Atlantic Council

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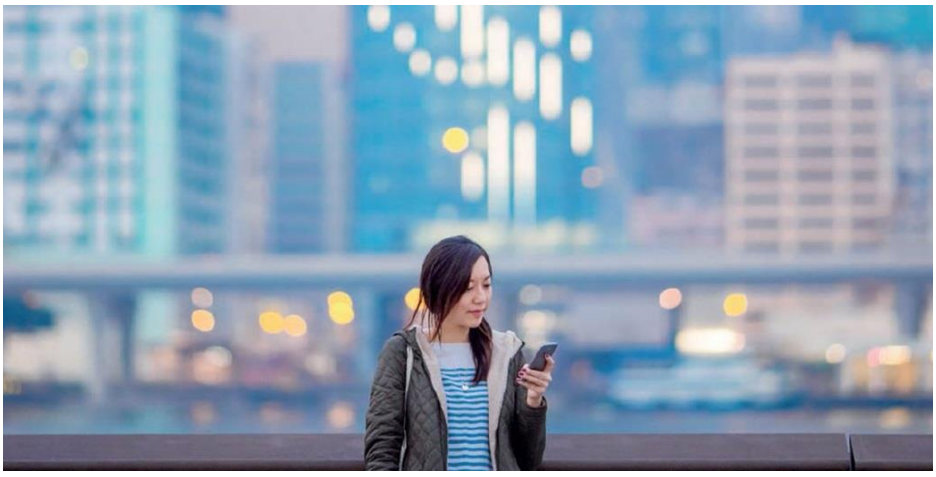
ZURICH

Risk Nexus

Overcome by cyber risks? Executive summary

The globalization of value chains, increased financial integration, rapid urbanization, and the Internet's ubiquity have all accelerated worldwide economic growth over the past few decades. Unfortunately, these same developments have also significantly increased our vulnerability to external shocks and global crises. With risks mounting and traditional systems of control weakening, now is the time to ask: do the risks of being connected outweigh the benefits to global economic growth?



In 2030, will the Internet and related information and communications technologies (ICT) continue to drive global innovation and prosperity? Or, will that bright promise be swamped by an unstable and insecure Internet, so overwhelmed by non-stop attacks that it has become an increasing drag on economic growth? The answers, as far as we can predict, are not promising and mean the difference in tens of trillions of dollars in global economic growth over the next fifteen years.

So far, cyberspace has been safe enough, secure enough, and resilient enough for the past decades to re-invent nearly every industry, create a 'hyperconnected world,' and transform the global economy.

Unfortunately, these benefits come with an increased dependence on a shared, stunningly complex system-of-systems, which no one truly understands in its entirety. Most of the recent cybersecurity trends point to a darker future, with every year worse than the last: more data breaches, more disclosures of critical vulnerabilities, and more nations building and employing offensive cyber capabilities.

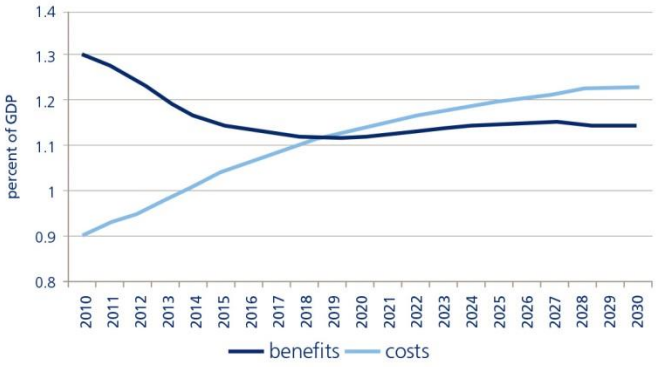
Teaming with the Pardee Center at the University of Denver, we modeled the economic benefits from ICT and the associated cybersecurity costs. To model the benefits, we researched the contribution to GDP of the ICT sector itself, the benefit of ICT to the rest of the economy, as well as the benefit to consumers. The costs included direct cybersecurity spending, the losses from cyber incidents, and opportunity costs because economies may not be making full use of ICT.

A future where the annual costs of being connected outweigh the benefits is not only possible, it is happening now. According to our project models, annual cybersecurity costs in high-income economies like the U.S. have already begun to outweigh the annual economic benefits arising from global connectivity.

For all economies, the inversion of costs and benefits is expected to occur within the next five years. In Latin America, it is expected before the year 2030, as the region bridges the digital divide. In the Asia-Pacific region, the inversion is expected sometime after that. (Figure 1)

This is the bad news.

Figure 1: ICT cyber benefits and costs, global annual totals, 2010-2030



Note: Using 5-year moving average

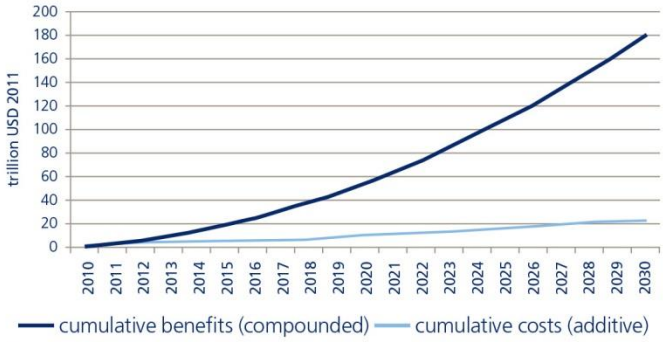
Source: IFs 7.15

Fortunately, there is good news, and it is actually pretty great.

Although the one-time costs of being connected are higher on an annual basis, benefits accumulate over time, as they tend to be made as long-term investments in productivity. In other words, cyber benefits tend to keep delivering each year after they are originally felt, whereas the costs tend to be experienced as 'one offs.'

In our Base Case, the accumulated global benefits of being connected should still outpace the costs through the year 2030 by nearly USD 160 trillion (constant 2011 US dollars), an 8 percent gain in the cumulative global GDP between 2010 and 2030.

Figure 2: ICT cyber benefits and costs, global cumulative totals, in USD trillion, 2010-2030



Source: IFs 7.15

Table 1: Expected GDP in 2030. This table adds context for interpreting the costs and benefits in the report, relative to the size of the global economy in 2030

Region	**Annual GDP in 2030** (at market exchange rate)	**Cumulative GDP** (at market exchange rate)
World	USD 135 trillion	USD 2,000 trillion
High-income economies*	USD 70 trillion	USD 1,200 trillion
U.S.	USD 24 trillion	USD 400 trillion

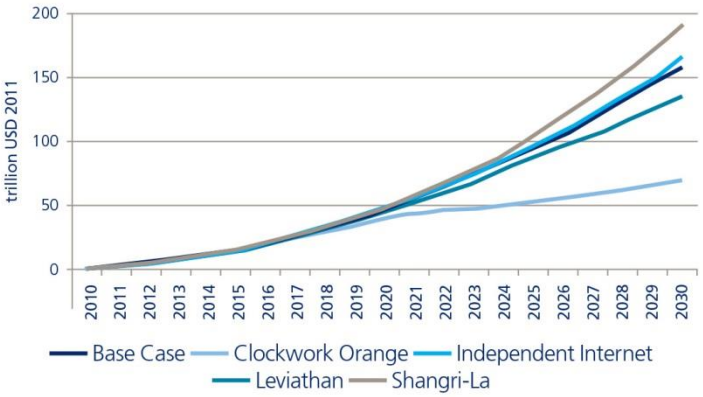
*World Bank definition

We also examined four alternate futures. In the best future of *Cyber Shangri-La*, where technology booms are driven by strong cybersecurity, the recurring annual economic benefits result in a cumulative net global gain of USD 190 trillion by the year 2030 – about USD 30 trillion higher than that of the Base Case. In the worst future of a *Clockwork Orange Internet*, cyber attackers dragging down the Internet might cost the world nearly USD 90 trillion of potential net economic benefit[1]. In a *Leviathan Internet* future, governments impose strong Internet borders, and global benefits drop by around USD 20 trillion when compared to the Base Case and a fourth alternate future, the corporate-driven *Independent Internet*.

Steering towards these trillions of dollars of global economic benefits requires a range of actions today from states, companies, non-state groups, and individuals.

A strong and resilient Internet will be driven by a healthy non-state sector, supported when needed by governments. Avoiding the worst futures is a global collective action problem that requires a sense of joint stewardship over the Internet, needing actions that go far beyond just admonitions to 'improve cyber security.' We must also focus on improving resilience and, above all, international governance for the globe and the Internet.

Figure 3: ICT cyber net benefits or costs, global cumulative total, in USD trillion, by scenario, 2010-2030



[1] The names for these two alternate futures, Shangri-La and Clockwork Orange, were chosen as they are both fictional works from the past century. Each vibrantly illustrates a different world, one utopian and balanced, the other deeply dystopian. The book *Lost Horizons*, by James Hilton, about a mystical Himalayan paradise whose inhabitants live nearly forever was written in 1933; *A Clockwork Orange* was first a 1962 book by Anthony Burgess, but became a cult hit in the 1971 movie of the same name by Stanley Kubrick.

The full Risk Nexus report is available on
knowledge.zurich.com/cyber-risk/overcome-by-cyber-risks

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