THE IMPACT OF THE FINANCIAL CRISIS ON EUROPEAN E-GOVERNMENT DEVELOPMENT

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Abstract: *This paper is assessing the status of e-government development in Europe in comparison with other regions of the world by analyzing evolution trends and making correlations between the financial crisis and the fluctuations registered in the indexes that are measuring e-government development. One of the most important issues addressed in this paper are the disparities registered in e-government development around the world and how the crisis affected more or less different regions.*

Keywords: financial crisis, e-government, development, Europe, indexes, trends, policy, disparities.

JEL Classification: D80, G01, H00, 033.

1. INTRODUCTION

Throughout history, in many cases, new infrastructure brought big changes in the way people interact. The new wave of improvements in ICT (information and communication technologies) opened a new path for governments when interacting with citizens or businesses. This opportunity for the governments to use ICT to support operations is now called e-government.

During this time the public sector went through a reform of its systems in order to meet the needs of the citizens. Spending public money is and will always be a subject of public debate due to the public source of the money, thus better service and result are demanded form officials, together with efficiency, accountability, transparency and trust (Georgescu, 2008).

2. DEFINING E-GOVERNMENT

One of the most common ways of defining a term is by stating what the term is about. European Commission defines e-government as being a provider of better public services to citizens and businesses with the use of the tools provided by ICT (European Commission, 2011). Effective e-

government can take place by rethinking the way organizations are supposed to provide service by re-engineering processes, all leading to delivering services more efficiently.

Starting from the other end, we can get a different perspective by thinking over what governments are supposed to do. World Bank is focusing on technologies that have the power to transform the relations that are taking place between government, citizens and businesses in the sense of enhancing interactions, offering better service delivery, solving management problems and granting access to information (World Bank, 2011). Such technologies are represented by the internet, by mobile technologies or new networks.

Regarding e-government Gartner Group is speaking about process optimization in service delivery, involving citizens in decision making and enhancing governance through technology, internet and media (Gartner Group, 2011).

3. MEASURING E-GOVERNMENT

The status of e-government development can be evaluated using a series of indexes. The UN (United Nations) is measuring the improvements in implementing e-government registered by its 191 member states. While before 2008 UN was calculating an e-government readiness index, this index turned into an e-government development index because nowadays e-government is not in just an emerging state anymore. When calculating the e-government development index, UN takes into account the web measure index, the human capital index and the telecommunication and infrastructure index (United Nations, 2008). These three indexes are taking values from zero to one, zero being the lowest.

The data used in this analysis is from the United Nations reports on e-government development from 2003, 2004, 2005, 2008 and 2010. Firstly, let's get into more details about the indexes that are used to calculate the e-government readiness index.

From 2008, United Nations are using a five stage e-government framework for measuring web presence. These stages are evaluating the e-government presence by categories such as emerging, enhanced, interactive, transactional or networked and a score is received for every stage. Each stage of development has a few characteristics that are used to check whether the level has been reached or not. The resulting index is called the web measure index. For example the emergent state is characterized by an offer of limited and basic information on a web page and maybe a few links to ministries, while

in the transactional level a two-way interaction between government and citizen is taking place with options such as applying for ID cards or passports, pay taxes, fees for postal services, etc.

Measuring the ICT infrastructure of a country is done by the United Nations by measuring six measures, such as the number of TV's, mobile phones, telephone lines, PC's, internet users and online population, all of them averaged per one hundred individuals. The value that results is called the telecommunication infrastructure index (United Nations, 2005).

Assessing the human resource is done using an index that gives one third weight to gross enrollment ratio (primary, secondary and tertiary education) and two thirds to adult literacy. This index is called the human capital index and is an index that evaluates education (United Nations, 2003).

The following table contains the values of these three indexes for Europe during the years 2005 – 2010.

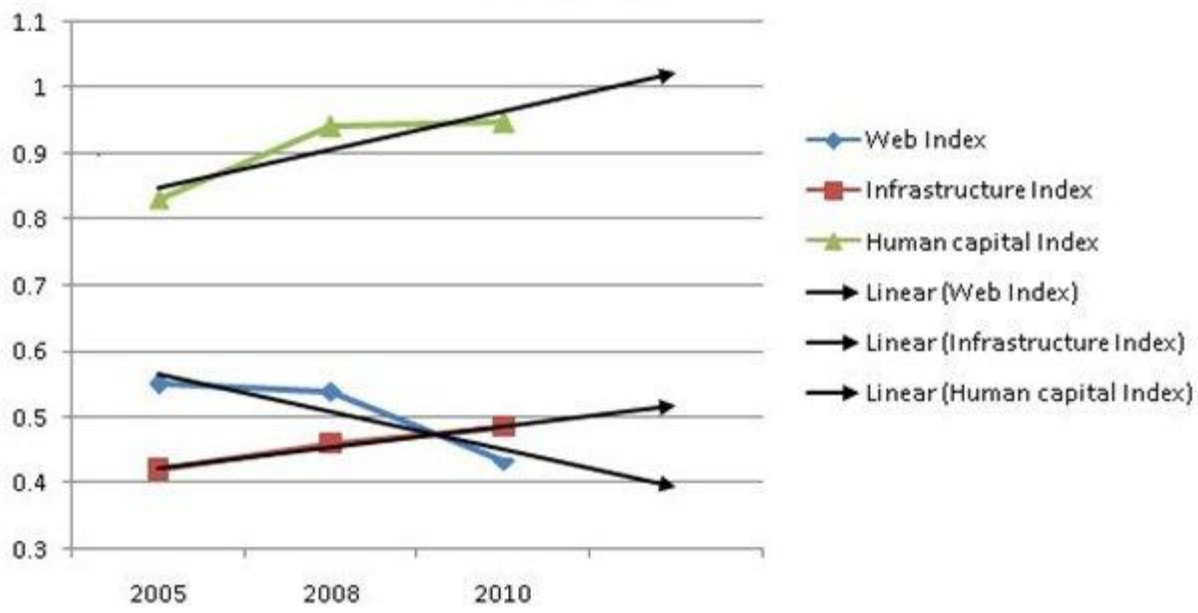
Figure 1 - Index values for Europe

Composition Indexes			
	2005	**2008**	**2010**
Web Index	0.55	0.54	0.44
Infrastructure Index	0.42	0.46	0.48
Human capital Index	0.83	0.94	0.95

Source: United Nations Reports, 2005-2010

As we can see at a first glance, the human capital index has the biggest values. The infrastructure index is registering a slow but constant growth while the web index is falling. We can get a better perspective on the situation from the following chart.

Figure 2 - Index trends in Europe



Source: United Nations Reports, 2005-2010

The most obvious observation is that from 2005 to 2008 the human capital index registered a significant growth of about 15%, with a small drawback after 2008. The right assumption to make in this case is that investments in education were made during the economic crisis. Hence the developed European countries already had high values when measuring the index, the growth comes most probably from less developed countries that are new members of the EU (European Union), countries known to have problems with school enrollment and literacy rate. This might have been caused by the different programs that the EU is running in these countries in order to increase the adult literacy rate and gross enrollment ratio. Also, aligning the policy of new member states with the EU policy, led to a set of reforms that changed the educations system in most east European countries.

Although the years after 2005 were known as a time of economic crisis, the infrastructure index registered growth. As expected for times like that, the growth was small, but constant. In conclusion, the population interest of spending money on mobile phones, computers, TV's or internet did not diminished during the crisis, mainly because these goods are not luxury goods anymore and are seen as basic goods nowadays A good impact on this index was also brought by EU programs in east European countries, with programs in collaboration with local governments. These programs were supposed to bring television and internet to remote places or make them available to a poorer individuals or

enabling them to buy computers with a discounted price. Furthermore, from 2005 to 2010, the mobile phone market evolved in the sense that competition increased between providers, thus their services got cheaper and consequently available to more people.

The effects of the crisis are more obvious in the case of the web development index. From 2005 to 2008 this index had a small drop of 1% out of the total, this telling us that there were very few improvements on this subject during this period. Between 2008 and to 2010, the index registered a fall of 10% out of the total score. This suggests that no major investments were done during this period due to financial reasons. Also, it may be that other regions that might have not been affected so much by the crisis invested more in e-government, thus raising the standards, while Europe was defined by stagnation.

Governments are significant purchasers of IT, their decisions being able to influence the market. Policymakers should develop procurement policies that are neutral with respect to specific technologies or platforms and that allow the governmental decision maker to choose the best alternative in a particular situation based on reasonable, objective criteria.

4. THE BIG PICTURE

At a first glance over e-government development in the whole world, we firstly notice the extremes. The best ratings are registered in Europe and the lowest in Africa. Europe is fairly above world's average due, to some extent, to the benefits of being an early adopter of e-government while Africa lags far behind because of its poor infrastructure. The Americas follow Europe's development closely while Oceania and Asia are in close range to the world's average.

E-government is a topic with many potential implications. There are many factors to be taken into account and some of these factors come with a level of uncertainty, making them issues to be discussed as disadvantages. I consider these factors as being a subject for improvement, weaknesses that can be managed with proper control and sound management. Some of these factors can be the vulnerability to cyber-attacks, lack of privacy due to increased surveillance, a false sense of accountability and transparency because the government would be responsible for checking its own actions, the lack of equality in public access to Internet.

There is also a lot to debate on the subject of early adopters of e-government and how did the financial crisis influenced adoption. Some studies (Shailendra, 2007) show that early adopters are

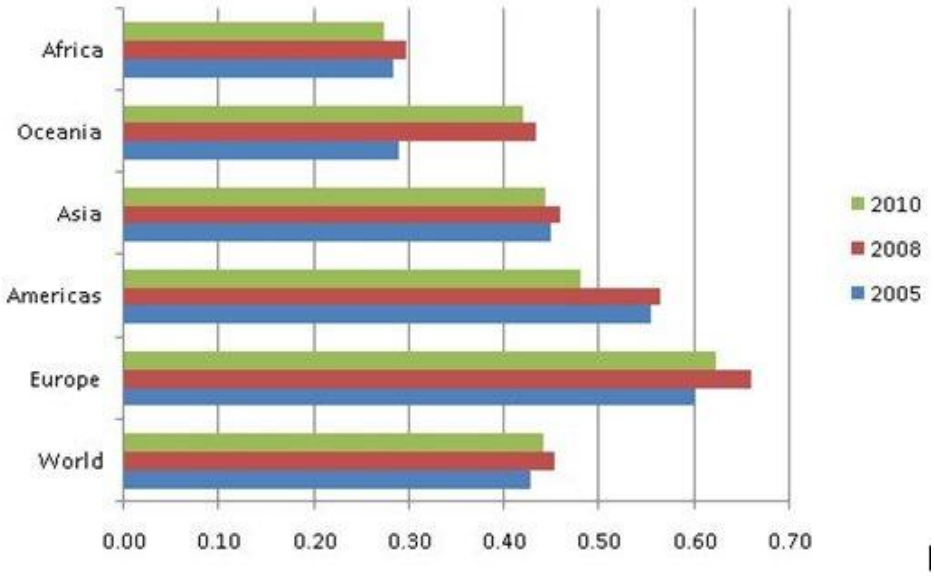
driven by the wish to solve problems, to use technology for improving an already existing process while countries that adopt technology later, are firstly motivated by conformity issues rather than efficiency. In this context, some countries that are later adopters, also affected by the crisis, did not scored good on the web measure index due to lack of quality.

Figure 3 - E-government development index – regional values

E-Government Development Index					
	2003	**2004**	**2005**	**2008**	**2010**
World	0.402	0.413	0.427	0.451	0.441
Europe	0.558	0.587	0.601	0.660	0.623
Americas	0.538	0.549	0.554	0.564	0.479
Asia	0.387	0.400	0.449	0.457	0.442
Oceania	0.351	0.301	0.289	0.434	0.419
Africa	0.246	0.253	0.283	0.296	0.273

Source: UN Reports, 2003-2010

Figure 4 - E-government development index – regional chart



Source: UN Reports, 2003-2010

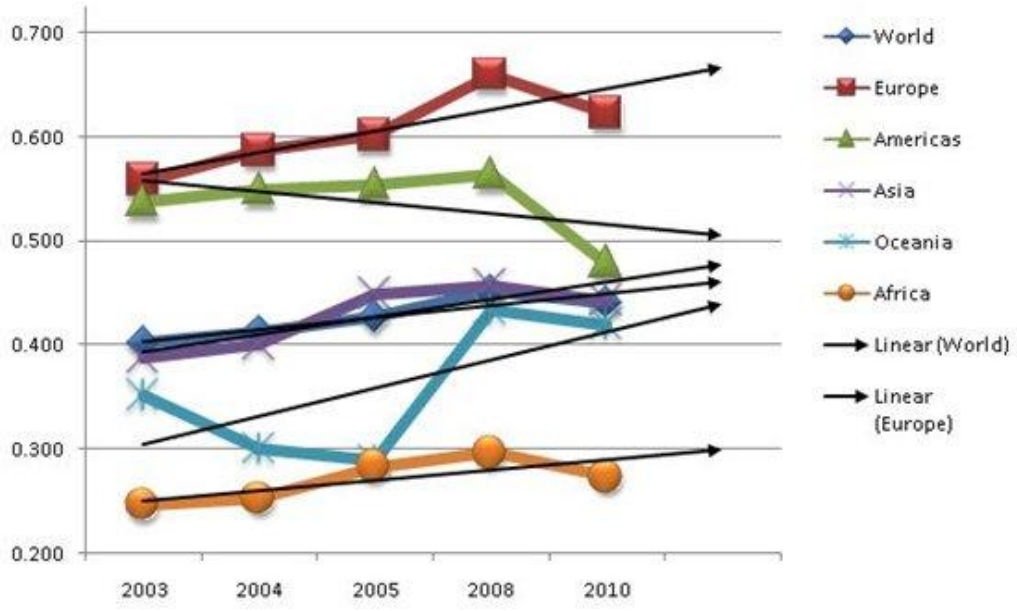
As we can see from the above bar graph, the regions in which e-government was most affected by the crisis are Europe and the Americas, as expected. In these two cases there is a high difference between the values registered in 2008, compared to the ones registered in 2010.

In what concerns e-government, Asia did not had much to suffer from the crisis. Asia's score remained mostly constant, with small variations, and very close to the world's average. This was expected because Asia is a big market for technology and also because the crisis, having American roots, affected more the economy of Europe rather than Asia's.

The crises affected also the EU funds that were granted for e-government research and development. From 2001 to 2006, there were two big projects aimed on e-government development. One of them was COSPA (Consortium for Open Source Software in Public Administration) and the other was FLOSS (Free/Libre and Open Source Software). These projects were aimed to develop methodologies, business models and frameworks for implementing and using open source software in public administration around Europe. Although the projects had many deliverables and successful implementations, there were no other similar projects funded after 2006.

After 2006 there are no significant large projects at a European scale, but there are many local projects that benefit from the knowledge of the ones before them. Some cases worth mentioning are implementations made in Munich, Vienna or Extremadura region from Spain, where local governments leveraged the benefits of open source software to establish a solid e-government environment.

Figure 5 - E-government development index: regional trends



Source: UN Reports, 2003-2010

All European regions excel in the e-government development index and achieve scores above the world average. Western and northern Europe countries perform especially well in e-government development, drawing on the advantages of the well-developed telecommunications infrastructure and high human resources capacity. Many countries in Europe are high-income developed countries, and this advantage in reflected in the chart above. Even so, a decline is registered from 2008 to 2010, decline that can be correlated with the decrease of the web index for that period, but we cannot but notice that this did not affect the ascendant trend of e-government development in Europe.

In comparison with other areas, we see that the loss in the index value registered by Europe was smaller than in the case of the America, thus the crisis had more influence over e-government development in the Americas. While Europe still maintains on an ascendant trend, the financial crisis did put e-government development in the Americas on a descendent trend. Asia ranks very close to the world's average, registering a higher increase than the world average. Africa was and still is the least developed, some effects of the crises can be noticed from 2008, but this region has still a lot to suffer from poor infrastructure and very low score in human development index. Oceania registered the highest increase in e-government development during times of economic crisis, mainly because of a very low level development before 2005 and just achieving online government presence after 2005, boosted its web development index.

CONCLUSIONS

In most developing countries the infrastructure can play a key role in enhancing e-government. There's no secret that a competitive ICT infrastructure comes with high investment costs, thus lack of capital or long term funding are things of high concern for the officials.

Also, the local population can boost the development of e-government by having an influence over the human capital factor. Some papers (Georgescu, 2008) acknowledged the importance of skills and knowledge for establishing and promoting e-government using local work force. This topic can be addressed by long term policies and projects in education and by using the experience of other countries that have already established e-government platforms.

We noticed that there are a series of interconnected factors on which e-government depends. The ones at the foundation seem to be the ICT infrastructure, followed by people having computers, internet access and being educated and computer literate.

Given the actual state of the economy in Europe, e-government depends of a series of key factors that would enable it to reach higher levels of development. One of the factors is human capital, which should be a priority and a framework should exist to ensure education attainment in schools include teaching on ICT use to ensure that future generations are adept with technological advancements. Also, computer penetration rates are a subject for enhancing efforts and have strong potential for further development. Service providers should be able to offer high speed Internet connection at competitive prices. This will help bridge the gap in digital divide.

European countries that cannot afford proprietary software and applications for e-government should strongly consider either to outsource e-government or to use open source software.

Security and ease of use should also be desired and provided with affordable authentication technologies for making online transaction more reliable. Online transactions have to become more attractive to citizens so a good idea for e-government sites would be to provide incentives for users to complete their transactions online.

Last but not least, we have to consider the strengths of the country's ICT infrastructure. Let's take an example from Singapore where the mobile phone market has a penetration rate of 136% (United Nations, 2010) and opened ground for technology specific e-government that it is now called

m-government (mobile). Another type of technology specific e-government is g-government (GIS/GPS applications for e-government).

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