Technology in Society 42 (2015) 104–122

Contents lists available at ScienceDirect

Technology in Society

journal homepage: www.elsevier.com/locate/techsoc

Dependency on un-captured GDP as a source of resilience beyond economic value in countries with advanced ICT infrastructure: Similarities and disparities between Finland and Singapore

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ARTICLE INFO

Article history:
Received 12 January 2015
Received in revised form 27 March 2015
Accepted 17 April 2015
Available online 22 May 2015

Keywords:
Trap in ICT advancement
Finland and Singapore as world ICT leader
Resilience beyond economic value
Un-captured GDP
Growth or happiness

ABSTRACT

The majority of countries with advanced information and communication technology (ICT) infrastructure have been experiencing extended stagnation due to an "embedded" trap in ICT advancement. However, certain countries have been able to sustain a high level of ICT-driven global competitiveness. This suggests that in these contexts there is resilience beyond economic value. Finland and Singapore can be considered countries of resilience with respect to ICT-driven global competitiveness because of their continued GDP growth despite the recession. While both countries share significant similarities including institutional strength in ICT, they demonstrate noteworthy disparities in their development trajectories: Singapore is growth-oriented based on captured GDP while Finland seeks happiness by shifting to un-captured GDP. This contrast can be attributed to their distinct co-evolution with their institutional systems characterized by government/business initiatives in ICT usage for economic efficiency and differences in the new economic index referred to as "happiness seeking". Given the increasing significance of un-captured GDP derived from the dramatic advancement of the Internet, this paper, will use a comparative analysis of ICT-driven development trajectories in six leading countries in the field over the last two decades. This analysis reveals the different option for maintaining economic resilience. A new method for measuring un-captured GDP was developed to assess the consequences and state of un-captured GDP in six countries. Institutional sources leading to this state were analyzed and a source of resilience beyond economic value was conceptualized and articulated.

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1. Introduction

The majority of advanced information and communication technology (ICT) countries have been experiencing extended stagnation ("great stagnation" (Cowen, 2011 [2])) as demonstrated by their low GDP growth from the middle of the first decade of this century which is illustrated in Fig. 1. (See annual growth rate in Appendix 1). Singapore is an exceptional case in this regard.

Part of the stagnation itself can be attributed to a "trap" in ICT advancement[1] derived from the two-faced nature of ICT, that is, while advancement of ICT generally contributes

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[1] Against anticipation, excessive advancement of ICT results in its marginal productivity decline due to its prices decrease derived from its two-faced nature.

http://dx.doi.org/10.1016/j.techsoc.2015.04.003
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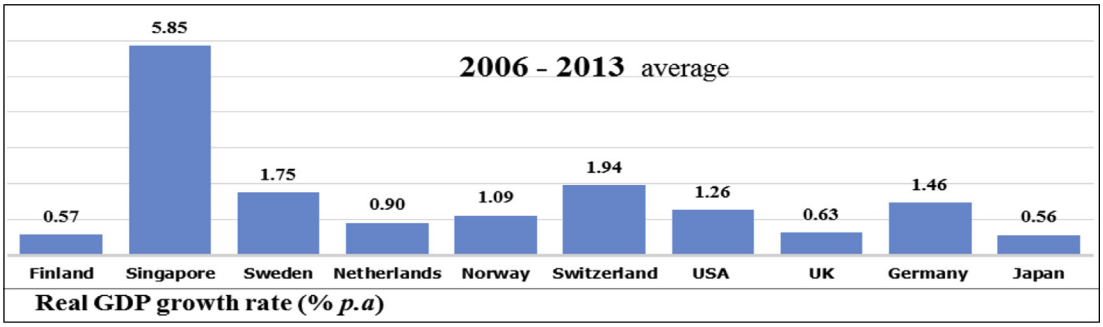

Fig. 1. Stagnation in economic growth in ICT advanced countries (2006–2013).
Source: World Economic Outlook Database (IMF, annual issues) [4].

Table 1
World ICT ranking top 5 countries (2011–2013).

ICT ranking	1	2	3	4	5
2013	Finland (3)	Singapore (2)	Sweden (6)	Netherlands (8)	Norway (11)
2012	Finland (3)	Singapore (2)	Sweden (4)	Netherlands (5)	Norway (11)
2011	Sweden (3)	Singapore (2)	Finland (4)	Denmark (8)	Switzerland (1)

Figures in parenthesis indicate global competitive ranking as tabulated in Table 2.
Sources: The Global Information Technology Report 2012, 2013, 2014 (World Economic Forum (WEF), 2012, 2013, 2014). The Global Competitiveness Report 2011–2012, 2012–2013, 2013–2014 (WEF, 2012, 2013, 2014).

to enhanced prices of technology by new functionality development, the dramatic advancement of the Internet reacts to decreased prices of technology due to its nature of "freebies", "easy copying" and mass standardization (Cowen, 2011 [2], Watanabe et al., 2014*b* [26], 2014*c* [27]).

Contrary to these circumstances, certain countries have been able to sustain a high level of ICT-driven global competitiveness, which suggests their resilience beyond purely economic value. Finland and Singapore can be considered resilient countries with respect to ICT driven global competitiveness as they have been maintaining the top level in the world rankings in ICT and also economic competitiveness as demonstrated in Tables 1 and 2 (WEF, 2014*a* [31], 2014*b* [32]).

Looking at Tables 1 and 2 we note that Finland and Singapore share the world's top ICT position both in 2012 and 2013, and also accomplishing a top global competitiveness position after Switzerland (Yusuf and Nabeshima, 2012 [33], WEF, 2013*a* [29], 2013*b* [30] 2014*a* [31], 2014*b* [32]).

Inspired by these conspicuous accomplishments in ICT-driven competence, Table 3 compares institutional factors governing competence in these ICT advanced six countries.

Table 3 demonstrates the conspicuous accomplishments of Finland and Singapore in global competitiveness, ICT competitiveness, human capital and quality of education with a similar size of population. However, if we look at the table carefully, we note that, in addition to these similarities, there are explicit disparities between the two countries. While Singapore demonstrates excellent economic performance such as a high GDP growth rate, low unemployment ratio and higher income level, and it is one of the advanced ICT countries, it remains far behind the "happiness and welfare" level as characterized by low inequality, high birth rate and happiness ranking[2] compared to Finland which demonstrates the highestlevels in these indicators compared to the other five countries compared.

This disparity reflects a number of factors including consumer behavior in their buying decision process and factors determining consumers choice in these two countries often characterized by the significant effects of national institutional systems (e.g., Hofstede, 1991 [3], Pieters et al., 1995 [16], Watanabe, 2009 [23]). For example, Internet merchants (Jarvenpaa et al., 2000 [8]). Rintamaki et al. (2006 [19]) have unveiled softer aspects of shopping, particularly such that the social dimension is decisive for consumers' shopping decisions in Finland's department stores. There is a similar tendency in Finland in the attitude formation towards online banking (Karjaluoto et al., 2002 [10]) and in factors affecting consumer choice for mobile phones (Karjaluoto et al., 2005 [9]). In contrast to these structures in Finland, Singaporean consumers generally pay attention to more pragmatic dimensions, such as price, content of products, transaction security and vendor quality, as demonstrated by Liao et al. (2001 [11]) in their survey

[2] Happiness ranking compares the degree of happiness in 156 countries taking following 7 factors: Happiness explained by levels of (i) GDP per capita, (ii) social support, (iii) healthy life expectancy, (iv) freedom to make, (v) generosity, (vi) perceptions of corruption, and (vii) influenced by the levels and trends of income inequality within the country and also between countries in the region.

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