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# National Intellectual Capital and the Financial Crisis in France, Germany, Ireland, and the United Kingdom

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# Foreword I

The economic crisis is a consequence of many parallel factors which are all related to globalization and digitalization. My main concern, assessing this in more detail from the European perspective, is that revolutionary global forces have not been taken early nor seriously enough by most national and regional decision makers. The Heads of European States and Governments have once again recalled the importance of fiscal consolidation, structural reform, and targeted investment to put Europe back on the path of smart, sustainable, and inclusive growth. The main question is how capable and ready are the national governments to tackling the complex and manifold issues of crises and to renewing even radically many of our public and private structures and processes.

The first basic requirement is that all the European Union Member States remain fully committed to taking the actions required at the national level to achieve the objectives of the Europe 2020 Strategy. The second basic requirement is that the national and regional governments, as well as people, are ready for radical changes. This booklet, and the other 11 booklets by the experienced authors, focus on National intellectual capital (NIC) and give necessary insights and facts for us the readers and especially for our in-depth systemic thinking of the interrelationships of NIC and economic recovery.

How should the national and regional decision makers tackle the existing knowledge of intangible capital? The focus needs to be more on the bottom-up approach stressing the developments on local and regional levels. I highlight our recent statements by the EU Committee of the Regions. The key priorities are to get more innovations out of research and to encourage mindset change towards open innovation.

The political decision makers are finally aware that the traditional indicators created for and used in industrial production cannot be applied to a knowledge-intensive, turbulent, and innovativeness-based global enterprise environment. Indicators that perceive the intangible dimensions of competitiveness—knowledge capital, innovation knowledge and anticipation of the future—have been developed around the world, but their use has not yet become established in practice. This booklet accelerates the development and the use of these indicators.

This helps the local and regional, as well as central, governments in taking brave leaps forward on a practical level—giving greater ownership and involving all the stakeholders. This means the need of actions towards increasing the structural and relational capital of regions, both internally in communities of practice and in collaboration with others.

The new generation innovation activities are socially motivated, open, and collectively participated, complex and global by nature. The regions need to move towards open innovation, within a human-centered vision of partnerships between public and private sector actors, with universities playing a crucial role.

Regions should be encouraged to develop regional innovation platforms, which act as demand-based service centres and promote the use of international knowledge to implement the Europe 2020 Strategy, smart specialization and European partnerships according to the interests and needs of regions. For this to happen, we need to apply the new dynamic understanding of regional innovation ecosystems, in which companies, cities, and universities as well as other public and private sector actors (the "Triple Helix") learn to work together in new and creative ways to fully harness their innovative potential.

New innovative practices do not come about by themselves. One major potential is the use of public procurement. The renewing of the European wide rules must increase the strategic agility and activities of municipalities and other public operators as creators of new solutions. Especially, the execution of pre-commercial procurement should be reinforced even more in combination with open innovation to speed up the green knowledge society development, i.e., for common re-usable solutions in creating the infrastructures and services modern real-world innovation ecosystems are built upon. Conditions must be created that also allow for extensive development projects which address complex societal challenges and which take the form of risk-taking consortia.

One of our working instruments within the Committee of the Regions is the Europe 2020 Monitoring Platform, which broadly reviews and reflects the opinions and decisions on a regional level all around Europe. It gives a flavor of cultural and other socioeconomic differences inside the EU. This brings an important perspective to the intellectual capital, namely the values and attitudes needed for citizens supporting policymakers on appropriate long-term investments and policies.

Emphasizing the importance of these issues, decision makers in all countries and regions worldwide need a deep and broad understanding of the critical success factors affecting the NIC. With all the facts and frames for thinking this booklet gives a valuable insight in today's challenges.

Markku Markkula
Advisor to the Aalto University Presidents
Member of the EU Committee of the Regions
Former Member of the Parliament of Finland

# Foreword II

Financial crisis—words very much heard today. What is all this about, actually, and how to get a grip on what we experience today? The booklet gives an important insight on the factors affecting competitiveness and productivity in modern knowledge society. We need to see behind the obvious, and we need to have increasingly "qualified guesses" as the character of the society and industry has fundamentally changed.

What is very important to notice is the shift towards intangible value creation beyond the deterministic phenomena we saw very clearly in the industrial era. Cost drivers were the important ones throughout the industry. Mass production, bigger is better; very traditional productivity factors, was the mantra.

However, the production picture is changing. Increasingly value is created by the intangibles, often services related to the tangible components, and even totally in immaterial value creation, where perceptions and expectations determine the market value of the "extended product". We also see rapid change in organizational forms, we see new type of entrepreneurship growing besides the traditional industry clusters, we see smart specialization of regions and countries.

This means also that there will be clearly different and complementary roles of the actors in innovation and value creation ecosystems. Large companies, small ones and even microenterprises together with the public sector are traditionally seen as the active partners in such innovation environments. The real issue in the dynamic markets is, however, that the end users are increasingly to be taken on board as *active subjects* for innovation, and not merely treated as objects, customers. Markets need to be shaped and created in much more dynamic way than ever before. Open innovation beyond cross-licensing includes the societal capital as an important intangible engine for productivity growth. Innovation happens only when the offering is meeting the demand. Otherwise, we can only speak about inventions or ideas.

We need to have a close look at the intellectual capital and the different factors within it when we design our policy approaches. Short-term investments in process capital (infrastructures) and market capital seem to be very important for the manufacturing base as such, but at the same time measures for longer term intellectual capital development and efficiency need to be taken.

Increasingly, important is the *structure* and the open *processes* related to intangible capital and knowledge pools. For sustainable long-term development both the *human capital and renewal capital* are crucial, as they are directly related to the innovation capability of the region. The correlation between these factors and the GDP growth is undisputable. In knowledge intense industries talent is attracting talent, and the connectivity which modern ICT provides makes this talent pool fluid across disciplines, organizations, and geographical settings. It is imperative to modernize the innovation systems enabling the full dynamics needed for success in knowledge intense industries, beyond the traditional boundaries.

Measuring performance of innovation systems becomes increasingly complex due to the mash-up of different disciplines, having new types of actors and interactions between them. Hence, the importance of analysis of the various components of the National intellectual capital (NIC) (and equally on national innovation capability) as done in this booklet cannot be underestimated when making qualified guesses for operational choices to create functioning innovation ecosystems. The only predictable in true innovation is the unpredictability and the surprises. The role of the public sector is to drive strategy and measures enabling the unpredictable, and to catalyze a fluid, seamless and frictionless innovation system to grow, with strong interplay with the surrounding society.

We need to have courage to experiment, to prototype in real-world settings, to have all stakeholders involved to find and remove the friction points of innovation and to achieve sustainable innovation ecosystems for knowledge-intensive products and services.

I wish you interesting reading with this mind opening report.

Bror Salmelin
Advisor, Innovation Systems
European Commission
DG CONNECT

# Foreword III

The 2008 global financial crisis hit the whole world with unprecedented speed, causing widespread financial panic. Consumer confidence dropped to the lowest level since the Great Depression. Taiwan, with an export-dependent economy, was seriously impacted by the crisis and the unemployment rate hiked while household consumption levels dropped. At the onset of the financial crisis, Prof. Lin was the Dean of Student Affairs here at National Chengchi University in Taipei, Taiwan. She was the dean in charge of financial aid and student loans and thus saw firsthand the direct impact the financial crisis had upon our students. The crisis was so devastating that Prof. Lin, along with the university, was compelled to launch several new initiatives to raise money and help students weather the difficult times.

I am very glad that she took this painful experience to heart and set herself upon the task of investigating the impact of the crisis; trying to look into the causes and consequences for policy implications, not only for Taiwan but for an array of 48 countries. In particular, she approaches the crisis from the perspective of "national intellectual capital (NIC)" which is very important in today's knowledge-driven economy.

Taiwan is an example of a knowledge economy and has enjoyed the fame of being referred to as a "high-tech island". Without an abundance of natural resources, Taiwan's hardworking and highly educated population is the single most precious resource that the island has. Acknowledging the value of such human resources and intellectual capital, we established the Taiwan Intellectual Capital Research Center (TICRC) under my leadership in 2003. Ever since then, Taiwan's government has continuously funded the university to conduct relevant research projects aimed at enhancing the intellectual capital of Taiwan. Having been thus endowed with the responsibility of nourishing future leaders in the public and private sectors, we have focused on building up our strength in innovation, entrepreneurship, and technology management related research and education.

To enhance intellectual capital research, we recently formed a joint team of professors for a 4-year project in order to leverage their respective research capabilities. Through this project we hope to provide policy suggestions for the government by exploring the creativity, innovation, and intellectual capital at national, regional, city and county levels. The goal is to come up with an intangible assets (IA) agenda for Taiwan's future sustainability. Professor Lin is an integral member in this research team.

Following her 2011 book *National Intellectual Capital: A Comparison of 40 Countries*, this booklet series is Prof. Lin's second attempt at presenting her research, conducted under the sponsorship of TICRC, to international readers. As the Founding Director of TICRC and her President, I am honored to give a brief introduction of the value of this booklet series.

In comparison to her 2011 book, this series increased the number of countries studied to 48 and particularly focuses on the impact of intellectual capital on the 2008 global financial crisis. Rarely has an economic issue been systematically studied from the view point of IA, particularly at such a large scale of 48 countries. The research results show without a doubt that NIC is indeed an important economic development enhancer. In particular, the fact that countries with higher NIC experienced faster recoveries from the 2008 financial crisis provides a strong message for the policymakers.

In addition to providing insights to national policy, the booklet also summarizes the background of each country before the crisis, the key events during the crisis, economic development afterwards, and future prospects and challenges. Each volume affords readers a holistic picture of what happened in each country in an efficient manner. The linkage between NIC and this financial crisis also provides a different perspective of the crisis.

We are happy that Prof. Lin continues to share her valuable research results with international readers. I sincerely hope that her insights can garner more attention concerning the benefits of developing NIC for the well-being of every nation.

Se-Hwa Wu
Professor, Graduate Institute of Technology
and Innovation Management
President, National Chengchi University
Taipei, Taiwan

# Preface I

There are "mounting risks of a breakup of the Euro zone." Such comments are frequent today on how the European leaders are handling the escalating crisis and its potential impact on non-European countries. But few leaders, reporters, or researchers are actually addressing the situation of national intellectual capital (NIC) and its signals. In addition to the financial crisis, is there an emerging NIC crisis as well? Why is it emerging? How should policymakers think about NIC? In what way does it need specific attention? When will the outcome and impact of taken NIC policy steps be realized?

In the midst of the European crisis, there are national interventions to address the issues mentioned above. In leading economical nations the investments going into intangibles now exceeds tangibles, and is positively correlated to income per capita. However, these still do not show up clearly in national mapping as well as policy making insights. Therefore, the New Club of Paris is focusing the knowledge agenda setting for countries on Societal Innovation (see www.new-club-of-paris.org).

Chairman Ben Bernanke of the U.S. Federal Reserve was addressing some of these same aspects in a key note speech in May 2011 hosted by Georgetown University: http://www.icapitaladvisors.com/2011/05/31/bernanke-on-intangible-capital/. OECD and the World Bank are developing NIC statistics, often based on the model from Corrado–Hultén. Japan has been developing both NIC and Intangible Assets (IA) at METI for some time now. Their research on IC/IA has resulted in a National IA Week with various key stakeholders, such as government agencies, universities, stock exchange, and enterprises. Japan is so far the only country in the world to hold such activities, and they have been doing so for the last 8 years. Australia, Singapore, South Korea, and China are currently undertaking various NIC initiatives. Other countries are also becoming more and more aware of NIC, with policy rhetoric centered on innovation, education, R&D, and trade. Despite this, the map for a more justified NIC navigation has been missing.

This booklet highlights NIC development for a number of countries, based on 48 different indicators, aggregated into four major NIC components of human capital, market capital, process capital and renewal capital. The model here is a refined and verified statistical model in comparison to the Corrado–Hultén model. We call it the L–E–S model after the contributors Lin–Edvinsson–Stahle. Based on a deeper understanding and the timeline pattern it sets forth, this model will add to a better NIC navigation, not to mention knowledge agenda setting for countries.

Upon looking at a global cluster NIC map, it is evident that the top leading countries seem to be small countries, especially Singapore, the Nordic countries, Hong Kong, and Taiwan. For the U.S., Finland, and Sweden around 50 % or more of its economical growth is related to NIC aspects. Sweden, Finland, Switzerland, the U.S., Israel, and Denmark are strongly influenced in its GDP growth by focusing on Renewal Capital.

It might be that we will see a clearer map of the NIC ecosystem and drivers for wealth emerge in the extension of this ongoing unique research of NIC. This booklet will present a NIC map for various clusters of countries. It can be used for bench marking as well as bench learning for policy prototyping. The starting point is awareness and thinking of NIC, and its drivers for economic results. Based on this more refined navigation, NIC metrics can be presented.

Deeper understanding will emerge from this research, such as the scaling up of limited skilled human capital in one nation by using the globalized broadband technologies for migration and flow of knowledge (such as tele-medicine or mobile banking in Africa). This is also referred to as the IC multiplier. It might also be the way the old British Commonwealth was constructed, but without the IC taxonomy. In modern taxonomy it might be the shaping of NIC alliances for the migration and flow of IC between nations?

Another understanding that might emerge for policy making is the issue of employment versus unemployment. The critical understanding will be deployment of IC drivers. This will require another networked workforce of value networkers on a global scale, such as volunteering software and apps developers. However such volunteers do not show up in traditional statistics, for the mapping on behalf of policymakers.

On another level, there might be a clear gap analyses between nations to support the vision process of a nation. On a deeper level, it is also a leadership responsibility to address the gap of NIC positions versus potential positions. Such a gap is in fact a liability to the citizens, to be addressed in due time.

This will take us to the need for the continuous renewal of social systems. The so-called Arab Spring is explained by some as resulting from three drivers: lack of renewal of social systems, Internet, and soccer as cross class interaction space. The lack of social renewal and innovation is most likely critical early warning signals. For Greece, we can see such a tipping point occurred back in 1999.

On a global scale we might see that the concern for the Euro zone crisis should and can be explained by a deeper and supplementary understanding of NIC, in addition to financial capital. So we need to refine our NIC understanding, NIC mapping, NIC metrics, and NIC organizsational constructs into societal innovation for the benefit of wealth creation of subsequent generations.

Leif Edvinsson
The World's First Professor of Intellectual Capital
Chairman and Co-founder of New Club of Paris

# Preface II

Our first book *National Intellectual Capital:A Comparison of 40 Countries* was published in early 2011, at a time when the 2008 global financial crisis had been declared over yet the European region was still plagued with sovereign debt problems. Before we finalized the book, we were able to retrieve some of our raw data concerning the troubled countries, such as Greece, Iceland, Ireland, Portugal, and Spain. The results of our analysis based on data spanning 1995–2008 revealed some early warning signs of the financial turmoil in those countries. In my preface of that book, I mentioned the warning signs might reveal only the tip of an iceberg. At that time, my co-author, Prof. Edvinsson, and I decided to do a follow up study to trace the development of National Intellectual Capital (NIC) in as many countries as possible, particularly through the lens of the 2008 global financial crisis. This 12 booklet series is the result of that determination.

The 2008 global financial crisis came with unexpected speed and had such a wide-spread effect that surprised many countries far from the epicenter of the initial U.S. sub-prime financial problem, geographically and financially. According to reports, no country was immune from the impact of this financial crisis. Such development clearly signifies how closely connected the world has become and the importance of having a global interdependent view. By reporting what happened during 2005–2010 in 48 major countries throughout the world, this booklet series serves the purpose of uncovering national problems before the crisis, government coping strategies, stimulus plans, potential prospects, and challenges of each individual country, and the interdependence between countries. The 6 years of data allow us to compare NIC and economic development crossing before, during and after the financial crisis. They are handy booklets for readers to have a quick yet overall view of countries of personal interest. The list of 48 countries in 11 clusters is provided in the appendix of each booklet.

Searching for financial crisis related literature of 48 countries is itself a very daunting task, not to mention summarizing and analyzing it. For financial crisis related literature, we mainly relied on the reports and statistics of certain world organizations, including OECD, World Bank, United Nations, International Monetary Fund (IMF), European Commission Office, the US Congressional Research Service, the U.S. Central Intelligence Agency, and International Labor Office (ILO). Some reliable research centeres, such as the National Bureau of Economic Research in the U.S., World Economic Forum, the Heritage Foundation in the U.S., and government websites from each country were also our sources of information. Due to the requirement of more update and comprehensive information, we were not able to use as much academic literature as we would have liked, because it generally covers a very specific topic with time lag and with research methods not easily comprehended by the general public. Therefore, we had to resort to some online news reports for more current information.

In the middle of 2012, the lasting financial troubles caused the European economy to tilt back into a recession, which also slowed down economic growth across the globe. However, almost 4 years have passed since the outbreak of the global financial crisis in late 2008; it is about time to reflect on what happened and the impact of the financial crisis. By comparing so many countries, we came to a preliminary conclusion that countries with faster recovery from the financial crisis have higher NIC than those with slower recovery. In other words, countries that rebounded fast from the crisis generally have solid NIC fundamentals, including human capital, market capital, process capital, and renewal capital. We also found that the higher the NIC, the higher the GDP per capita (ppp). This booklet series provides a different perspective to look beyond the traditional economic indicators for national development.

In an era when IA have become a key competitive advantage, investing in NIC development is investing in future national development and well-being.

Enjoy!

Carol Yeh-Yun Lin
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National Chengchi University, Taiwan
Taiwan Intellectual Capital Research Center (TICRC)

# Executive Summary

*Reducing youth unemployment and increasing their competitiveness through work experience is likely the only way to maintain the quality of life in Europe in the future.*

One of the key causes of the financial crisis was that conventional financial systems failed to detect potential risks due to non-transparent information disclosure, including unsupervised financial activities across national borders. Our earlier National intellectual capital (NIC) research revealed warning signs of impending financial crisis for Greece, Iceland, and Ireland. Such findings indicate that NIC, albeit intangible, can provide valuable insights into risk control and strategy formulation. This booklet looks at the connections between the financial crisis and NIC development for France, Germany, Ireland and the United Kingdom.

Particularly, this report attempts to answer the following questions: How did France weather the financial crisis better than most EU countries? Why was Germany so resilient to the 2008 global financial crisis? What role has Germany's NIC played in its economic growth? What are the strengths and weaknesses of Ireland's NIC? How did these affect Ireland's recovery after its bailout? What is the NIC profile of the United Kingdom? What NIC pattern emerges for future sustainability?

Data covering 2005–2010 for 48 countries indicate that *the higher the NIC, the higher the GDP per capita (ppp)*, accentuating the value of NIC as a driver in major countries throughout the world. *For the 6-year average of NIC rankings among 48 countries, France ranks 23rd, Germany 17th, Ireland 16th, and the United Kingdom 20th*.

The 2008 financial crisis caused severe impacts across the globe and is considered to be the worst since the *Great Depression* of the 1930s. The crisis came with unexpected speed and spread into a global economic shock, which resulted in a number of *bank failures*. During this period, economies worldwide slowed, credits tightened, and international trade declined. In an effort to mitigate the crisis, governments and *central banks* across the globe responded with unprecedented *fiscal stimuli*, *monetary policy* expansions, and institutional bailouts. These measures had its desired impact and the financial crisis was declared over by the end of 2009.

However, the short global recovery in 2010 was overshadowed by the lingering sovereign debt problems in Europe, thus a global economic slowdown recurred in the second half of 2011. Despite the efforts of European leaders to prevent large economies like Italy and Spain from needing bailouts, Spain still asked for external financial assistance in June 2012. As of early 2013, economic recovery in most developed countries was still hampered by the weak global development.

During the financial crisis, France was affected to a lesser degree mainly due to its large public sector and relatively low dependence upon exports. Germany, heavily reliant on exports, was hard hit yet its economy rebounded fast following the 2010 global economic upturn. Ireland's economy was dragged down mainly by the housing bubble and required a bailout in November 2010. The United Kingdom was also hit very hard, mainly because of its international financial connections. However, the British government swiftly released stimulus packages with massive tax cuts; the measures worked, and its economy revived in 2010.

The Global Competitiveness Index ranking (Fig. 1.1) of these countries (except Ireland) advanced in 2011–2012, when compared to their 2005–2006 level. France advanced from 30 to 18, Germany from 15 to 6 and the United Kingdom from 13 to 10. Only Ireland declined from 26 to 29. Between 2005 and 2010, the *real GDP growth* pattern of France, Germany and the United Kingdom was similar—it leveled in 2008, dropped to negative growth in 2009, and then rebounded to positive growth in 2010. Ireland experienced negative −5.36 % real GDP growth in 2008, down to −8.35 % in 2009, then bounced to −1.3 % in 2010, reflecting its serious financial troubles and coming emergence.

All the countries continuously increased their general *government debt* from 2008 onward and exceeded EU criteria of 60 % GDP starting in 2009. Ireland's 93.13 % debt in 2010 explains its bailout request. Aside from GDP growth and government debt, *unemployment* is another important indicator of the impact of the financial crisis. In 2005, France and Germany had high unemployment rates, whereas Ireland and the United Kingdom had low unemployment rates. In 2010, the unemployment rate in France increased only a little, Germany actually had a rate reduction, Ireland tripled its rate and the United Kingdom doubled theirs. Germany's short hour work scheme prevented a large number of workers from losing jobs. The *consumer price inflation* (CPI) development pattern is similar among the three larger economies, with a reduction in 2009, which however rebounded to pre-crisis levels in 2010. Ireland is the only country with large CPI fluctuation over the six years, peaking in 2007, sliding to –4.48 % in 2009 and then rebounding to –0.95 % in 2010.

For NIC component capitals, over the studied six years (2005–2010), *human capital* (HC) did not vary much among the four countries. However, Ireland's HC kept increasing, even during and after the financial crisis. For *market capital* (MC), Ireland scored the highest, although it started sliding in 2008. Germany and the United Kingdom had overlapping MC development, with Germany continuously increasing the score from 2008 onwards. France consistently had the lowest MC, far apart from the other three countries. The development of *process capital* (PC) was relatively stable for all four countries, with Ireland as the highest performer and

France the lowest performer from 2005 to 2008. In 2010, Germany had the highest PC and France still had the lowest score.

For *renewal capital* (RC), Germany consistently had the highest score and was far ahead of the other three countries. Ireland had the lowest RC until 2009. Both Germany and Ireland had an upward trend, whereas France and the United Kingdom had a downward trend. *Financial capital* (based on 1–10 scale) did not show much difference among the four countries. For the overall *NIC*, France consistently had the lowest score, Germany had an upward trend, Ireland had the highest score until surpassed by Germany in 2009 and the United Kingdom had little *NIC* variation during this period.

For the co-development of NIC-GDP, PC-GDP and RC-GDP, Germany was consistently the best performer, whereas France was consistently the last in NIC-GDP, MC-GDP and PC-GDP. Ireland had backward development in NIC-GDP, MC-GDP and PC-GDP; however it had forward development in HC-GDP and RC-GDP. The United Kingdom had the above co-developments either in between Germany and France, or overlapping development with Germany and France.

For *dynamic NIC ranking* changes in three time periods (2005–2006, 2007–2008 and 2009–2010), the ranking gains represent increasing international competitiveness (among the 48 countries) after the financial crisis and vice versa. France lost its international competitiveness in HC, yet gained competitiveness in MC on a relatively large scale of up to 6 ranks. Germany gained international competitiveness in HC, MC, PC and overall NIC on a relatively large scale of up to 9 ranks. Ireland mainly lost its international competitiveness in MC, PC and financial capital on a relatively large scale of up to 5 ranks. The United Kingdom gained its international competitiveness in HC and MC on a relatively large scale of up to 5 ranks. The ranking changes over these three periods disclose the dynamics of NIC variation during and after the financial crisis.

NIC 3D *trajectory analysis* was conducted to detect the enhancing and impeding factors of each country in reaching a targeted GDP per capita (ppp), benchmarking the U.S. due to its high GDP per capita (ppp) (ranks 3), high RC (ranks 5) and high NIC (ranks 7). To reach the GDP level of the U.S., France has the longest distance (52.01 %) to cover, followed by the United Kingdom (37.59 %), Ireland (33.98 %) and Germany (21.97 %) (see Table 3.4). Interestingly, even though Ireland suffered from severe financial troubles, its route to reach the targeted GDP is shorter than that of the United Kingdom. A likely answer is that Ireland surpasses the United Kingdom in HC, MC, PC and financial capital. This finding explains how intangible NIC helps sustain a country's development, despite its tangible woes in financial breakdown.

As of early 2013, the world economic recovery has been hampered by the pending debt problems in the Euro zone, the modest growth in the U.S. and the slower growth in Asia. The economies of these four large European countries were affected. Each economy's resilience to crisis will again be tested if the world plunges back into recession.

This economic crisis provides an ideal opportunity for nations to examine/renew/innovate the soundness of their economic system and the effectiveness of *national* *governance related to NIC*. The following implications are drawn from our research findings. Readers can refer to Chap. 5 for the rationale behind these implications.

1. Reducing government deficit through effective public spending and continuous structural reforms is the first priority in the wake of financial crisis.
2. Adhering to a set of governance criteria is important to keep national development under control.
3. Capturing the art of balance between control and autonomy helps establish a sustainable economy.
4. A government's timely and focused intervention is critical for restoring public confidence when a financial crisis unfolds.
5. Reducing youth unemployment and increasing their competitiveness through work experience is likely the only way to maintain current level of quality of life in Europe in the future.
6. Adopting smart investments that add high values will further enhance national competitiveness in Europe.
7. Straightening the aftermath exit transition is essential to continuously benefit from the stimulus package.
8. Building a highly skilled workforce and reducing unemployment rates can be achieved through education reforms.
9. Enhancing NIC helps strengthen national resilience and competitiveness.
10. Designing country-specific NIC strategy facilitates a more focused national development.

This report uncovers that France needs to pay more attention to its weakening international competitiveness in HC and its consistently low MC. Although Germany proved its resilience during this financial crisis, the country's next stage development may lie in adding values to its renewal capability. Ireland is still combating its financial problems; however with increasing HC and RC, its recovery and future prosperity can be anticipated. The United Kingdom, as the third largest economy in Europe, has comparatively slow development in both the intangibles and the tangibles, losing a little international competitiveness in RC and financial capital after the financial crisis. It can utilize its rising HC and MC to build stronger renewal capability in the increasingly globalized knowledge economy.

In an era when the intangible asset has become a key competitive advantage, investing in NIC development is in essence investing in future economic development and well-being. NIC should be nourished from both local culture viewpoint and global interconnectivity by social media. Based on emerging new insights of values, societal history and citizen relationships, a key focus for the future will be on the fusion of NIC and social service innovation as well as societal innovation, for the enabling of a new societal fabric.

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# Abstract

In the first decade of the new millennium, the biggest event that caught worldwide attention was the 2008 global financial crisis, which was brought about primarily by ineffective governance, failed surveillance systems, and implementation flaws. These problems are mainly intangible in nature. Therefore, examining the financial crisis from the viewpoint of intangible asset provides a different perspective from traditional economic approaches.

National intellectual capital (NIC), mainly consisting of human capital, market capital, process capital, renewal capital, and financial capital, is a valuable intangible asset and a key source of national competitive advantage in today's knowledge economy. This booklet looks into the connections between the 2008 global financial crisis and NIC development with a special focus on Bulgaria, the Czech Republic, Hungary, Poland, and Romania.

In addition to the summaries of financial crisis impact, the aftermath, future prospects, and challenges of each individual country, NIC analysis based on data covering 2005–2010 for 48 countries reveal that the higher the NIC, the higher the GDP per capita (ppp). Graphical presentations of various types allow for intra-country and inter-country comparisons to position the reported four countries on a world map of NIC–GDP co-development.

By looking into tangible economic development along with intangible NIC development, this booklet provides valuable implications for policymakers.

**Keywords** Competitiveness · Economic policy · Financial capital · Human capital · Innovation · Intangible assets · Intellectual capital · Knowledge management · Research and development (R&D) · Science and technology policy