and skill potentials of such device, there arise possibilities for the some form of codification of achieved knowledge. It is clear that without the codification (exosomatization) of newly achieved (endosomatic) knowledge their required intersubjectivity cannot effectively reach. On the other hand, it is interesting that a great cohort of independent discussants with similar or same computational entity reach a higher level of intersubjectivity than the group of readers of some textbook or monograph.

Reaching a similar level of intersubjectivity and equal understanding among book readers as in the above-mentioned cohort requires a wide mutual face-to-face and collective discussions after reading. Upon that experience, it is clear that discourse with not a bit accomplished computational story device is more than listening to or reading a conventional storytelling. Fortunately, the above mentioned devices, methods and tools

³⁾ The proceedings of first workshop published in 1998 [9].

also offer new technologies and methods for the creation of deep structured computational stories built-in with not only conventional verbal stories, pictures, graphs, and tables and so on, but populating them with a variety of softbot communities⁴). In this sense, the talking with a virtual discussant can have several levels from very simple talking (in the form of asking questions) with single softbots at the bottom level, to exceedingly advanced one with a deeply structured computational story at the top level which we intituled somewhat allegorically dancing. At preliminary level of being contiguous with computational entities are prevailing the form of passive observation of events provoked by pushing the desired buttons localised on the main command board (interface) of computational story or at least of particular applet. Admittedly, this activity is not the same as observation by listing in a textbook and/or in a scientific monograph. The important difference against print on essay consists in the possibility to contemplate evolution of the experiment running in PC with adjustable singular point, values of parameters, time and speed by buttons, sliders, tables, "rheostats" and/or "potentiometers". However, saying it more exactly, the observer can use the whole scale of routines built in computational entity. In this context, it is interesting that in past years there have been emerging on the Internet several computational stories that are appropriate for social sciences and economics. Only for the creation of clear imagination about the matter, we focuses the reader attention include a few simple and semi-advanced stories made in software STELA by Pontifex Consulting. However, if he/she changes his/her activity from the passive observer and enters the process of modification of softbot, or moreover tries to build a new one for one's own purpose, the situation is going to change dramatically. Such activity becomes more constructive and/or more creative because the subject has to look for anonymous or hidden approaches, methods and tools. The benefit from this is a higher form of verifying achieved investigation results because the subject is push to this activity by curiosity and pull to the process by the desire to achieve effectively functioning device. This desire is directing the subject to reflecting and creative activity in the form of building entities from the bottom upwards (third level of the diagram, Fig. 1). In order to create such a very advanced story, it is necessary to use special requirements and routines in creating relevant softbot and, maybe in the future appropriate myslit. In such case, as a rule, there has to be used another methodological approach than phenomenological. Mostly, the constructor in this case uses a building approach from bottom upwards, or quite implicitly, he/she uses multi-agent approach with specific aspirations. However, the constructive approach and/or doing something constructively has, at least may have, a deeper sense. Implementing the process of mental model creation, its transformation into topological or into another mathematical construct, moreover the construction of the creature capable of functioning in appropriate software can be perceived as some kind of learning-by-doing but not in manual work sense. The creature, of course is made by hands, but is clearly an intellectual process running not only in vigilance but also in deeper layers of mind (in brain structure is not under direct control of subject). As an example of such process, we refer to the case of spontaneous scrabbling by oneself subject of an essay in the process of intensive reasoning. However, the building the block and principal block diagram, the programming and so on is another "scrabbling". Among other important requirement is, so called Principle of Minimum Prejudices. A little

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⁴⁾ Of course, the creation of a structured computational story in economics is not an isolated job only for economic scholar. Such job is need for an integrative collaboration between an economist and software engineers at least.

simpler saying – if the purpose of using bottom-to-up modelling and suitable multi-agent simulation in economics is accomplishes wholly, at least partially, independent authentic evolutionary story, it is need to carefully considering what and how much existing knowledge to implement and what commands and routines to embed.

7. Discussions

No secret is that the topics of knowledge creation in contemporary creative and knowledge society is very problematic, full of misunderstanding and difficult area of research.

It is important to take into account the differences between virtual world emerging in individual consciousness and other one mastering by man out of authentic mind. Logically those ones are both parallel to objective world but every in different form. The so called "evolutionary mastering" of human mind (bricolage, tinkering) going on in objective reality for thousands years is fortified by adding to former one rapid bricolage assisted by softbots and myslits in electronic virtual reality in our days. This someone has to understand in such form that new meme need not come through very long distressful way of phylogeny. The advances in ICT, CI and in cognitive sciences allow constructing and/or "creating" artificial world for dual experiments to objective ones. In artificial world constructed by method from bottom to up using so called minimum principle of embedding in prejudices of creator may spontaneously emerging entities living in that virtual environment. Such experimentations can help in slipping out of diverse myths, misbeliefs, fata morgana, dogma, mirages, etc. surviving in human consciousness, in sciences as a whole, and in economics obviously too⁵⁾. This products and assistance of ICT, CI and cognitive sciences union is very important potency of advanced economic reasoning in runaway evolving contemporary world. If economics has to be the self-same science it must strive for experimentation because only experimentation makes possible falsification of theory. For the reason that economics has bounded opportunities for experimentation in objective reality, moreover experimentation in economy at large is impossible at all. In that inappropriate situation the sole way is "experimentation" with economic models and or theories after their formalization to mathematical entities in mind of authentic economist, or further advancing that method by using products and services of ICT and CI, what we regards as promising opportunity for more plausible falsification of economic theories. By famous molecular chemist, biologist and philosopher L. Kováč, "Aristotle's barrier is a boundary in human species-specific reality separating the space that can be captured by sheer contemplation and reasoning from an additional space that can only be reached by experimental falsification of hypotheses. The reality circumscribed by Aristotle's barrier is simple and easy to human comprehension, often familiar if not self-evident. It is also related to the *Lebenswelt*, the natural world or life world, of phenomenology [20] (see also Kováč, 1992)".

Conclusion

At present, it is clear that the unprecedented technological revolution happens and new products and services are taking place in common life as we enter to the era of ICT

⁵⁾ It is evident fact that not only conventional science but contemporary one too is contaminated by not clear outcomes and maybe myths – clearly social sciences, inclusive economics, more than natural and technical sciences.

and global knowledge age. It is a revolution of crucial importance in that it involves technologies for knowledge and information production and dissemination via the variety networks of excellence and virtual agents (softbots and myslits) setting to Internet. These new technologies and outstandingly the product and services of CI in coworking with scholars in branches of cognitive sciences and using their result and services have breath-taking potential also for cultivation ideas and imaginations in the field of collective economic consciousness. They enable remote access to information and offer wholly new means of acquiring knowledge. In addition to transmitting written texts and other items to be digitalized, they also allow users to access and work upon knowledge systems, among other with such devices like applets and virtual laboratories from a distance (e.g. distant experimentation), to take new economic knowledge. Among others these new tools allows creating excellence environments for distance-learning courses. As examples, such realised within the framework of interactive relations among teachers and students (Tele-Bridge education). Other forms have unbelievable quantities of information – a sort of universal library – available on their desktops, and so on. The ICT, AI and CI enhance creative interaction not only among scholars, scientists and students but, similarly, among product designers, suppliers and the end customers. The creation of virtual objects such as *softbots* and *myslits* that can be farther modified in large dimension and are instantly accessible to everyone, namely softbots specialized for economists serves to facilitate collective work and learning and as a result may increases the level of collective economic consciousness. In that respect, the new possibilities that computers have opened up for qualitative understanding of complex economic processes via numerical simulation represent extraordinary significant departure from prior experiences and from conventional economic knowledge. Higher level of collective economic intelligence and wisdom emerging when people are using more intensively knowledge-based activities, supported by ICT, AI, IC and using specialised software, interacting for achieving knowledge suitable for understanding changes reality in global knowledge based society. As expected, such activities involve several aspects. Among them play important role three subsequent elements: 1. the significant number of collective members via coworking via not only coworking not only with ourselves but using assistance of softbot creating new economic knowledge (diffuse sources of innovation); 2. the community creates a "public" space for exchanging and circulating the knowledge in hybrid networks; 3. The new ICT are intensively used to codify and transmit the new knowledge.

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The Use of Managing Stress Strategies in the Profession of a Media Creator

Zuzana Ihnátová, Radovan Kopečný

Abstract

Purpose of the article Mentally demanding job of a media creator (journalist, communicator, etc.) exposes an individual to a high amount of stress. The latter one disturbs the balance of external expectations and internal capabilities, leading to disruption of psychological well-being and reduction of the quality of life. The key to proper stress management is usage of positive coping strategies. The aim of this paper is to research the usage of coping strategies (positive and negative) by the students of mass media - the future media creators. Methodology/methods By means of a standardized questionnaire, we examined the use of positive and negative coping with stress strategies on probands - the future media creators, i.e. students on the faculty of mass media. The questionnaire was distributed personally in amount of 105 with a 95% return of 100 questionnaires. As the sampling method we used the choice of participants based on availability. Findings The results showed that probands elected more positive strategies, and thus they are able to handle stress in a healthy and rational way. As the trend of feminization is constantly evolving in the media, we also examined ability of female students to cope with stress. Our assumption, that women handle stress better than men, was not confirmed. They chose rather negative strategies. On the other hand, the male part of probands was inclined to choose positive strategies. Behind the ability to handle stress in a positive way, in the case of media creators, probably lies the complexity and integrity of personality, and other factors. Limits of research The main limit of presented research is the composition of research sample, i.e. students even though they study in the programs of the mass media, are not the representative sample of the group of media creators in practice. Therefore, we suggest executing similar studies on the sample of the media creators that are already working in the field of media to verify our findings.

Keywords: creativity, media, creative employee, stress, coping strategies

JEL Classification: M15, M21 (see on websit

http://www.aeaweb.org/journal/jel_class_system.html)

Introduction

Personality of a media creator requires a thorough research attention not only from the psychological point of view, but also from the management and pedagogic ones. The need for such an introspective is expressed in Brecka's Media Psychology: "Journalist himself, by his way of speaking, influences his beneficiaries, he is involved in how the media statements are received and processed by the audience" (Hradiska, Brecka, Vybiral 2009, p. 75). Creative workers in the media, from journalists across moderators to photographers, create media content, thus directly and indirectly affect the recipients. We can deduce a consequential – what affects the psyche of a media creator may secondarily affect the recipient. The inner world of such workers is mostly hit by stress. Psychological pressure is being constantly developed on media creators; therefore their work is challenging and full of stress.

1. Literature review

1.1 Media creator

The basic terminology premise is that a media creator can be appointed as a communicator, as well – that is the origin of mass communication, as defined by Laswell (in Valcek, 2006). However, he identified the communicator as a creator, not his psychological aspects. David Berlo worked with some indications and defines source "*as a set of a*) *communication habits* (*skills*), *b*) *a given level of knowledge* (*knowledge*), *c*) *current attitudes* (*attitudes*) *and d*) *by functioning, a synthesis of these elements a*) *in the social system and b*) *in the culture*" (In Valcek, 2006, p. 94). Berlo already perceives intrinsic properties such as skills and knowledge. The basis of psychology of media creators were put by Gerhardt Maletze. From the theory of media, his model of mass communication (1963, Fig 1) can be directly used.



Figure 1 Model of mass communication

Source: cultsock.ndirect.co.uk

The so-called "Berlin underground plan" provided the initial basis for examining the communicator. It affects not only his "self-image", but also his personality structure, the existence of communicator in his organization and communicator's social environment (Valcek, 2006). Last but not least, it comes to the psychological structure of the personality of the communicator. "*The communicator's status is determined*

psychologically (self-reflection, personality, communicator as a professional team), but also institutional (pressure and urgent action of a media such as a public institution, the communicator as an economic-political organization)," stated Valcek (2006, p. 98). Maletzke still does not work with psychological pressure of stress and burden, but we can assume that he includes it in organization and social environment.

1.2 Psychological profile of a media creator and his work activity

It is required from a media creator to have the capacities to withstand stressful situations. This is confirmed by Brecka (Hradiska, Brecka, Vybiral 2009), who has based this piece of knowledge on several studies – the first three basic qualities of a journalist include social, creative and cognitive skills. Just the cognitive ones are defined as "*speed of decision-making, adaptability to change*" (Hradiska, Brecka, Vybiral 2009, p. 61), i.e. an underlying predisposition to successfully cope with burden and stress. He confirms it by his own studies, in which figures an important feature – a good mental condition. This implies stability and integrity of the personality. The importance of this feature is highlighted particularly for the very demanding profession highly threatening the quality of life.

1.3 Workload of a media creator

Brečkova and Sramek (1991) describe journalism as an exhausting work both physically and mentally. They underpinned it by a research Journalists of daily press in Slovakia, where 45% of journalists surveyed said they considered the job to be quite exhausting and 11 % to be very exhausting. Samuel Brecka, pedagogist, scientist and researcher, expresses his views in this field: *"Research has clearly shown that journalism is a profession mentally demanding, performed in time pressure, with high amount of responsibility. Journalist, who is resistant to stress and addresses such situations confidently, has an advantage that can be appreciated not only by the recipient, but also by co-workers."* (Hradiska, Brecka, Vybiral 2009 p. 121). He adds to the demandingness, the number of hours worked. Several aspects, including efforts to have current news or low salaries, force workers in the media to work during the weekends and beyond the normal 40 hours a week. Holina (1997, p. 50) states in his research that journalists who are trying to earn more are the one who do overtime: *"In the highest income category 39.3 % said they worked more than 60 hours weekly."*

Working in the media in a capitalist society does not have to be bound by permanent staff contract and/or affiliation to the editor. Burns writes "today's journalists are often freelancers; they write on demand or sell their articles individually." (Burns, 2004, p. 30). Freelance job in the media has become characteristic of these conditions, which leads to a trend to write for more media simultaneously. In fact, in many cases it may be not only the matter of a prestige, but mainly for the financial reasons. This view is supported by a journalist, teacher and scientist Zuzana Krutka. "Basic salaries are usually very low as well as the fees paid. Today journalists have become intellectual jobber, therefore there is no wonder that many of them are leaving the profession" (Krutka, 2000, p. 52). Low salary bonuses for hard work can lead to increased tensions, while at the same time increasing the amount of work, and possibly also to different kind of personal problems.

1.4 Stress

The work of a media creator, publicist, and journalist brings many stressors, stress genic situations and mental burden. In this chapter we will summarize the knowledge of workload, work psychology and strategies for stress management. Dobrikova, a psychologist who works with the concept of stress as a situational state of an individual, where the external factors go beyond his abilities: *"We are talking about a stress situation only in the case when the level of intensity of a stress genic situation is greater than the ability or opportunity to handle this situation. This is generally called above-limit, thus overburden"* (2007, p. 6). Dobrikova, in this case, outlined the link between stress and burden. Indeed it can be argued that these two are synonyms – we have taken the word stress from the English *"stress"*, this is also confirmed by the expert on work psychology Stikar (Stikar *et al*, 2003) – he defines burden as a disagreement between two systems (internal and external).

Inner harmony is essential for psychological well-being of an individual, as confirmed by Ruiselova: "Integrated personality, in which different personality characteristics create a relatively harmonious whole, is the idea that, in most psychological theories, is associated with the concepts of mental health and subjective well-being." (Ruiselova et al, 2006, p.9). In this case, however, Ruiselova adds, that achieving a personal integrity is a lifelong process and "Insignificant share of it also have the self-regulation processes that connect adequately goals with individual options. With this in mind, they take into account the cognitive, emotional and motivational characteristics, as well as the social aspects of personal maturity" (Ruiselova et al, 2006, p.9). Specifically mentioned characteristics are, in principle, predictors that determine the ability to use positive strategies of coping with stress.

1.5 Burden of a media creator

The media creator's profession is mainly dominated by psychological stress. Dobrikova (2007) talks about work overload, time pressure and stress from responsibility. In this case, all three are included in the working process of a media creator. Workload, as the number of hours worked and work demands on the individual, time pressure, as an effort to have actual information, and finally the stress from responsibility. In this case, we can also speak of the executives in the media; however, the accountability factor is manifested in a different, more personal sphere in this case. A communicator is tied to the recipients by responsibility. He must create the message responsibly; otherwise he exposes the public to the risk of misinformation. In the more personal area, it is about own responsibility and self-image in front of the recipients. Media creator is trying to get some recognition and success, to build his own name and career. This is aptly completed by Stikar, according to whom a mental burden "arises from requirements to information processing that are laying claims on such mental processes, particularly such as attention, memory, imagination, thinking and decision-making" (Stikar et al, 2003, p. 74). Mental burden or more precisely psychological stress is so well demonstrably present phenomenon in the profession of a media creator. It has negative effects on his balance and psychological well-being.

1.6 Coping and strategies

Coping strategies are part of an extensive system of coping, which contains positive, negative, active and passive styles and aspects of response to burden. The structure of coping was already postulated by Prystav (Ruiselova *et al*, 2006, p. 11), by allocating four basic concepts: coping processes, coping skills, coping patterns and coping resources. In this case we understand processes as specific ongoing activities, abilities as personality

traits and we perceive resources as specific personal prerequisites (among which are creativity and its potential). Roskies and Lazarus (In Ruiselova *et al*, 2006) divide resources to internal (psychological prerequisites, skills, health) and external (social support and understanding of a partner). Important for us are coping patterns. These include strategies and styles that an individual uses in managing stress. In general, strategies for coping with stress can be divided dualistically – into positive and negative, active and passive, adaptive and non-adaptive.

Distinguishing between adaptive and non-adaptive strategies is also used by Dobrikova (2007):

Adaptive strategies

- a) Behavioral use resources mitigating the severity and urgency of the problem: relaxation training, exercise, physical activity, medications, finding social support;
- b) Cognitive analysis of the situation, reducing the importance of the problem (underestimating);
- c) Distractionist enjoyable activities that help to relieve you from burden;

Non-adaptive strategies

- a) Rumination closing oneself inwardly, perseveration / screening oneself, suffering, without attempts to change the situation;
- b) Avoidant strategy in the context of drunkenness, gambling, attacking others.

We have also worked with similar strategies in the questionnaire used during the examination.

The use of positive and negative strategies depends also on cognitive flexibility. This is a direct part of the above mentioned cognitive skills, which postulated Brecka and are mentioned in the contribution above. As reported by psychologist Jurčová in her research: "Lower cognitive flexibility (rigidity) and a little creative imagination of adolescents is associated with greater anxiety, vigilance, as well as self-control and consistency, which may thus translate into strict compliance with the rules, cautious, inflexible interpersonal behavior, greater inaccessibility and rigidity in social contacts. "(Jurčová, 2000, p. 85). All of these characteristics result in the usage of the negative coping strategies. On the other hand, based on the fact that media professionals work with the formation of intellectual content, continues a well renowned Slovak psychologist Damian Kovac (2010). In fact, author argues that there is an evidence of a positive function of creative abilities of individuals that are translated into positive work-organizational activities. Moreover, in terms of personality, media creators are due to the presence of flexible cognitive skills more able to use positive strategies for coping with stress.

2. Definition of the research problem

We have identified the presentation of the use of positive and negative coping strategies in the profession of a media creator as the research problem. Solving of the problem is justified as a psychological introspective into one of the most important psychological traits of a media creator – the ability to manage stress. Generally, these results can be beneficial not only for academic and educational communities, but also the human resources managers and for leaders of creative teams.

After defining the problem, we have set the intention to prove or disprove hypotheses:

- Media creator usually uses negative coping strategies
- Women are more resistant to stress, and therefore they use more positive and less negative strategies.¹⁾

3. Methodology

We have used the questionnaire as a quantitative method in the realization of the research. We distributed the questionnaire *Strategies of coping with stress* to probands. We processed the numerical data from the questionnaires in the program Microsoft Office Excel and in the statistics program SPSS. Statistics method of descriptive, frequencial and comparative analysis was used. The results were furthermore extrapolated into charts, graphs and interpreted verbally.

Distribution, procession, evaluation and interpretation of results were carried out under the supervision of an expert from the psychology field. The questionnaire was distributed personally in amount of 105 with a 95% return of 100 questionnaires. As the sampling method we used the choice of participants based on availability.

Strategies of coping with stress

Strategies of coping with stress were measured by a standardized questionnaire entitled Strategies of coping with stress, further referred to as SCS. Positive and negative strategies are consequently interpreted according to authors Janke and Erdmann (2003, p. 13-14) as follows:

After processing the questionnaire, the results appear in 13 +2 categories:

POS positive strategies

- 1. *Underestimation* when talking to others, the subject gives the stress a lower level of stress, reduces its severity, underestimates own reactions, or evaluates them favorably
- 2. *Guilt denial* stresses that it is not its responsibility for the burden; it is characterized as a defensive strategy, one of the strategies of re-evaluation and devaluation
- 3. *Deviation* a trend of moving away from the stress situation, reversing of the burden, induce mental states mitigating stress, positive self-enforcing strategies and neutral strategies (work), but also negative
- 4. *Alternative satisfaction* turnover to affirmative actions and/or situations, focus on positive emotions, self-support by external rewards (buy something)
- 5. *Control of situation* to analyze, plan and control a situation, constructive efforts with the aim to control and troubleshooting
- 6. *Control of reactions* keep a check of own responses, not to let show excitement nor freeze
- 7. *Positive self-instruction* attribute a competence, ability to control, encouragement, internal appeals and suggestion of not giving

1) The hypothesis is linked to the phenomenon of media feminization

Rarely occurring strategies

- 1. *Need for social support* make contact with other people, get support during the burden in the form of a piece of advice, conversation, concrete assistance, may be a sign of passive helplessness, but also an active solutions seeking
- 2. *Avoidance* a tendency to avoid stress in advance, avoid confrontation, attempt not to end up in similar situation

NEG Negative strategies

- 1. *Escape tendency* a tendency to escape with resignation and get out, inability to cope with stress, inability to relax, self-pity, and the fact of not addressing the burden, but intensifying stress
- 2. *Perseveration* inability to mentally move away, long-term projection, fear, metaphysics, extends the burden
- 3. *Resignation* to give up, feeling of helplessness, hopelessness, gives up the efforts to overcome the burden
- 4. Self-blame and attributing the load to own erroneous action, depression

At the end, the authors add two final categories as the total average of positive and negative strategies.

Each proband reached own resulting values, but given the nature of the questionnaire, an individual's score cannot be objectively evaluated. The questionnaire SCS does not have a categorization of below average, average or above average. In its results we are looking for the difference between groups.

4. Results

65 women and 35 men participated in the research, clearly showing the feminization trend in media.

Use of positive strategies

As we show in Figure 2 the average use of positive strategies to cope with stress in the whole sample obtained after processing the data from the questionnaire SCS.



Figure 2 Use of positive strategies to cope with stress

Among the positive strategies, the sample significantly used the control of situation. Above-average values were also achieved by control of reactions and positive self-instruction. It is a sign that the sample prefers grip and control of the situation, either by controlling the situation or controlling themselves.

Use of negative strategies

Furthermore, in Figure 3 we show negative strategies and tendencies to use them in the sample.

The use of negative strategies

Figure 3 Use of negative strategies to cope with stress

We see in Figure 3 that the choice of negative strategies varies significantly. Resignation tendencies in probands's cases are very low, but problem with the use of perseveration appears, i.e. deliberate projection of the situation.

The established hypothesis is confirmed in Figure 4. After comparing the averages (13.9 positive, negative 10.41) we would get the same, or more precisely, a similar result. The hypothesis was not confirmed and a media creator mainly uses positive coping strategies.

Figure 4 Comparison of use of positive and negative strategies to cope with stress



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Coping in the case of women and men

We developed a t-test from the results of the SCS questionnaire, in which we differentiate the tendency to use coping strategies in case of women and men. We extrapolated the results of the t-test and we wrote the values into the tables. We first start with positive strategies in Table 1, showing then visually in Figure 5.

| | Women | | М | en | | | |
|---------------------------|---------|-----------------------|---------|-----------------------|--------|-------|--|
| POS | Average | Statistical deviation | Average | Statistical deviation | t | Sig | |
| Underestimation | 11,9231 | 4,06320 | 13,2857 | 4,16266 | -1,586 | 0,116 | |
| Guilt denial | 12,2308 | 3,69446 | 11,7143 | 4,04803 | 0,645 | 0,521 | |
| Deviation | 13,3077 | 3,53519 | 13,9143 | 4,27972 | -0,759 | 0,449 | |
| Alternative satisfaction | 13,4769 | 4,54872 | 10,8571 | 5,50477 | 2,549* | 0,012 | |
| Control of situation | 15,7846 | 4,17018 | 16,6000 | 4,16003 | -0,933 | 0,353 | |
| Control of reactions | 15,0000 | 3,36805 | 15,7429 | 4,06812 | -0,977 | 0,331 | |
| Positive self-instruction | 15,0615 | 4,34409 | 15,6286 | 4,14506 | -0,632 | 0,529 | |
| POZ average | 13,8462 | 2,23069 | 14,0000 | 2,80755 | -0,300 | 0,765 | |

Table 1 Positive strategies according to gender

t - coefficient of Student's T-test for two independent choices

* statistical significance, p < 0.05

Figure 5 Positive strategies according to gender



It is statistically confirmed, that women use replacement satisfaction strategy significantly more. In this case, we are even talking about statistical significance and we see it also in Figure 5. In case of men, we see a tendency to use the strategy of undervaluation more than in case of women, but in this case it is not statistically confirmed, only by 88.4% level of significance level approaching to statistical significance (95%).

We continue with the result of t-test rare coping strategies in Table 2, and Figure 6.

| | Women | | M | en | | |
|--------------------------------|---------|-----------------------|---------|-----------------------|--------|-------|
| Rarely occurring strategies | Average | Statistical deviation | Average | Statistical deviation | t | Sig |
| Need for social support | 15,8154 | 5,25266 | 12,6000 | 5,34790 | 2,901* | 0,005 |
| Avoidance | 14,7692 | 4,59881 | 15,9429 | 4,73375 | -1,205 | 0,231 |

Table 2 Rare strategies according to gender

- t coefficient of Student's T-test for two independent choices
- * statistical significance, p < 0.05

Figure 6 Rare strategies according to gender



In Table 2, we see the difference between the use of strategy "Need for social support." Women incline more frequently to this coping strategy, even statistic significantly often, which can be seen in the Table and Figure. In the case of men, we see only 76.9% significance level of the tendency to avoid stress. We continue with negative strategies in Table 3 and Figure 7.

| | Women | | M | en | | | |
|-----------------|---------|-----------------------|---------|-----------------------|-------------|-------|--|
| NEG | Average | Statistical deviation | Average | Statistical deviation | Coefficient | Sig | |
| Escape tendency | 10,1538 | 4,42377 | 10,6286 | 4,60234 | -,505 | 0,615 | |
| Perseveration | 13,9077 | 5,21633 | 11,2857 | 5,61810 | 2,334* | 0,022 | |
| Resignation | 8,1538 | 4,58677 | 6,9714 | 4,38906 | 1,248 | 0,215 | |
| Self-blame | 9,7385 | 3,86198 | 10,2000 | 4,05695 | -,560 | 0,577 | |
| NEG average | 10,6769 | 3,53159 | 9,9143 | 3,67321 | 1,016 | 0,312 | |

t - coefficient of Student's T-test for two independent choices





Women with statistically confirmed significance tend to negatively deal with burden by perseveration. We also see the 78.5% significance (approaching the 95% threshold), under which we consider that women have a higher tendency to resign when it comes to burden situation.

The following additional strategies develop previously mentioned ways of dealing with stress. Bias branches out to Burden avert and the States of stress mitigation. Control of the situation branches out to Analysis of the current situation, Planning measures and Active intervention into the situation. Positive self-instruction consists of Positive attitudes and ideas and of tendency to Endure, not to give up. Lastly, the negative Self-accusation differentiates to Possibility of own guilt and Remorse towards one-self. We show them in Table 4 and Figure 8.

| | | Women | | Men | | | |
|------------------------------|-----------------------------------|---------|-----------------------|---------|-----------------------|--------|-------|
| | | Average | Statistical deviation | Average | Statistical deviation | t | Sig |
| Deviation | Diversion of burden | 6,9231 | 2,17448 | 7,1714 | 2,60639 | -,508 | 0,613 |
| | Stress modification | 6,3846 | 2,16284 | 6,7429 | 2,30527 | -,772 | 0,442 |
| Control of situation | Analysis of actual situation | 5,4615 | 1,64009 | 6,1143 | 1,54865 | -1,935 | 0,056 |
| | Planning of actions | 5,1385 | 1,82754 | 5,3429 | 1,45406 | -,571 | 0,569 |
| | Active approach in situation | 5,1846 | 1,61915 | 5,1429 | 1,89648 | ,116 | 0,908 |
| Positive self-instruction | Positive attitude and thinking | 7,8000 | 2,33987 | 8,1429 | 2,18474 | -,715 | 0,476 |
| | Do not give up | 7,2615 | 2,75725 | 7,4857 | 2,36856 | -,407 | 0,685 |
| Self-blame | The possibility of own blame | 4,6615 | 2,45126 | 4,9714 | 2,71689 | -,580 | 0,563 |
| | Self-blame | 5,0769 | 2,08647 | 5,2286 | 1,95667 | -,354 | 0,724 |

Table 4 Additional strategies and their specification

t - coefficient of Student's T-test for two independent choices





Men have almost statistically confirmed tendency to positively solve burden by analyzing the situation. The results, in this case, amounted to 94.31 % significance level, which means a difference approaching statistical significance. For other complementary strategies, we have not found any significant relationship, nor statistically confirmed differentiation. In the Figure, we see that the values of men and women are approaching, for some coping strategies they are almost identical, and thus their use them in the same way.

When analyzing coping with stress we noticed a number of positive strategies used by male gender. Women, on the other hand, resorted to negative resignation strategies. This fact is of particular interest because we believe in the existing process of the feminization of the media. This is also argued by Brecka: *"Today, in the structure of Slovak journalist, there is almost 60 % of women"* (Brecka, 2005, p. 305). Also, in our pool, the representation of women went up to 65 %. In this case, the hypothesis was not confirmed and it cannot be said that women handle stress better than men. It seems to be a rather opposite trend, in favor of men. The hypothesis is thus not confirmed.

Conclusion

Job of a media creator in any medium is challenging, in particular, mentally. A creative employee (editor, moderator, graphic, etc.) is exposed to increased amount of stress and burden. Excessive workload, number of hours worked, pieces of information to process, demands of work on brain operations, constant creative activity, emphasis on current information and the consequent urgency – it all only increases stress, which a worker in the media goes through. It is, therefore, necessary to devote time to examination of ways of stress avoidance. To theoretical knowledge in this area, we have added our own research. We have realized it on future media creators, who are in the last stages of development – thus future graduates. By assumption, these students should be ready to work in the media, by now. We therefore investigated their potential of coping with stress. Our assumption that a media creator tends to negative strategies, was not confirmed. He rather selects positive strategies. This may result from an integrated creative personality and present creativity that brings a variety of psychological factors acting on better stress management.

The assumption that women (although there are more of them in the media) manage stress better, was not confirmed either. Men rather tended to positive strategies. Negative strategies can be seen more in case of women.

The psychological preparation for dealing with stress in the profession of a media creator should not only be further examined, but should also become a subject of pedagogic activity. Knowledge and skills of a media creator are at least as important as the way he can cope with burden.

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The Crisis Intervention Team (Cit) Model for Law Enforcement: Creative Considerations for Enhancing University Campus Police Response to Mental Health Crisis

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Abstract

Purpose of the article American university and college campus law enforcement, like their peers in American munipal law enforcement agencies, find themselves interacting frequently with civilians experiencing mental health disturbances. An innovative model for law enforcement, the Crisis Intervention Team (CIT) model, has been developed to address the difficulties law enforcement professionals and civilians in mental health crisis face during encounters. (Margolis & Shtull, 2012) This article explores how CIT can enhance police response to mental health crisis on the college campus. Methodology/methods Methods of applied research were conducted, borrowing from a benchmarking model and including interviews with multiple key informants representing law enforcement and mental health. Informants were affiliated with three universities and multiple municipal jurisdictions in Virginia, USA. Scientific goal The goal was to assess the relevance of CIT on the college campus and explore creative approaches to enhancing campus police response to mental health crisis. Findings The results supported the scholarly literature regarding the efficacy of the CIT model. Creative adaptations to the CIT model for campus possibly can be implemented to address concerns of mental health crisis on campus. **Conclusions** CIT is a highly innovative model requiring extensive collaboration between law enforcement, mental health agencies, and mental health advocates. As standard qualitative research was not conducted, the sample size of key informants may not have reached saturation. However, findings from the interviews support the body of literature on CIT. The implementation of CIT on the college campus could possibly help to alleviate difficulties on campus arising from mental health crisis, including reducing inappropriate arrest or disciplinary action, improving campus safety, addressing concerns related to threat assessment and management, and enhancing collaborative efforts on campus and with resources in the broader community.

Keywords: campus law enforcement, campus mental health, campus police, crisis intervention teams, mental health crisis, peer support specialist, threat assessment and management

JEL Classification: 118, 119, 123

Introduction

In recent decades the United States has faced important societal and policy changes regarding the management and care of those suffering from mental illness. Since the middle of the twentieth century, the United States has experienced the deinstitutionalization movement, increasingly stringent civil commitment procedures, and a deteriorating mental health system. It has been argued that this has lead to the shifting of the locus of management of mental health-related concerns from the health care system towards the criminal justice system and the prison industry. (Balassone, 2011; Bloom, 2010; Lurigio, 2000; Munetz & Griffin, 2006; Navasky, 2005) Furthermore, attention has been focused on encounters between persons in psychiatric distress and law enforcement professionals in part as a result of concerns regarding potentially inappropriate arrests, (Hafemeister, Garner & Bath, 2012) and in part regarding difficulties experienced by both law enforcement professionals and the distressed civilians they interact with. (Gur, 2010; Lurigio, 2010; Reuland, 2004)

At the same time, mental health related concerns have been increasing on university and college campuses. (Flatt, 2013; Margolis & Shtull, 2012) The challenges of Americans in psychiatric distress in the general population as well as municipal law enforcement professionals who interact with such individuals have relevance to the university campus setting. Yet, the university environment is unique and therefore requires special consideration when considering interactions between university-affiliated individuals and law enforcement. (Margolis & Shtull, 2012)

1.1 The Incarceration Crisis of the Mentally Ill

Currently we are seeing the acceleration of the use of law enforcement, the criminal justice system, and the prison industry to police and manage a significant portion of Americans with psychiatric illness. This has become a concern not only for those with mental illness, their families and advocates; but also for mental health and public health professionals, law and bioethics professionals, and leadership within the American prison industry, the criminal justice system, and law enforcement. (Hafemeister et al., 2012; Lurigio, 2000; Lurigio & Watson, 2010; Navasky, 2005) Increasingly, the voices of leaders within these fields almost unanimously agree that the locus of American management of mental health concerns has shifted. The ideals of mental health outpatient treatment and social services for the mentally ill within the community have been replaced by the policing of the mentally ill, particularly those with serious mental illness, to the criminal justice system and prison industry. (Hafemeister et al., 2012; Honberg & Gruttadaro, 2005; Navasky, 2005) The US Bureau of Justice reported that over half of all adult inmates report having a "mental health problem" that describes symptoms of mental illness. (James & Glaze, 2006). Unfortunately, prisons and jails are unequipped to manage mental illness and often provide an environment that exacerbates both the mental and physical health of mentally ill inmates. (Balassone, 2011; Human Rights Watch, 2003; Martinez, 2010; Navasky, 2005)
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While incarcerated, the mentally ill inmate is at increased risk for violence and mistreatment at the hands of other inmates and prison staff. (Hafemeister et al., 2012) Inmates with mental illness have significantly increased rates of victimization by sexual assault while incarcerated. (Beck, 2013) Although by federal law inmates have a constitutional right to health care access, in practice health care for inmates is inadequate. This is especially true for mentally ill inmates, who are often denied many forms of psychotherapy and have limited access to psychotropic medications. (Wallace, 2012) Suicide is a leading cause of death in American jails and prisons, with most suicides occurring within the first week of incarceration. (Noonan, 2010) The disproportionate number of inmates in American jails and prisons with mental illness, which far exceeds the proportion of mentally ill individuals who have criminogenic psychopathology, has been linked in part to increased arrest rates of individuals experiencing mental illness. (Lurigio & Watson, 2010; Margolis & Shtull, 2012)

1.2 Concerns Specific to Law Enforcement Interactions with Civilians in Crisis

Individuals and organizations from a diverse range of disciplines have raised concerns regarding the ability of law enforcement professionals to appropriately manage interactions with civilians in psychiatric distress. From the perspective of those involved in mental health treatment and advocacy, arrests of individuals with mental illness are of serious concern. The National Alliance on Mental Illness (NAMI) reports that of all Americans with serious mental illness (defined as limited to diagnoses of the schizophrenic and schizoaffective spectrums, bipolar disorder, and major depression), 44% of these Americans have been arrested sometime in their lives. (Hall, Graf, Fitzpatrick, Lane & Birkel, 2003) This does not include persons with mental illness not identified as "serious mental illness", such as trauma, personality, and anxiety disorders. There is also discussion of insensitive and aggressive police interventions that lead to the escalation of the psychiatric crisis as well as to injuries and deaths to both law enforcement professionals and civilians. (Kerr, Morabito & Watson, 2010)

From the perspective of law enforcement, many frustrations have been expressed. Currently, about 10% of all calls to law enforcement involve a mental health concern in middle and large population jurisdictions. (Teplin & Pruett, 1992; Cordner, 2006) These calls are often resource-intensive, especially in regards to the excessive time required for law enforcement to resolve these calls. (Deane, Steadman, Borum, Veysey, & Morrisey, 1999) As American society has increasingly relied on law enforcement to manage situations involving mental illness, the law enforcement professional has found him/herself thrust into the role of social service provider, or "street-corner psychiatrist". (Teplin & Pruett, 1992) Difficulties in working with America's troubled mental health system to refer civilians in distress to services have fueled a sense of frustration (Cooper, McLearen, & Zapf, 2004) and may incentivize law enforcement to arrest such individuals. (Margolis & Shtull, 2012)

For law enforcement professionals, mental health calls are perceived as especially dangerous. (Cordner, 2006; Federal Bureau of Investigation, 2005; Ruiz & Miller, 2004) Qualitative studies reveal that many law enforcement professionals have a lack of subjective confidence in their skills to interact with the psychiatrically distressed civilian, a lack of knowledge of mental health issues, and stigmatizing attitudes towards mental illness. (Canada, Angell, Watson, 2012; Ruiz & Miller, 2004) Law enforcement also is

concerned with the potential for injuries and deaths that occur during these encounters, which has on occasion lead to civil litigation against law enforcement agencies. (Federal Bureau of Investigation, 2005; Lurigio & Watson, 2010)

1.3 The College Campus

On college and university campuses, mental health concerns present unique challenges. The rate of mental health crisis on campus has been increasing throughout the nation. (Castillo & Schwartz, 2013; Flatt, 2013; Kadison, R., 2006) Three aspects of the university student body contribute to this phenomenon. Many psychiatric disorders often first manifest in late adolescence and early adulthood, thus impacting the student body disproportionately from the general public due to the high percentage of students in this age group. Secondly, advances in psychiatric treatment have enabled more individuals with mental illness to matriculate into college and university programs and to pursue careers in academia. (Erdur-Baker, Aberson, Barrow, & Draper, 2006) Finally, veterans from the Iraq and Afghanistan conflicts are matriculating into higher education in increasing numbers. (Vacchi, 2012) These veterans have significantly increased rates of Post-Traumatic Stress Disorder (PTSD) and Traumatic Brain Injury (TBI) as a result of their experiences during active-duty military service. (Tanielian & Jaycox, 2008)

For the student body, suicidality and substance abuse figure prominently. Young adult college students have lower rates of suicide than their cohort in the general population. (Shadick & Akhter, 2014) However, suicide is currently the second leading cause of death in American college and university students. (NAMI on Campus, 2012) Substance abuse can exacerbate underlying psychiatric conditions and can lead, in itself, to a psychiatric and non-psychiatric health crisis. (Duckworth & Freedman, 2013). Evidence-based research has demonstrated a positive causal relationship between the presence of comorbid psychiatric and substance abuse disorders and violence perpetration. (Soyka, 2000) Sexual assault is also a significant problem on college campus, with 20-25% of college and university female students experiencing sexual assault at some point during their time as undergraduate students. (Krebs, Lindquist, Warner, Fisher, & Martin, 2009a; Krebs et al., 2009b) The crisis of sexual assault on American campuses has become so problematic that it has prompted presidential action. (Obama, 2014) With military sexual assault prominent in the ranks of American military forces, veterans returning to campus may have trauma associated with rape in addition to combat-associated trauma. (Bell & Reardon, 2011) Furthermore, with the deterioration of mental health services in the broader community, campus law enforcement also have found themselves responding to mental health calls that do not involve an affiliated campus member, but rather a member of the surrounding community that has come onto the college campus. (Margolis & Shtull, 2012)

As a result of mass shootings on college campuses by students or former students, crisis management and threat assessment teams have been implemented on campuses throughout the nation. (Keller, Hughes, & Hertz, 2010) In particular, The Virginia Tech mass shooting murder tragedy of 2007 prompted institutions of higher learning throughout the United States to pursue creative approaches to address future threats of campus violence. (Nolan, Dinse, & McAndrew, 2014) Campus crisis management teams, also known as threat assessment and management teams, are multidisciplinary and involve the participation of campus law enforcement. (Pollard, Nolan, & Deisinger, 2012) Although the correlation between the overwhelming majority of psychiatric diagnoses and outwardly directed violence is low (Lipson, Turner, & Kasper, 2010), mass shootings

have created for universities and colleges a strong priority to address and intervene in possible threats. (Pollard et al., 2012; Keller & Hughes, 2010)

Threat assessment and management teams address a broad array of outwardly directed violence. This includes not only intervening to prevent a potential campus shooting, but also to intervene in domestic and dating violence, sexual assault, and terrorism. Threat assessment and management teams also assess and work with, or monitor, campus-affiliated individuals who pose a risk for suicide, but who don't necessarily present a risk of outwardly directed violence. (Anonymous campus threat assessment and management police detective, personal communication, May 4, 2014)

The most common form of mass murder in the United States, defined as the murder of at least four victims in a specified short amount of time, is more associated with male-on-female intimate partner violence as opposed to mental illness. "Family annihilators", a subset of mass murderers who commit suicide after the murders, constitute about a third of domestic violence related mass murders. Family annihilators often have depression coupled with indicators consistent with pathological narcissism, but not necessarily Narcissistic Personality Disorder per se. (Campbell, 2008) As mass murders involving non-familial members such as campus shootings are fairly rare, research into the profile of this category of mass murderers is somewhat limited. Generally speaking, these mass murderers do not have mania or formal thought disorders such as schizophrenia. Although depression may be a complicating factor in the profile of the campus mass murderer, the mass murderer appears to be more motivated to commit his crime due to core personality disturbances that are largely explained from the discipline of psychoanalysis. He may have psychological indicators consistent with paranoia and/or pathological narcissism. Outside of, possibly, Antisocial Personality Disorder, generally speaking most other personality disorders do not appear to correlate with an increased risk of perpetration of campus mass murder. Although the non-familial mass murderer may have an increased risk for depression, depression alone in itself does not appear to increase the risk of becoming a mass murderer. (Ferguson, Coulson, & Barnett, 2011; Knoll, 2013; Meloy, Hempe, Mohandie, Shiva & Gray, 2001) Other factors must be present to present a risk. (Anonymous threat assessment psychologist, personal communication, April 15, 2014; Ferguson et al., 2011; Knoll, 2013) Unfortunately, due to the high level of media attention to non-domestic violence related mass murders, coupled with irresponsible media coverage reporting a strong link between mental illness in general and mass murderers, the public has been misled to believe that the mass murderer is often afflicted with "serious" mental illness, such as schizophrenia or bipolar disorder. (Barry, 2013)

1.4 The Crisis Intervention Team Model for Law Enforcement

There are a number of creative strategies that target law enforcement agencies to improve their ability to serve civilians with mental illness. Strategies include mental health professional/law enforcement collaborative teams and mobile crisis teams. One particularly innovative strategy is the Crisis Intervention Team (CIT) model, which has received more attention by both research scientists and policy makers than the other two strategies. (Gur, 2010; Margolis & Shtull, 2012; Morabito, Watson, & Draine, 2013) Although CIT does not meet the criteria for being considered an evidence-based practice, sufficiently positive research results have qualified it as a best practice for law enforcement by a number of criminal justice, law enforcement, and mental health organizations. (Watson & Fulambarker, 2012; Jines, n.d.)

The CIT model was first implemented in Memphis, Tennessee in response to the tragic fatal shooting of a suicidal civilian by law enforcement. Since its first implementation in 1988, this model has been adopted in jurisdictions throughout the nation. (University of Memphis CIT Center, n.d.c) The CIT model has been endorsed by local and state policy in a number of jurisdictions and receives support at the national level from both governmental and non-governmental organizations (University of Memphis CIT Center, n.d.c) The CIT model targets law enforcement professionals in order to empower them to safely and effectively handle encounters with the civilian exhibiting signs of mental illness. (University of Memphis CIT Center, n.d.d) Currently over 2000 local programs and 325 regional programs in the United States have adopted this model to some degree. (University of Memphis CIT center, n.d.c) CIT has also been implemented by a number of university and college campus police departments. (Margolis & Shtull, 2012) Often this is established through the mentorship of the municipal law enforcement agency in the city or county that the university is located in. (NAMI Central Virginia Chapter presentation, 2013)

2. Health Theories/Models that Support the Implementation of Crisis Intervention Teams

A number of health theories and models can be applied to the problems that the CIT model addresses. Social Determinants of Health, the Social Ecological Model of Health, and the Sequential Intercept Model have direct relevance to the public health concerns surrounding high arrest and incarceration rates of the mentally ill, as well as officer and civilian safety.

2.1 The Theory of Social Determinants of Health

The World Health Organization and the Centers for Disease Control and Prevention have adopted the model of social determinants of health in order to understand how social issues impact public health. This allows for policy and intervention on a broad range of public health issues. (Centers for Disease Control and Prevention, 2014; World Health Organization, 2008) As will be explained, the intersection of law enforcement and mental health crisis can be understood through this framework.

Social determinants of health are those factors that impact health outcomes, such as mortality and morbidity, and are not directly explained by pathophysiology. (Marmot & Wilkinson, 2006; Bradley & Taylor, 2013) Determinants can be categorized into eight clusters. Clusters are labeled accordingly: food and agriculture, employment, housing, water and sanitation, health care services, education, work environment, and living and working conditions. (Marmot & Wilkinson, 2006) The inappropriate arrest, prosecution, and incarceration of those with mental illness profoundly and adversely impact all eight categories of determinants, directly or indirectly.

Social exclusion is an important factor, and can result from a variety of circumstances, from minority status to income status. Because there is great stigma against mental illness, people with mental illness are socially excluded on a global scale. (World Health Organization, 2002) Stigma impacts not only the high incarceration of the mentally ill in the United States, but also the mentally ill person's ability to obtain education, employment, social networking, and health care access. (Cummings, Lucas, & Druss, 2013)

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The presence of mental illness can on occasion impair a person's parenting ability. Parental mental illness presents legal barriers to custody or visitation in family courts. (Hollingsworth, Swick, & Choi, 2013) Because of stigma within American family court systems, sometimes children are removed from a mentally ill parent's custody regardless of whether symptoms of the mental illness are adequately controlled. (Marsh, 2009) Obviously, incarcerated parents are separated from their children. Single mother households may be especially be impacted, given the higher rate of mental illness for American female inmates with in comparison to American male inmates. While estimates for serious mental illness among incarcerated adult men stand at about 14.5%, for incarcerated adult women it is at 31%. (Hafemeister et al., 2012) The Bureau of Justice reports that 73-75% female inmates have significant symptoms of mental illness in general, which is a higher rate than for male inmates. (James & Glaze, 2006) In the juvenile incarcerated population, the gender disparity is also reflected, as mental illness in general is estimated at about 66% for boys and 74% of girls. (Telpin, Abram, McClelland, Dulcan & Mericle, 2002) Parental incarceration can severely disrupt the emotional well being of children, and can cause prolonged separation post-incarceration due to legal custody barriers even when parents do not have mental illness. (Midley, 2013; Abramowicz, 2013) Thus, incarceration of the mentally ill parent can possibly have more profoundly devastating consequences for children, even if psychiatric symptoms in the parent are being managed effectively or become stabilized, through prolonged separation from the parent. Social exclusion as a result of incarceration and adverse conditions of other social determinants of health, therefore, can have profound effect for parents with mental illness, particularly single mothers, and their children.

Besides the impact of stressful circumstances such as incarceration or other social aspects (such as unemployment or discrimination) on the mental and physical health of the mentally ill, incarceration and obtaining a criminal record can have lifelong consequences. In the framework of the model of social determinants of health, this can increase a mentally ill person's risk for morbidity and mortality on a broad range of health conditions. (Marmot & Wilkinson, 2006) Once the mentally ill defendant is on parole or probation, he or she is often not able to meet the conditions of his or her parole. This is because most jurisdictions do not take into account the challenges mental illness presents for parolees, and require compliance with inappropriate measures. As a result, mentally ill parolees find themselves re-arrested at higher rates than their non-mentally ill cohort members. (Gur, 2010; Hafemeister et al., 2012; Navasky, 2005) Incarceration disrupts the mentally ill person's social and insurance benefits, such as Medicaid and Medicare. (Koyanagi, n.d.) Upon release from incarceration, the mentally ill parolee may find that he or she may no longer be eligible for a broad range of services, including mental health services, depending on the nature of the crimes he or she has been convicted of. (Kovanagi, n.d.; Yoon & Bruckner, 2009) A criminal record decreases employment opportunities and may bar entrance into certain professions. Ironically, the mentally ill parolee may find him or herself imprisoned again because of the inability to meet the employment condition of his or her probation agreement. (Hafemeister et al., 2012; Navasky, 2005)

Likewise, the law enforcement professional's perceived sense of dangerousness regarding mental illness and lack of skills to interact effectively with civilians in crisis can possibly affect officer health. These factors can lead to an increased risk of force in encounters, which in turn increases the risk of physical injury or death to officers. (Kerr et al., 2010) Psychological stress has been directly linked to higher rates of mortality and

morbidity in many health conditions; thus, officers who are unable to appropriately interact with the mentally ill individual may, as a result of stress, have increased health concerns in general. (Marmot &Wilkinson, 2006)

The inappropriate prosecution and incarceration of the mentally ill affects social determinants of health for the entire macroscopic community. Incarceration is financially costlier than services such as housing and health care, including substance abuse treatment. (Gur, 2010; McVay, Schiraldi, & Ziedenberg, 2004) The economic welfare of a population directly impacts health indicators. (Bradley & Taylor, 2013; Marmot & Wilkinson, 2006) Undo economic stressors, therefore, negatively impact every member of society.

The model of social determinants of health incorporates a diverse range of social concerns. Racial prejudice, gender bias, and the social exclusion of the economically disadvantaged all can impact the mentally ill individual and his/her family. Likewise, adverse life circumstances, such as traumatic experiences, are quite profound influences on human health. (Marmot & Wilkinson, 2006; Shim et al., 2014) Given the impact of difficult interactions between mentally ill civilians and police as well as unnecessary incarceration of the mentally ill on both microscopic and macroscopic public health concerns, it is of utmost importance to address these concerns in all sectors of American life, including the university setting.

2.2 The Social Ecological Model of Health

The social ecological model of health addresses health on both the microscopic and macroscopic levels. Five levels are identified in society. These include a person's individual health risks, such as genetic predisposition to medical conditions and individual health behaviors. Interaction between the individual and his or her social support network, neighborhood, and community are also incorporated into the model. Finally, broad macroscopic concerns can influence public policy at a national level that impacts the health of individuals and communities. (Bronfenbrenner, 1979; Ruderman, 2013)

The interaction between law enforcement and the civilian in psychiatric distress touches upon all five levels. Macroscopically, policy can be implemented to address these concerns. The endorsement of the crisis intervention team model in Virginia state legislation is one such example. (Va. Code Ann §9.1-187-§9.1-190, 2009) On a more microscopic or practical/clinical level, the Crisis Intervention Team model addresses the health of individuals with mental illness, their families, and law enforcement professionals. The CIT training, through incorporating presentations of persons with lived experience of mental illness and family members, sensitizes officers to these concerns. Creative approaches to de-escalation techniques in the CIT model protect both officer and civilian from the adverse health outcomes of difficult interactions that may result in increased psychological stress, injury or death. Furthermore the CIT model, as a jail diversion method, may positively impact those with mental illness and their families by reducing arrests in this population. (Skeem & Bibeau, 2008)

2.3 The Sequential Intercept Model

The Sequential Intercept Model was specifically designed to address incarceration of those with mental illness. Five intercepts are identified during the incarceration process that can be addressed with jail diversion methods. For instance, one intercept is identified after arrest, and alternative courts such as mental health courts can target this intercept for jail diversion. The CIT model intervenes at the first intercept: pre-arrest jail diversion. All professionals involved with CIT are familiar with this model, and the importance of CIT in addressing pre-arrest jail diversion. (Munetz & Griffin, 2006)

3. Identifying Best Practices of the CIT Model

Identification of best practices of the CIT model through applied research was aided with a modified methodology from the benchmarking model as outlined by Robert D'Amelio in his book, "The Basics of Benchmarking". (D'Amelio, 1995) Using select tools as described in the benchmarking process, information regarding a university campus that does not implement CIT was collected. This included interviews with two campus non-CIT trained law enforcement professionals, one campus detective with some CIT training, and one university-affiliated psychologist. The psychologist and the detective are members of the threat assessment and management team.

Data collection on the best practices of CIT involved extensive research into the literature of CIT. Further exploration into the efficacy of the CIT program in obtaining its stated objectives was accessed through a review of the scholarly literature. Key informants were identified and interviewed. This included interviews with two law enforcement professionals of high rank employed with universities that have implemented the CIT model. Two mental health professionals on CIT municipal teams were also interviewed. A peer support specialist with a municipal CIT program (that includes in its jurisdiction a university) was interviewed. Furthermore, one NAMI-affiliated advocate who serves as a presenter in the CIT training and one university student activist were interviewed. The student activist serves at a high level of rank and involvement with the university's Active Minds chapter. (Active Minds is a national mental health awareness university student organization.) This student activist attends a university that has not implemented CIT. Key informants volunteer in mental health advocacy or are employed in positions that directly involve the management of mental health crisis from a law enforcement perspective, and represent three Virginian universities as well as a number of Virginian municipal jurisdictions. Among this sample, all interviews with law enforcement professionals as well as the peer support specialist were audiotaped after obtaining consent. In total, all interviews with law enforcement professionals in the entire sample, both professionals in police departments that had implemented CIT and those departments that had not, were audiotaped with consent, with the exception of the campus detective, who declined consent for audiotape.

3.1 CIT: Identified Best Practices

The Memphis CIT model, which serves as the prototype for all other CIT models nationally, has two stated objectives: pre-arrest jail diversion of individuals with mental illness to mental health services, and enhanced officer and civilian safety. (Dupont, Cochran, & Pillsbury, 2007) The Virginia CIT coalition includes eleven additional objectives. These additional goals include decreased response time for law enforcement involving mental health calls and decreased stigma of mental illness in the law enforcement professional culture. (Virginia CIT Coalition, n.d.)

One core element of all CIT models requires that a certain percentage of patrol officers are CIT trained so as to be able to cover all areas of the jurisdiction at all times. The Memphis model states that at least 25% of a police force should be trained for this

purpose; scholars in the field have suggested this percentage should be set at a higher level for rural areas and jurisdictions with smaller police forces. The Memphis model maintains that CIT training should be voluntary and officers wishing to be CIT-trained be adequately screened. (Dupont et al., 2007) However, some American jurisdictions have opted to mandate training to all officers in their law enforcement agencies. (Margolis & Shtull, 2012) In Virginia, many jurisdictions have aimed to have 100% of the force trained. Rationale for this is that as not all police calls can be accurately identified as a mental health call. Since all police may encounter persons exhibiting mental illness in their general duties, this necessitates the need for all police officers to have CIT training. (NAMI Central Virginia, 2013) In one Virginian jurisdiction, the responsiveness of police officers to the CIT program was very high. This incentivized increased officer participation in training. (Anonymous campus law enforcement professional, personal communication, May 9, 2014) Such enthusiasm among police officers is reflected in a recent study from Chicago. (Morabito et al., 2013)

3.2 Efficacy of the CIT Model

The research to date on the efficacy of CIT programs in municipal jurisdictions is limited but promising. Currently there are few scholarly articles specifically addressing CIT programs on college and university campuses. (Margolis & Shtull, 2012) Scholarly literature yields that the most positive results of CIT programs involve decreased stigma of mental illness in the law enforcement professional culture; (Browning, Van Hasselt, Tucker, & Vecchi, 2011; Demir, Broussard, Goulding, & Compton, 2009) subjective increased confidence on the part of patrol officers in their ability to appropriately manage interactions with civilians exhibiting mental illness and/or substance abuse; (Ritter, Teller, Munetz & Bonfine, 2010) decreased use of force and subsequent injuries to officers; (Skeem & Bibeau, 2008; Von Hemert, 2012) decreased time for law enforcement to resolve a mental health call; (Department of Criminal Justice Services and Department of Behavioral Health and Developmental Services, 2011) and enhanced referrals to mental health services in the community for civilians. (Department of Criminal Justice Services and Department of Behavioral Health and Developmental Services, 2011) There is less evidence to support that CIT is successful in obtaining its jail diversion objective; however, a number of studies have indicated that jail diversion through decreased arrests are occurring as a result of CIT implementation in a number of jurisdictions. (Franz & Borum, 2011; Von Hemert, 2012; Watson et al., 2010)

4. Best Practices of the Prototypal CIT odel

All CIT programs are based on the Memphis model. (University of Memphis CIT, n.d.e) This model requires a number of practices that can be creatively enhanced in local jurisdictions to fit the needs of local populations. (Reuland, Draper, & Nortion, 2010)

4.1 Early and Sustained Collaboration with Stakeholders

The CIT model requires that police agencies collaborate closely with key stakeholders in a sustained manner from the beginning of the planning stage. Of utmost importance is collaboration with the local mental health system. A memorandum of understanding ideally must be established between the police agency and a health facility that can treat mental health crisis, such as a hospital. This single point of entry facility must adopt a no-refusal policy. The facility must also adopt police-friendly policies, such as decreasing the time an officer needs to stay with the civilian at the facility. In some jurisdictions, hospital emergency rooms may implement a "crisis assessment center" specifically for persons brought to the hospital by CIT law enforcement officers. Early and sustained collaboration with other stakeholders, particularly mental health advocacy organizations, is also crucial. NAMI has been particularly active on national, state, and local levels in this collaboration, and has also contributed to funding for CIT programs. Mental Health America is another national advocacy organization that serves as a key stakeholder. Governmental agencies such as state and federal criminal justice agencies, as well as the Substance Abuse and Mental Health Services Administration (SAMHSA), have been involved in advocating for policy regarding CIT and providing funding. Local advocacy groups also are included as key stakeholders for CIT implementation. (Dupont et al., 2007) (Virginia CIT coalition, n.d.)

4.2 CIT Training

CIT training must be offered to patrol officers and dispatchers. For patrol officers, the training requires 40 hours conducted within a week. The officers must be educated in didactic classes on psychiatric diagnoses, signs, and symptoms as well as psychiatric crises and substance abuse. In the training, officers are challenged regarding their views and attitudes towards mental illness. This is specifically designed to help destignatize mental illness, and to debunk popular myths surrounding mental illness. Psychiatric concerns related to veterans are taught. Site visits to local mental health services as well as presentations by community members living with mental illness and their families are included. Finally, de-escalation methods are taught to the officers through role-play simulating a diverse variety of situations that the officer may encounter with a psychiatrically distressed civilian. Included in role-play are situations requiring advanced police techniques. These scenarios simulate incidents involving subjects at risk for suicide by cop and suicide by bridge, as well as situations involving hostages or barricading. (Anonymous CIT professional, personal communication, April 14, 2014; Dupont et al, 2007; Virginia CIT Coalition, n.d.) For dispatchers, it is recommended that they receive 20 hours to better identify mental health calls, appropriately dispatch CIT-trained officers, and to verbally interact with callers in a manner that does not exacerbate the crisis. Cultural diversity is incorporated into the training. (Dupont et al., 2007; Virginia CIT Coalition, n.d.)

The Memphis model recommends refresher courses every two years. Local programs can enhance this basic training with elective subjects, such as working with individuals with developmental or intellectual disability. Elective topics are often tailored to the needs of the jurisdiction's population served. For instance, in a jurisdiction with a large homeless population, the local CIT training can incorporate a more extensive education regarding homelessness. Advanced training for CIT graduates can be offered. These classes often touch on topics not given extensive discussion in the basic 40-hour training, such as Alzheimer's dementia and trauma-informed practice. (Dupont et al., 2007; Virginia CIT Coalition, n.d.)

Great emphasis is placed on how to resolve an incident using the least amount of force necessary, and how to interact with a civilian in crisis in a manner that promotes de-escalation. This includes verbal and nonverbal de-escalation techniques. (Dupont et al., 2007; Virginia CIT Coalition, n.d.) De-escalation techniques require the officer to use a different approach to the civilian in crisis than the approach used when interacting with a criminal suspect. For instance, verbal protocol in introducing oneself to the civilian in

crisis has been standardized to promote a calm and non-confrontative approach. Nonverbal techniques, such as being mindful in regards to avoiding resting one's hand on one's gun, are also taught. Such techniques help to lower resistance from civilians in distress. As preliminary research has linked increased civilian resistance to the use of force and subsequent injuries, de-escalation techniques constitute core skills that aid in enhancing safety and could possibly aid in pre-arrest jail diversion. (Morabito et al., 2012)

One training technique is required participation in "Hearing Disturbing Voices" simulation. The students are given headphones that simulate auditory hallucinations. Towards the end of the simulation, with the headphones still in place, these students are then asked to perform a number of tasks commonly asked by police and mental health professionals. This experience gives students the ability to understand how difficult it could be following commands and answering questions while experiencing auditory hallucinations. (Reuland & Schwartzfeld, 2008) However, research results suggest contradictory impact of auditory hallucination simulations, and caution should be taken when employing this technique. (Ando, S., 2011; Brown, 2010)

5. Additional Identified Potential Best practices of Select Jurisdictions in Virginia

Some jurisdictions have included as stakeholders fire and rescue professionals, who go through the CIT training. These jurisdictions also encourage emergency department nurses and mental health professionals that are involved in crisis intervention to go through the 40-hour training along with the police officers. (Anonymous multiple key informants, personal communication, 2014; NAMI Central Virginia Chapter, 2013) The two university campus police agencies that have implemented the CIT model work closely with university services, including the Dean's office, human resources, and the student counseling services. All three university police agencies surveyed have collaboration with the local municipal law enforcement agencies that the university is located in, including implementation of mutual benefit. However, the two universities with CIT implementation appear to have enhanced collaboration with other university services. This is despite the fact that the university that does not have CIT implementation has collaboration between university counseling and campus police for psychiatric crisis.

5.1 The Role of the Peer Support Specialist

Peer support specialists are mental health paraprofessionals who have lived personal experience with mental illness and/or substance abuse. This profession has grown from the peer recovery movement, and requires specialized training for peer support specialists, as well as certification in many states. For candidates of peer support specialist training, usually a high school degree is required in addition to lived experience with mental illness and/or substance abuse. Peer support specialists most commonly work with people who are not in crisis but are experiencing significant mental health and/or substance abuse challenges. Research into the efficacy of the peer support specialist role in these settings has been positive, and demonstrates that peer recovery in general and peer support specialists in particular have a significantly positive impact in the recovery of individuals from mental illness and/or substance abuse. (Pitt et al., 2013; Salzer, Katz, Kidwell, Federici, & Ward-Colasante, 2009)

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Recently, peer support specialists are beginning to be employed for psychiatric crisis situations. There is at least one jurisdiction in Virginia that employ a peer support specialist as part of the CIT team. These peer specialists are employed through the local public mental health services and often serve in the hospital emergency department setting. In crisis settings, they support both persons in crisis as well as family members who are present. They are part of the mental health team in the emergency room, and collaborate strongly with emergency room staff and other mental health professionals. As members of the mental health team, they interact with and collaborate strongly with officers who take persons in crisis to the emergency room. (Anonymous peer support specialist, personal communication, April 30, 2014; NAMI Central Virginia Chapter, 2013) The peer support specialist interviewed also presents regularly in the CIT training. This can aid in reducing stigma against mental illness among officers, as well as offsetting frustration officers can feel when they interact with individuals in crisis. Officers, through the presentation of the peer support specialist, are then exposed to a person who has had a significant psychiatric history, including psychiatric crisis and a history of psychiatric hospitalization, who has achieved recovery. As officers often have exposure to mental illness only in the context of a mentally ill person being actively symptomatic or in crisis, this helps officers to understand that recovery is possible even in individuals with serious mental illness.

6. Discussion: Considerations for Enhanced Police Response to Psychiatric Crisis on College Campuses

6.1 Jail Diversion

The university environment differs somewhat from municipal settings because of its unique nature. The university environment encourages diversity and openness of expression for faculty and students alike. Increased collaboration among campus services for students and employees are often more prominent than within the non-college community environment. (Margolis & Shtull, 2012) On the surface, such characteristics may appear to deter campus police from making arrests of campus-affiliated individuals exhibiting signs of mental illness and/or substance abuse.

Although standard qualitative research was not conducted, interviews of law enforcement personnel revealed different attitudes regarding arrest or referral to university disciplinary procedures of individuals who are presenting in psychiatric crisis. As part of the interview for law enforcement professionals, two vignettes were explained and responses were audio recorded (with the exception of the campus detective, who declined to be audiotaped,) after receiving consent. The first vignette involved a possible low-level misdemeanor charge. The example given described a student experiencing his first psychotic break. The student believes there are cameras in the walls of his dorm room that are spying on him, so he punches holes in the walls. This technically could lead to a misdemeanor charge of vandalism. Non-CIT professionals indicated that this situation would result in diversion to the university's judicial review, and that this diversion would be initiated by the campus police. CIT professionals responded that no arrests would occur and no disciplinary action would be initiated by law enforcement; and that they would defer to the University Dean regarding disciplinary action.

The second vignette involved a situation that, without mental illness as a factor, would constitute a violent felony crime. An acutely manic student is agitated, and during

the course of police intervention, the student hits a police officer. Non-CIT officers indicated that an arrest would be made in this situation. As one non-CIT trained law enforcement professional put it, "If it's a crime, then we will arrest."

CIT officers, however, had a different attitude. An arrest in this situation would generally speaking not result in an arrest if the assault were perceived as the result of psychiatric disturbance. As CIT training improves the officer's ability to discern if such an act is the result of criminal intent or the result of psychiatric disturbance, this may be a strong variable explaining this phenomenon.

The CIT approach is demonstrated in this interview with one campus law enforcement professional:

We don't want to punish kids for something that they're going through at the time whether it is [substance abuse] or whether its too many classes or whether its just any kind of...influence or something that's going on with them, we don't want to throw them in jail for it, we want to help them in anyway possible. So that's why I really like the CIT program because... we're not arresting people just because they're acting, you know, inappropriately and when someone thinks its trespassing, drunk in public. I had an incident where a kid [university student] was walking in the middle of the roadway and a taxi cab driver called in and said he's drunk, he needs to be arrested. The first officer that showed up, he was not CIT trained, but that was my sector so I was there. So I was the one taking the call. The officer says lets just DIP [charge him with drunk in public] him and lets go ... so I started talking to the kid and come to find out that he was standing in the middle of the road because he wanted a car to run him over, he wanted to die, because he was failing...He was not accepted into a fraternity because he was different, so he was medicating himself with alcohol, wanted to die. I talked to him; I got him to go to the hospital voluntarily and once again he straightened up and was able to graduate, and I didn't arrest him for drunk in public. He didn't need that. Could I have? Sure, he was drunk in public. But that wouldn't have helped him. He would have slept it off in the hospital or in the jail, he woke up the next day just as depressed as he was when he went in...I have tons of these stories of these students, they're breaking the law, that's not what they need [arrest and criminal prosecution].

This law enforcement professional further elaborated on his opinion the importance of jail diversion:

And that's some of the things I, as trained prior to CIT, I was working at [a state psychiatric hospital], I would see these people with these dumb charges...There was a guy who was in the hospital; he was NGRI [not guilty by reason of insanity], but he was arrested for trespassing because he had broken into a army recruiting office and was waiting on them to come in because he wanted to be in the military so bad, but, and he could just not rationalize the fact that he broke the law. He was that much thinking about joining the military. And so the local jurisdiction arrested this poor guy, and you know he went to jail for no reason, and he's sitting in there without his medications. He was mistreated by other inmates. He was just delayed his...everything when he could have just been [taken to the hospital by police] and you know, started the process without all the charges; with his medication, without being mistreated, and we would never had to pay for it and send him to jail.

Although the research regarding the CIT objective of jail diversion is more limited and less promising than the research regarding other CIT objectives, the interviews confirmed formal qualitative studies that demonstrate the ability of CIT to positively impact police attitudes towards jail diversion when not actively confronted with a crisis. Such perspectives could have an important influence on how officers perceive the appropriateness not only of arrest, but how officers communicate the need for criminal justice intervention to a prosecuting attorney. In the university setting, enhanced understanding of how mental illness and/or substance abuse contribute to socially aberrant behavior can enable campus police to better communicate cases that may require intervention through the university's disciplinary review or threat assessment and management team.

6.2 Trauma-Informed Practice

The CIT model, as discussed above, addresses the unique experiences of military veteran survivors of combat that could lead to the development of PTSD. CIT training gives special attention to veterans related issues. However, after surveying CIT training schedules and the scholarly literature, non-combat trauma concerns were noticeably absent from the didactic component. Interviews with CIT-trained informants confirmed the relative lack of attention to trauma in the non-military population, and one informant felt that there needed to be more emphasis on non-combat related trauma.

The Substance Abuse and Mental Health Services Administration has identified trauma-informed intervention as a best practice. Mental health crisis in itself can have traumatizing effects. One best practice identified by SAMHSA in regards to professionals who work with individuals in psychiatric crisis relates to trauma-informed concerns. This practice acknowledges that individuals in crisis may have a trauma history, and that the crisis itself can cause both physical and psychological trauma. Professionals are urged to take this into consideration when interacting with persons in crisis, and to incorporate trauma-informed interventions during the crisis as well as once the situation has been stabilized. (SAMHSA, 2009). Police and mental health professional interventions that inadvertently cause distress to the civilian in crisis may impact recovery and impart in the civilian wariness of first responder professionals, including police officers and emergency room or mental health professionals. Given the high rate of non-combat related traumatic experiences in the general psychiatric population, (Muskett, 2014; O'hare, & Sherrer, 2013) incorporating trauma-informed practice for both health professionals and law enforcement professionals could improve outcomes in mental health crisis interventions.

6.3 The Peer Support Specialist

The peer support specialist can be an asset in the university environment given the unique nature of the university student population. Peers are typically involved when a student is experiencing psychiatric crisis. As a result, the student organization Active Minds has implemented a program for lay students to better learn how to help peers in psychiatric crisis, particularly if it involves suicidal ideation. These students who receive this instruction are designated as "gatekeepers". (Active Minds, n.d.)

Although currently peer support specialist training and certification does not require a college degree, a peer support specialist who has gone through the college experience could provide enhanced response to university-affiliated members with mental illness, whether in acute crisis or not. The combination of peer recovery/support training with lived experience regarding mental illness/substance abuse poises the peer support specialist to be able to enhance mental health interventions, possibly including in the crisis setting. A peer support specialist who has had a college experience, or receives training regarding the college experience, could possibly present an important creative intervention for mental health issues on campus.

6.4 Enhanced Collaboration with Student Organization Stakeholders

As noted above, a crucial aspect in the successful implementation of the CIT model requires early and sustained collaboration with mental health advocacy groups. For the university setting, the implementation of a CIT model could possibly be enhanced by collaborating with student organizations. These groups ideally would not be limited to mental health awareness and advocacy groups, such as Active Minds, although such organizations would be particularly important in stakeholder involvement. Other student organizations that address subjects such as substance abuse, domestic violence, and student/employee veterans also could have important contributions to make.

6.5 Threat Assessment and Management on Campus

The objectives of the CIT model and threat assessment/management teams are different. However, CIT implementation on campuses could possibly have a positive impact on the objectives of threat assessment and management teams. Because CIT training sensitizes law enforcement professionals to mental health concerns, CIT-trained officers have been shown in the literature to have a better understanding of the true nature of outwardly-directed violence or dangerousness associated with mental illness. This can enable campus police to more accurately identify the possibility of an individual in crisis requiring assessment and intervention by the threat assessment and management team. Conversely, CIT could also enable police to help rule out concerns of a risk for outwardly-directed violence in an individual in crisis. The literature reveals many ethical, legal, and privacy concerns regarding threat assessment and management teams. (Eells & Rockland-Miller, 2011; Ferguson et al., 2011; Stuart, 2012) By empowering campus police to appropriately determine if an individual presents as a subject of concern for threat assessment, police can possibly have an impact on these ethical concerns. Furthermore, because CIT incorporates advanced techniques including hostage taking and barricading, CIT training may be particularly relevant in the event of an actual outwardly-direct violence crisis.

One of the key informants, a CIT-trained campus law enforcement professional, indicated that the threat assessment and management team at his university currently does not have a CIT-trained law enforcement representative. He suggested that a representative from the university's CIT law enforcement professionals be included on the threat assessment and management team. He felt that this could enhance objectives, particularly regarding accurate identification of risk, for threat assessment and management teams. It may be prudent to take this professional's suggestion into account when structuring threat assessment and management teams.

Conclusion

That [university counseling services] and the vet place over there in [the student center]...I seriously think that those two need to get together and talk and possibly come up with a support group...there's nothing here [locally]...why aren't we helping them with a support group for the combat situations they saw, their PTSD, their TBI's? ... Common popularity is, oh my God, he's got PTSD, he's gonna snap and kill everybody. Why, because he's a soldier? No. PTSD is not just a combat-related PTSD. If you've been raped, beat up, you could have a serious car accident...you could end up with PTSD. So why don't we have a support group for these people instead of waiting for something to happen because like, oh yeah, man, that guy's crazy as hell [because] he's over in Iraq, and this girl's crazy because she got raped in high school and she's been crazy ever since. Why does society do that?

The above poignant statement by one of the key informants powerfully sums up so much of what the research literature addresses regarding mental illness. Although the statement specifically addresses PTSD and TBI, the key informant's concerns can easily be applied to everyone experiencing mental health disturbances. The discussion of stigma of those with mental illness as perceived by the general public as "crazy", violent, and dangerous is emphasized as it also is in the scholarly literature and among mental health professional and advocacy disciplines. It also demonstrates concern for the lack of interventions and collaboration among service providers for individuals experiencing mental illness. The key informant expresses the urgency for enhanced collaboration of campus services for campus-affiliated individuals experiencing mental illness. Although generally speaking universities often have extensive collaboration of services as compared to the general public, more work can be done in this area to improve the quality of life on the college campus. As the CIT model requires thorough collaboration of services, the CIT model could improve campus collaboration. As universities already have much collaboration, the campus setting may be primed to more easily incorporate the CIT model.

The CIT model can also enhance collaboration between universities and local community services. Not only would CIT improve collaboration between campus and municipal police departments, but also it could possibly address mental illness that cannot be addressed with university services. In particular, CIT can help to initiate or strengthen ties to local community mental health services. This includes hospital and emergency mental health services, particularly for universities that do not have a hospital health system. It can also give options for students whose mental health concerns go beyond what university counseling services can provide. By connecting with local public and private mental health services, sometimes a student can then be referred to treatment not offered at the university. An example of this would be Dialectical Behavioral Therapy (DBT) access for students with Borderline Personality Disorder and other mental health conditions that can be treated with DBT. (Tene et al., 2011)

The importance of mental health advocacy organizations in the collaborative effort of the CIT model cannot be stressed enough. This has implications for the university campus in relation to student organizations. Collaborations could be improved by not only including student mental health advocacy organizations such as Active Minds, but also student organizations that address veteran, sexual assault, and dating violence concerns. CIT, especially when incorporated with consideration for threat assessment and management teams, can provide the framework for enhanced dialogue, accuracy of cases involving persons of concern for threat assessment, and forge ties among a diverse array of services and organizations that are impacted by psychiatric crisis.

The university population can also be served by incorporating peer-related services and ideas, such as consideration of the peer recovery movement and employment of a peer support specialist. Families of persons with mental illness also can benefit from such activities. NAMI has begun a campus organization, NAMI on Campus, which could be instrumental to helping universities manage psychiatric concerns. (NAMI on Campus, n.d.) As NAMI already has been highly involved in the CIT model from its very inception in Memphis, NAMI could and should be considered in inclusion of university efforts.

Finally, the criminalization of mental illness has had a profoundly tragic impact on the quality of life and health status of literally millions of Americans. Universities and colleges are not immune to this problem. Although the research on CIT's ability to attain its jail diversion objective is somewhat inconclusive, there are many studies demonstrating that this objective may indeed be being met in a number of jurisdictions. The research indicates that, paramount to achievement of this goal, correct implementation of CIT, especially collaboration with the mental health system, is vital. Memorandums of understanding between police departments and health facilities are very important in this endeavor. CIT can also enhance disciplinary procedures on campus. The model can aid in non-punitive intervention targeting individuals who engage in socially aberrant or disruptive behavior due to mental illness, and possibly can help divert such individuals away from formal disciplinary sanctions and into mental health services. This could enhance efficacy of universities to manage such behaviors, not only to reduce incidence of disruptive behaviors, but also to reduce stigma.

Advocating for implementation of CIT in the campus setting does not invalidate the collaborative efforts already in place between university mental health professionals, campus law enforcement, and other university services. Rather, the CIT model is a creative approach that can enhance these collaborative efforts already in place. Currently there appears to be enough scientific and anecdotal evidence to support CIT implementation not only throughout municipal districts, but also the college campus. Even as researchers continue to gather results examining the CIT model's success, CIT has so much to offer the university environment that all universities and colleges have much to gain from this model. For Amerian universities and colleges, CIT can only enhance the academic experience for everyone on campus.

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