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Disruptive competition vs. single standard: The role of riskaverse investors in the decline of the European computer and handset industries

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Disruptive Competition vs. Single Standard

The Role of Risk-Averse Investors in the Decline of the

European Computer and Handset Industries

Paper to be presented at ITS conference in Rio de Janeiro, 2014

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Introduction

This paper starts from the following questions: What are the drivers of success and change in the IT industry, and why has Europe largely failed? The question is asked with a view to PCs, mobiles and services. The question is not asked with regard to car electronics, where Europe is doing well. Since surprises and disruptions are important in the field of IT, as will be sketched below, a second question follows: How can countries provide more space for beneficial disruptions? The findings are based on interviews with representatives of the European and Japanese computer and mobile industries and their investors as well as on a literature review.

Failures in Europe

Europe has witnessed a number of big failures in IT investments. A quick recap shows:

PC with a Graphical User Interface

The first big trigger for the decline of the European IT industry was the decision of the European banks, in particular Swiss banks, not to fund the marketing of the first PC with a graphical user interface, the Swiss *Lilith*, back in 1980, ahead of the introduction of the Macintosh. It was deemed to be too risky to develop large production facilities (Furger 1993). As is well known, US investors funded the *Mac*.

Videotex

Another bad decision was to support videotex (Minitel, BTX, etc.) at a time when the Internet was emerging. At that time it was already apparent that packet-based transmission had led to low prices. Hence powerful modems were made illegal, e.g. in Germany, and more expensive solutions were pursued by European IT companies. This strategy failed.

Mobile-specific data services

Later, the mobile Internet was crippled by investors trying to protect the market for SMS, MMS, WAP, etc. Manufacturers such as Nokia tried to sell cheap phones while more powerful ones with a browser, camera, music recorder, etc. were already gaining attractiveness. Investors were interested

in earning as much money as possible with cheap handsets and as little competition as possible, driven by a fear of "cannibalization" of revenues from SMS, MMS and WAP services (with e.g. a standard price of 1000 €/MB for SMS in Germany; see Weber et al. 2011). The Nokia disaster was not a bad management decision or caused by the US. It was caused by trying to sell simple products to their customers who in turn tried to sell data expensively. This was supported by investors, as our interviews with bankers showed. They failed to be afraid of cannibalization by outsiders, as later showed up with the attractive bundle provided by Apple, consisting among other things of a mandatory flat rate, without any special support for SMS. So Nokia was not undone by a superior device, as the Financial Times wrote on 24 June 2014, but by the widespread industry intention to keep SMS prices as high as possible and earn the related revenue streams as long as possible.

In the end, the European mobile industry system declined due to the success of Apple's approach of selling well-defined services bundled with a flat rate (Weber et al. 2011). It is not that European telecommunication companies would not have been able to invest into mobile Internet-enabled handsets due to auctioning costs; our interviews rather showed that they did not want to. German and Swiss banks definitely played a role in this process, which may have been supported by the non-European owners of the telecommunication companies and manufacturers as well.

Commons

Another disruption, though not a European failure, can be seen in WiFi. While commons was initially believed to be an unimportant niche technology for industrial, scientific and medical applications, it turned out that more bits are transmitted via WiFi than with licensed communications (Rethink Wireless 2013). UMTS has not become the universal service as was hoped.

In summary, one can say that, in the long run, it is not rewarding to invest against superior and/or more economic forms of technology. As a result, Apple has now become a much more valuable company than Ericsson, and the handset business of Siemens and Nokia has essentially disappeared.

Success in Japan copied by Apple

A key factor for the emergence of the iPhone services was technology competition in Japan. Unlike the situation in Europe, operators there were free to design services and choose technologies, including the radio interface. That means that operators were not bound to use an agreed standard technology, but were rather free to choose whatever they believed would become profitable. In this quickly changing cut-throat competition, they were able to identify new services and to invest in the necessary infrastructure ahead of selling them. In this way, the services offered by the iPhone, i.e. the mobile Internet, mobile music, mobile applications, flat rates, etc., were brought to market be-tween 1999 and 2004, years ahead of the introduction of the iPhone, in Japan (Weber et al. 2011). These innovations were not based on fundamental research, but to a large degree on a recombination of existing knowledge, enhanced by people who felt the market pressure.

Note that some operators in Japan would also have preferred a single standard, but there were others who thought that cheap competition is good (PHS), and yet others from the US insisted on getting access to the Japanese market (first Motorola, later Qualcomm), so these players increased competition at every level. In the sense of Hayek and Schumpeter, Japan was dominated by creative destruction as a discovery process.

As became visible at a JRC-IPTS-sponsored conference in 2011, unlike Nokia, Apple did not have any significant research expenditures (Hervas 2011) and did not need to, as it essentially bundled Japanese services with a new user interface.

Lessons

In parallel, the European investors, who preferred to earn money by reducing technological competition, lost ground. Initially, Nokia even refused to implement T9 (Tsuchiyama, pers. comm.). They did not develop the skills to implement new services, such as a cheap, non-cellular PHS-like service to compete with cellular services. Rather, PHS-like services were politically blocked by the competing GSM investors.

This shows that the slow process of improvement in a single standard regime did not lead to long-run success, as hoped for by risk-averse investors. An example of this is the sale of Nokia's handset business, once a flagship of European industry, to Microsoft.

Reducing competition and the lack of ability to specify, implement and market new services on the operator side significantly contributed to the decline. The competition in the European telecommunications industry contrasts with the competition in, e.g., the European car industry, which does very well in the race with the Japanese industry. Here, no single standards are pursued; rather a plethora of technologies is used for, e.g., propelling cars or for fitting them with luxury in open, global competition.

With the current trend towards using a single global standard in licensed communications (W-CDMA, LTE etc.) and more and more broadcast content moving into IP networks, one might believe that history is over, in the sense that no more disruptions or new types of services will appear. One might think that only marginal increases of Internet-using services will be seen, such as the Internet of Things, car-to-car communications, etc.

Given the difficult situation in Europe as described above, marginal progress, such as improving radio interfaces (5G PPP), will have limited effect. One must expect that, in Schumpeter's sense, new disruptive innovations might emerge. Due to the nature of competition in capitalism, these are not known ex ante. As a policy maker, investor, or normal human being one can conclude, however, that if somebody finds another disruption, those using or selling it could become the winners in terms of revenue, lower costs or jobs. This in turn means that providing for space for disruptive innovation could be rewarding.

Way forward

In this section, the consequences are grouped as follows: first for investors, second for policy makers in general and third for European policy makers in particular.

Options for investors

Search and allow for disruptions

If a country is lagging behind the global leaders, e.g. US and South Korea, it might not be enough to copy them (as advised by Desruelle, Stančík 2014). One might rather have to think out of the box and look for new concepts. It is possible that the history of using the spectrum is over, but this is not certain, so it might be possible to identify future disruptions.

Apple's success shows that disruptions such as cannibalising the traditional telecommunication data pricing model can lead to huge profits. As a consequence, investors could think about new types of creative disruption. Most likely any new service or device would need wireless connectivity; one can imagine various services, using broadcast, cellular or commons. New applications could emerge, such as disaster relief services, smart grid services, and in particular those which are unthought-of.

Investors should therefore require a spectrum policy which allows for experimentation and generous spectrum masks (like WAPECS or better), and ask for a plan for large areas of use in order to make economies of scale possible, e.g. an ITU region, not a single country. Also, competition on every level should be encouraged. For instance, the digital dividend spectrum could be provided to competing companies or to new entrants, which then might choose to invest in different radio interfaces, services, or devices. As risky as this may be for some, the market would find the winners. As commons is used for more than 50% of wireless traffic, having more commons could lead to more competitive economies (for a proposal for "super-WiFi" up to the radio horizon, see Elsner, Weber 2014). In the latter case, profitability might come with hardware production, and, of course, with the users.

Long-run orientation

Nokia might have survived if the company had invested early in superior services, much like KDDI did around 2003, instead of supporting the model to price data like water in the desert. Since it was widely assumed at the time that this type of pricing might collapse at some point in the future, acknowledging this fairly openly among employees and investors would have consequently led to a search for products which are more consumer-friendly. Some plan B together with a spectrum license holder would have helped. In turn, the spectrum holder would ideally have had to be large, with e.g. 100 million customers.

According to some views, both Apple and Samsung also profited from long-run investor orientation (discussion of Bouwman paper at ITS Brussels conference about Chaebol), in contrast to e.g. Nokia. The latter became rather arrogant (Bouwman 2014), talked as if it had invented major Apple services (Ormala 2011), was not afraid of disruptions, and thus only paid lip-service to the importance of disruptions by having read Christensen (1997), but no more.

Develop skills for providing venture capital

European banks are heavily engaged in the European telecommunications business, as well as in lending to Southern European governments. Both fields may have appeared to offer safe bets. What might be needed is therefore greater skill in funding new businesses. It has been argued that funds provided to start-up companies are far too small (Saffari 2014). It appears that European investors are able to develop skills to judge investments, e.g. in the automotive sector. Unlike in telecommunications, there is competition in this sector on almost every level, i.e. there are no agreements on the type of fuel, tyres or anything, and leading European companies are very well able to compete with leading Japanese ones. So the skills are available, even in Europe, but need to be employed in areas beyond successful ones such as car production.

Global policy options

The above boils down to supportive spectrum regulation, allowing e.g. for experiments, technology competition, and commons.

Governments could also create a market for highly secure phones by for example setting security standards and developing a migration path, reacting to the apparent fact that secret services such as the NSA undermined existing computers. This path is explored in the paper "Protecting confidentiali-ty - Regulation as a tool for securing computing environments", to be presented at the ITS conference in Rio de Janeiro (Weber 2014). In this way, governments could create a new market.

EU policy options

Analyse the disaster

First, the failure of the single-standard approach should be investigated in detail. We got hints, e.g. at the Brussels 2014 ITS conference, that not everybody appreciated our analysis (Bohlin et al. 2004, Weber et al. 2011). To quote some sentences from the 2004 report:

"Operators in Europe have limited experience of advanced mobile data communications ... in contrast to Japan... There is a need to favour a more user-focused perspective... Mobile telecommunications equipment will be built cheaply in Asia, causing Europe to fall behind in the production and deployment of mobile communications systems."

This was quite a good analysis. In fact, it was not that difficult to make it; one only had to see what is going on in Japan and talk to European insiders about it.

Rhetoric should not continue to sing the same song of standards leading to success. Our analysis should be combined with a more detailed analysis of Nokia's problems as well as of the short- and medium-term options for spectrum regulation. Discussion with potential investors would help. This could be encouraged at the European scale, on a project level or over the long term, as in a think-tank. The process could also be supported by a broad, public discussion.

Let me add an aside. As argued above, there is a striking similarity between the Japanese mobile market and the global car market. Hence one should not only look at the US, but also at Japan. Some insiders argue that the largest share of the value of iPhones is of Japanese origin (displays etc.).

Search for competing uses of spectrum

On a global scale, there should be competing teams and companies searching for "5G". In Europe, competition among research projects, e.g. in Horizon 2020 (cf. Kleiner 2014, Kroes 2013), could lead to achieving better results more quickly. One could have discussions with experts about whether several scenarios regarding 5G are possible in terms of radio interface, services and economics. Otherwise, there is a risk that some 700 million € earmarked for 5G-research might not lead to competitive results. A company such as Apple is much more valuable than Ericsson, hence research should search for something big.

This would imply considering means to make licensed operators use less than the 1200 MHz of spectrum they would like to obtain in the medium run. They would have to resort, instead, to building out more cells or using more residential WiFi nodes.

Explore ways out of risk-aversion

It needs to be discussed how Europe can benefit from investments in disruptions if investors prefer to be risk-averse. Possible options are state investments, spectrum deregulation or less protection for bank deposits so that the affluent have to analyse how banks invest their funds.

References

Bohlin, Erik; Lindmark, Sven; Björkdahl, Joakim; Weber, Arnd; Wingert, Bernd; Ballon, Pieter, (Rodriguez Casal, Carlos; Burgelman, Jean Claude; Carat, Gérard, eds.): The Future of Mobile Communications in the EU: Assessing the Potential of 4G. IPTS Technical Report prepared for the European Commission – Joint Research Centre. Seville 2004. http://ftp.jrc.es/EURdoc/eur21192en.pdf

Bouwman, Harry: Why Nokia failed to nail the Smartphone market. Presentation given at ITS Brussels, 2014

Christensen, Clayton: The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail. 1997

Desruelle, Paul; Stančík, Juraj: Characterizing and comparing the evolution of the major global economies in information and communication technologies. Telecommunications Policy, Volume 38, Issues 8–9, September 2014, Pages 812–826

Elsner, Jens; Weber, Arnd: Beachfront commons. Telecommunications Policy 2014, Volume 38, Issues 8–9, September 2014, Pages 709–714

Financial Times: Attack on Clayton Christensen's theory falls wide of the mark. June 23, 2014. http://www.ft.com/cms/s/0/02675e74-fab1-11e3-8959-00144feab7de.html#ixzz3HtQxrpF1

Furger, Franco: "Informatik-Innovationen aus der Schweiz? - Lilith/Diser und Oberon". Zürich 1993

Hervas, Fernando: The 2011 EU industrial R&D investment Scoreboard. Presentation at the conference "Global ICT industry: changing landscape? The future of European ICT R&D" (JRC-IPTS), Brussels 2011

Kroes, Neelie: Smashing barriers and thinking big. Address at Mobile World Congress, 26 February 2013, Barcelona, Spain, <u>http://europa.eu/rapid/press-release_SPEECH-13-159_en.htm?locale=en</u>

Kleiner, Thibaut: 5G Research in Horizon 2020. 2014.

http://ec.europa.eu/information_society/newsroom/cf/dae/document.cfm?doc_id=5204

Ormala, Erkki: Presentation at the conference "Global ICT industry: changing landscape? The future of European ICT R&D" (JRC-IPTS), Brussels 2011

Rethink Wireless: Kroes misses the point in her focus on US rivalry. August 2, 2013. http://www.rethink-wireless.com/2013/08/02/kroes-misses-focus-us-rivalry.htm

Saffari, Arnaud: Disruptive Innovation. Challenges for European Business and Policy. Presentation at ITS Brussels, 2014.

Weber, Arnd: Protecting confidentiality. Regulation as a tool for securing computing environments. Paper to be presented at ITS conference Rio de Janeiro, 2014.

Weber, Arnd; Wingert, Bernd: "i-mode" in Japan: How to Explain its Development. In: Müller, Jürgen; Preissl, Brigitte (eds.): Governance of Communication Networks. Connecting Societies and Markets with IT. Springer – Physica. Heidelberg, New York, 2006, pp. 309-332 [Selected papers from the 15th Biennial Conference of the International Telecommunications Society, Berlin/Germany, September 2004]

Weber, Arnd; Haas, Michael; Scuka, Daniel: Mobile Service Innovation: A European Failure. Telecommunications Policy, Volume 35, Issue 5, June 2011, 469-480