

1/18

RED

The Magazine
from SIX

Focus
SIX on Tax

Fiscal Matters Made Easy
Page 12

#SIXHackathon 2018

**Sleep Is
Overrated**

Page 22

Internet of Things
**E-Commerce
the Smart Way**

Page 26

Impulse Interview

The Good Hacker

Keren Elazari gives the
hacker community a friendly
face in the campaign
for greater cybersecurity.

Page 4



Get the Best of Both Worlds.

SIX Swiss Exchange and SIX Securities Services are now

Exchange Services.

www.six-group.com/exchange-services

EXCHANGE
SERVICES

12 **Focus**

How Taxes Get Handled Today

Financial information from SIX enables banks to comply with tax regulations. But SIX also helps them deal with tax refund claims and will soon also make it possible to factor in tax elements before executing investments.

4 Impulse Interview: Hacking for Security
Cybersecurity expert Keren Elazari goes to bat for the hacker community

10 Caught in the Act
SIX CEO Jos Dijsselhof returns from a press briefing

18 Sideshow
The first augmented reality showroom in Switzerland

20 How Much ...
... money is there in the world?

22 #SIXHackathon 2018
Some 130 contestants from 12 countries face various fintech challenges

26 Smart E-Commerce
An internal startup at SIX is planning an infrastructure for commerce over the Internet of Things

30 Future Talk: The Next Crisis
University of Zurich ethnologist meets University of St.Gallen professor of finance



Takeaway

The Magazine in 30 Seconds

Page

4

Cybersecurity

Former hacker Keren Elazari says that personal security decisions mark the starting point of many cyberattacks. That's why heightened awareness is also needed alongside technological solutions, she asserts. With its Cyber Hub, SIX is striving to fortify Switzerland's financial industry in both of those areas by providing a state-of-the-art security operations center and building a cybersecurity community.

Page

26

Internet of Things

With the help of the Internet of Things, SIX wants to combine three different elements of e-commerce together: ordering, supply, and delivery. An order would be placed by a smart refrigerator, for example. SIX would then direct it to the grocer of choice, and would dispatch an available delivery courier.

Page

30

Financial Crisis

It's been almost 10 years since the Lehman Brothers collapse. Today the economy appears stable. But Professor of Finance Manuel Ammann still sees structural factors, such as high debt, that could result in a new crisis. Ethnologist Stefan Leins concurs. Ultimately, it's people who "make" the market.



Keren Elazari

Former hacker Keren Elazari is an internationally renowned speaker, researcher, and author on the subject of cybersecurity. Her 2014 TED talk, which was viewed by millions, positively changed the public's perception of hackers and stimulated the debate on cybersecurity. Elazari has been collaborating in recent years with leading security providers, public-sector organizations, and large publicly traded companies. She is a senior researcher at the Blavatnik Interdisciplinary Cyber Research Center at the Tel Aviv University and is a member of faculty at Singularity University in Silicon Valley.

→ More information: k3r3n3.com

Attackers Are the Best Form of Defense

Impulse Interview: Hacking for Security

Israeli cybersecurity expert Keren Elazari recommends that every enterprise enlist the services of hackers. She knows what she's talking about – she was once a hacker herself.

Interview **Matthias Bill**

Would you call yourself a hacker?

Keren Elazari I'm proud to be a hacker. Strictly speaking, though, I'm a former hacker. The last two years I haven't spent sitting in front of a computer, but instead have been traveling around the world as an unofficial ambassador for the "white hat" hacker community. This fellowship of good-minded hackers does the real work day in and day out of detecting new vulnerabilities in IT infrastructures and finding ways to fix them. Today I would describe myself more as a security researcher.

Many people think of criminals when they hear the word "hacker."

The word doesn't have negative connotations to me. Hackers, first and foremost, are very creative individuals. They stray from beaten paths and employ unconventional thought patterns. SIX, for example, hosted its fourth hackathon in March 2018 [see page 22]. Nobody thinks that SIX invites crooks to the event. SIX invites inspired, unorthodox thinkers who don't break the law, but at most violate established rules to create something new.

Of course there are also criminals who do misuse their hacking talents. Very young hackers from impoverished economic backgrounds particularly are at risk of being forced by necessity or coercion into becoming criminals. An example from Venezuela illustrates that this sometimes can also come to a good end. A student there was caught hacking into a school computer. He wanted to sell test answers for cash. After his arrest, he was given a choice between jail or a job as the school's IT security adviser. He chose the latter option.

Are your public appearances and articles making an impact? Is the mainstream perception of hackers changing?

My 2014 TED talk has since reached more than two million viewers. I hope that it has contributed to altering the image



of hackers, because a change has definitely taken place. An underground convention like DEF CON in Las Vegas has since turned into an international, industry-spanning, intergenerational happening. And, for instance, the Girl Scouts of the USA, the epitome of virtuousness, recently introduced a merit badge for hacking – for good reason, because the need for enterprise cybersecurity specialists will further increase in the future.

Does every enterprise need a hacker on the team?

I recommend it [she laughs]. Over the last three to four years, more and more companies – even those known as being conser-

make a contribution as well? They, too, expose shortcomings after all.

There are whistleblower hackers or hacktivists who denounce injustices like investigative journalists do, but break the law in the process. I think, though, that you mean hackers with pecuniary or destructive intentions. Come to think of it, even that can result in something good. Think of ransomware that encrypts business-critical data and unblocks it only upon payment of the ransom. It's a big problem. On the other hand, the latest wave of cyber blackmail attempts has tremendously raised awareness of cybersecurity. What developers of ransomware do is still wrong, but we can learn something from it.

Is part of this learning process realizing that we can't delegate cybersecurity to technology alone?

There are fantastic new technologies like cognitive intelligence that SIX, for example, is rightly using in its security operations center. But algorithms alone won't protect us. Even the best firewall is worthless if we, as users, act negligently. My research has demonstrated that personal actions now and again have facilitated some of the biggest cyberattacks. Every one of us makes dozens of security decisions every day: We open the door without knowing who's on the other side, we use the same password for multiple websites, we click on links with no clue where they might lead, or we connect a private device to our workplace's WLAN. We can use technology to automate those decisions and thus minimize human intervention, but human error will still occur. We therefore need to instill a security awareness, to become or stay a little paranoid.

You live in Tel Aviv, where you grew up. Do Israeli citizens have a heightened security awareness given the political situation?

The reality in which we in Israel live has brought forth astounding innovations. Pressure makes diamonds, after all. Time and again we have had to devise quick, and thus creative, security solutions for sudden threats. Perhaps originally envisaged as temporary solutions, many of them ended up standing the test of time. My perception of the Swiss, for example, is completely different. The stable environment that Switzerland has enjoyed for decades has

“Hackers are very creative individuals. They stray from beaten paths and employ unconventional thought patterns.”

vative – have recognized the benefits of hackers. But there are many different ways to work together with hackers. I already mentioned hackathons, where the aim isn't for hackers to expose security vulnerabilities, but to identify new business ideas. But companies are also initiating “bug bounty” programs that reward hackers who discover security loopholes in their systems. Others are actually even hiring hackers as outside or internal consultants. Or once a year they assemble a “red team” of hackers, fictitious cyberassailants with an unobstructed view from outside.

Those hackers are commissioned to find security vulnerabilities. Asked a bit provocatively, don't criminal hackers

“We need to instill a security awareness, to become or stay a little paranoid.”

enabled the Swiss to this day to always be prepared for any eventuality. Those two traits – creativity and constant preparedness – can both be helpful in the battle against cyberattacks.

Let's look a little into the future.

The Internet of Things integrating the physical world with the cyberworld is now becoming a reality. And biohackers are already working on using technology to enhance the human body.

That's right, and that creates an unfathomably large target for attacks. Compounding the problem is that innovations in biohacking right now are not coming from companies or universities. It is flourishing in a do-it-yourself community that

is experimenting with implanted chips and corresponding software. But we don't have to go to that extreme to become concerned. Think of heart pacemakers or insulin pumps. Patients with pacemakers or insulin pumps already regularly have to run software updates today. So hacking computers was only just the beginning. ■

→ Keren Elazari was a keynote speaker at the recent "SIX on Cybersecurity" conference. Watch her speech delivered on March 1, 2018, in the video: six-group.com/elazari

SIX Cyber Hub

Cybersecurity for Switzerland's Financial Industry

There's no doubt about it, Switzerland's financial industry is under pressure, faced with new competitors, new technologies, and new regulations. And recent years have brought an additional threat of cyberattacks. This prompted SIX to launch the Cyber Hub – an interdisciplinary, multilateral, industry-specific initiative open to all institutions in Switzerland's financial center – in 2018. The aim of the SIX Cyber Hub is to strengthen cooperation, information-sharing and digital trust.

The SIX Cyber Hub also includes Switzerland's first-ever security operations center (SOC) built on a cognitive computing platform (see RED 2/17). The security analysts of SIX onsite in Zurich work 24/7. From fall onward, the SOC will also be available to banks and insurance companies as a managed service. SIX will also launch training and advanced education courses, and will promote and simplify the sharing of threat intelligence among all stakeholders involved.

→ SIX invites all participants in Switzerland's financial center to join the dialogue on cybersecurity: cyberhub@six-group.com



Congratulations from the Swiss Economic Community

SIX is celebrating its 10th anniversary. As part of the celebration, SIX invited leaders among Switzerland's business and economic community to contribute articles to its 2017 annual report. Swiss Federal Councillor Ueli Maurer, Swiss National Bank Chairman Thomas Jordan, multiple board member Eveline Saupper, and ETH Zurich President Lino Guzzella answered the call. They take a stand for open markets and international networking, for innovative approaches and new technologies, for young talents, and for Switzerland as a business location – all of which necessitate reliable infrastructures.

→ Read all of the articles in the 2017 annual report of SIX: six-group.com/congratulations

The Question

Is a Green Wave Sweeping Stock Exchanges?

One can certainly say that – in the form of green bonds. Over the last five years, the total nominal value of bonds worldwide that are financing climate-friendly projects has exploded from less than CHF 10 billion to over CHF 150 billion. The Swiss Exchange has been a trading venue for green bonds since 2014. Green bonds are sometimes addressing entirely new groups of investors. The proprietary green-bond flag recently added to the search screen on our website makes it easier for them to make investment decisions.

Ueli Goldener, Head Fixed Income Products, SIX

Did you know? 12 green bonds with a nominal issuance volume of CHF 8.6 billion (status as of March 2018) are currently admitted for trading on the Swiss Exchange and that the trend is pointed upward? In early 2018, SIX joined forces with the Climate Bonds Initiative in a partnership aimed at identifying green bonds.

→ More information: six-group.com/green

→ Send your question: RED@six-group.com

The Head / The Count



Werner Möckli
Head Terravis, SIX

4.5 Million Properties

Werner Möckli was involved right from the start. He initiated Terravis together with senior project manager Walter Berli. The platform from SIX automates and digitizes public land registry processes, which is an important building block in digitalizing Switzerland. Through numerous discussions, Möckli and Berli convinced land registry offices, notaries, and banks. Thanks to Terravis, they all are now collaborating efficiently through a single digital channel – round the clock. The public-private partnership works. Some 14 cantons are now activated in Terravis, making their data on more than 4.5 million properties accessible to authorized users via a centralized platform. Möckli has very specific visions about the future. He sees all real estate ownership transfer transactions in Switzerland being executed via Terravis at some point. The corresponding information (purchase prices, evolution of prices, etc.) could then also build a reliable foundation for real estate price indices.

→ More information: terravis.ch

The Insight

Silver and Bronze for RED

RED shows off SIX in all of its many facets and even goes a bit beyond that. And now, two juries of experts in the USA just recently conferred precious medals on the corporate magazine. RED received a silver medal for editorial content at the Pearl Awards, outperforming competitors from the USA, Australia, and Germany in a cross-industry category. In addition, a bronze medal won at the Mercury Excellence Awards ranked RED among the best B2B magazines in the financial sector.

→ Subscribe to an award-winning magazine: six-group.com/red



Caught in the Act





SIX Group headquarters
Zurich, Switzerland

February 13, 2018
2:00 pm

1°C
Humidity 70%
Sunny, dissipating fog patches

Jos Dijsselhof
Group CEO SIX

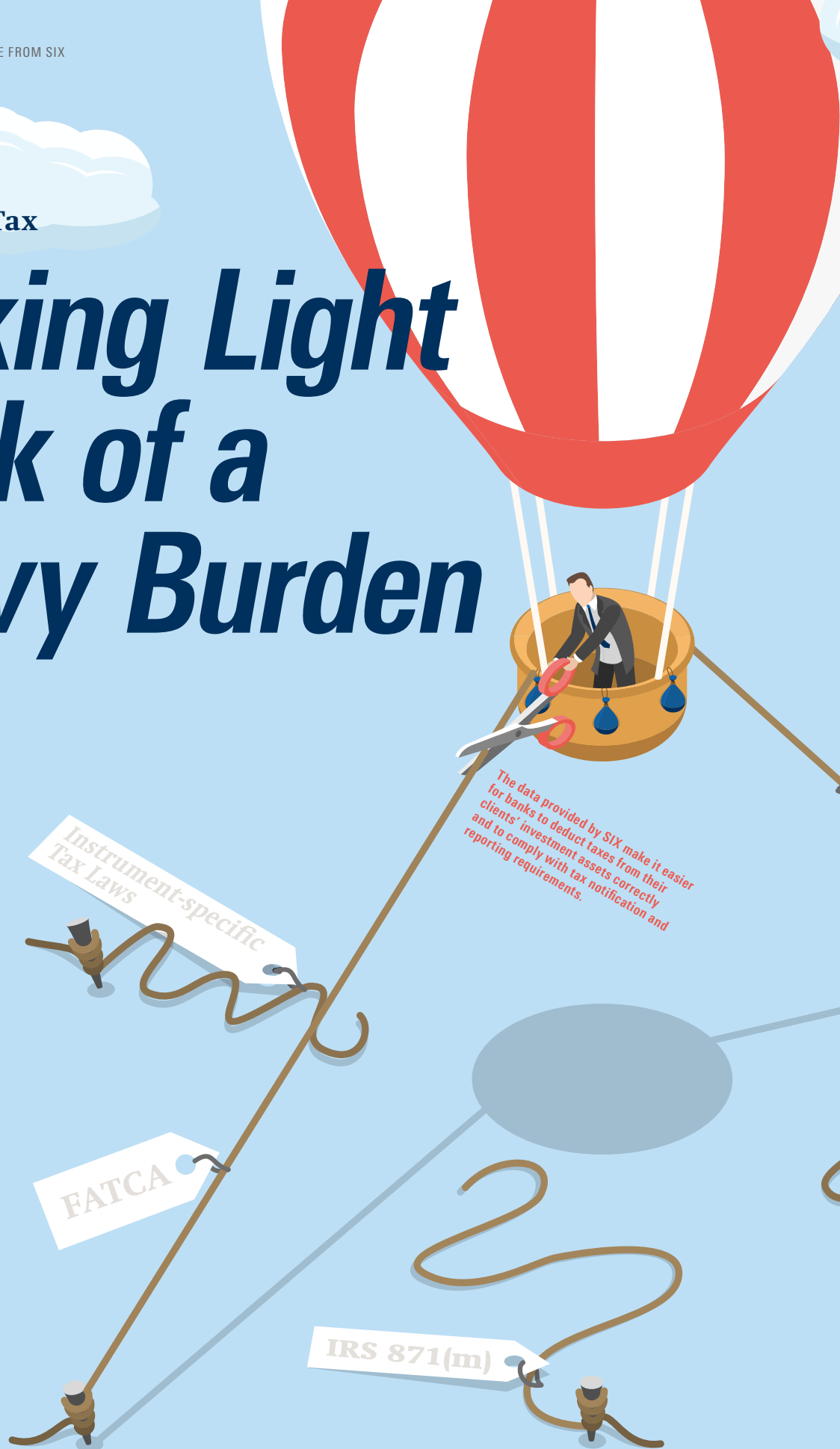
Jos Dijsselhof is on his way back to his office from a press briefing. The CEO of SIX has just explained the plans for the future to journalists from *Finanz und Wirtschaft* over lunch. Their discussion centered on the topic of providing infrastructure services especially for Switzerland's financial industry.

SIX will rigorously concentrate on securities, payment services, and financial information through newly formed business units under a single "SIX" brand. SIX is also setting up an innovation unit that includes the establishment of a CHF 50 million venture fund. SIX is separating its card business from its core organization and will further develop it going forward as part of a strategic partnership.

Dijsselhof, who joined SIX at the start of this year, says he is impressed by how the employees of SIX are rapidly expediting the new business realignment in a collaborative effort.

Focus: SIX on Tax

Making Light Work of a Heavy Burden



High-quality financial information is the very foundation of what enables banks to comply with increasingly complex and ever-changing tax regulations. SIX supplies this data reliably and even goes beyond that by providing supplemental advanced services concerning tax matters.

Text **Simon Brunner**



A

s Morgan Stanley so aptly put it in their legendary advertising slogan, “You must pay taxes. But there’s no law that says you gotta leave a tip.” History doesn’t tell us whether the bank was specifically referring to tax refund claims – it presumably wasn’t – but its slogan would certainly be

apropos precisely with regard to them: According to statistics from Switzerland’s Federal Tax Administration, Swiss taxpayers overpay around CHF 6 billion each year due to double taxation alone.

That’s not surprising. The task isn’t trivial. Even Nobel laureate physicist Albert Einstein is alleged to have said that it takes a philosopher to understand an income tax form – it’s too difficult for a mathematician.

Thinking about Taxes Right from the Start

The quote from Einstein would also be good for advertising purposes. But in the midst of increasingly complex and ever-changing tax regulations, what’s needed today isn’t philosophers, but rather a company like SIX, which is capable of delivering high-quality comprehensive financial information and providing supplemental advanced services that enable banks to comply with current international tax regulations and



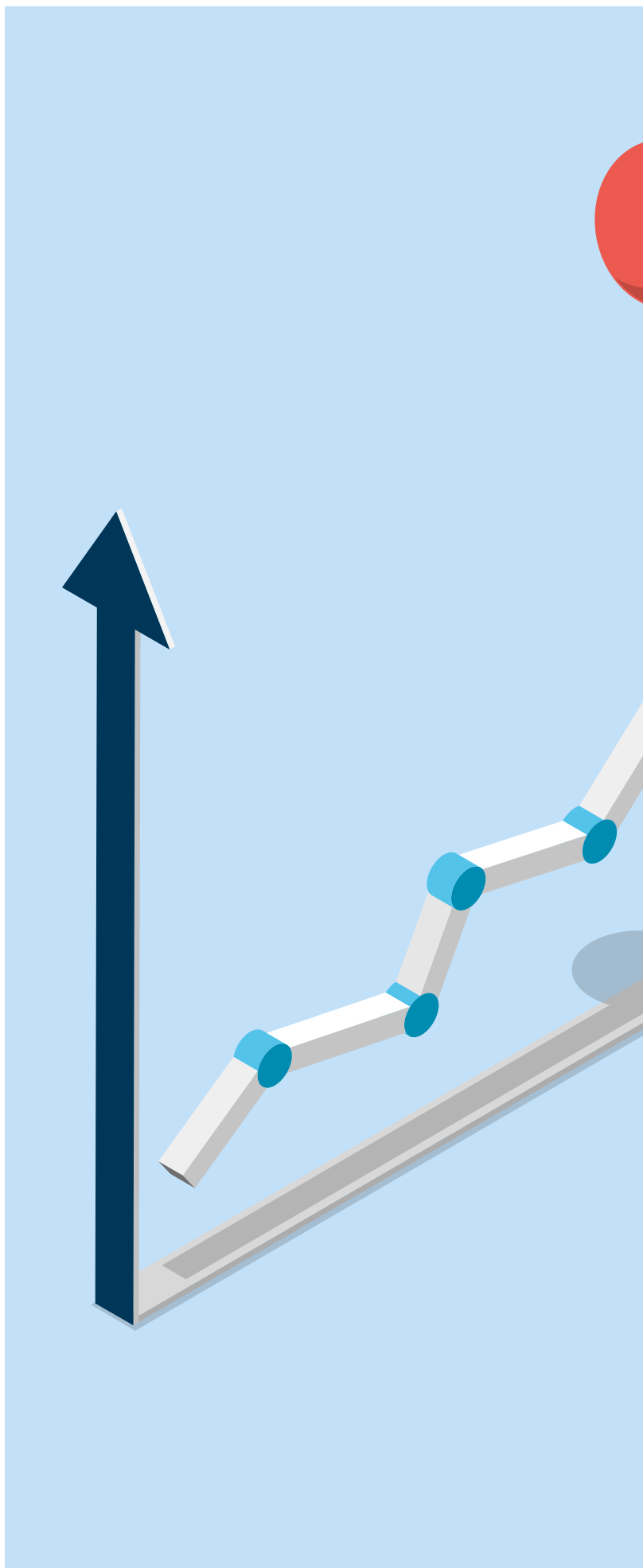
create added value for their clients. The only downside is that Einstein can no longer take advantage of this.

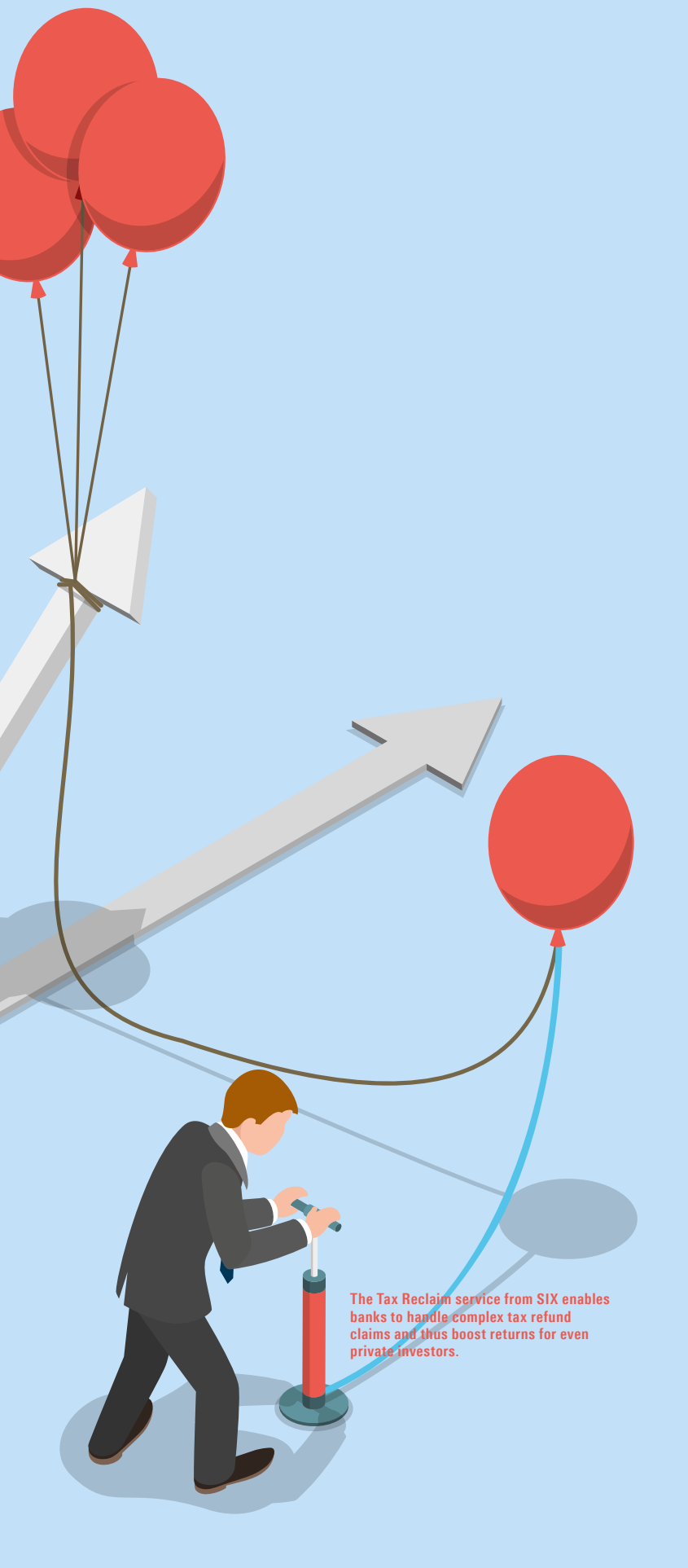
But let's take it step by step: "To really gain an awareness of the problematics, you have to picture taxes like an automobile's gasoline consumption," says Jacob Gertel, Senior Content Manager Legal & Compliance Data at SIX. "It's something that is constantly incurred and translates into an expense at the end of the journey, but that often goes forgotten when choosing the route at the outset." The first step toward changing that would be to continually keep "tax consumption" in mind and to depict it in the data "because that's the only way to professionally approach choosing a route or making investment decisions," Gertel explains.

Currentness Is Key

The Valordata Feed (VDF) from SIX supplies information on over 27 million financial instruments. SIX continually updates that information, including tax information. "Belgium, for example, introduced a change in transaction tax rates for domestic investors practically overnight," Gertel recounts. "The king affixed his signature to the amendment on December 25, 2017, and the new rates entered into force on January 1, 2018. We were able to reproduce that in our data from day one." This up-to-dateness is of paramount importance to the primarily Swiss and other European banks that subscribe to the VDF because they ultimately are co-responsible for ensuring that their clients properly pay taxes on trillions of francs and euros worth of investment assets.

The tax information in the VDF has to be very thorough in its detail, Gertel explains: "Buying a US stock is not the same from a tax standpoint as investing in a US equity fund. Also, every country taxes stock-exchange transactions, dividends and even assets, for instance, differently. Let's take Belgium again. Stocks there are taxed as wealth, as they are in Switzerland, but they aren't in the USA." It almost goes without saying that the taxes levied on shares, a structured product, or a bond can vary considerably even within the same country. Recent years,





moreover, have seen the addition of specific regulations (see Lexicon on page 16) such as the registration of foreign banks in the USA under FATCA, a tax on derivatives that use US stocks as their underlyings pursuant to IRS 871(m) and regulations on the automatic exchange of information (AEOI) under the Common Reporting Standard (CRS). With the data it supplies, SIX makes it easier for banks to meet those notification and reporting obligations, not just by flagging the affected financial instruments in the VDF, but also by flagging relevant corporate actions such as interest or dividend payouts.

Simplified Refund Claims

All that talk about regulations brings us back to the problem of tax refund claims. Many investors overpay taxes by not reclaiming the part of the foreign withholding tax they're entitled to under double taxation treaties. That happens, for instance, not because they forget to file a refund claim – though that does occur now and then – but rather because a tax refund is simply impossible for a private investor to obtain in many cases. "Italian authorities are a perpetual issue," says Michael Ripken, Head Post Trading at SIX. "Refund processing timeframes in Italy can still take up to 10 years. The Tax Reclaim service provided by SIX now enables banks to handle such complex tax refund claims even for private investors." Ripken gives a fictitious example: "Mr. Odermatt, a Swiss taxpayer residing in Lucerne, holds a securities custody account at his local bank. His portfolio is widely diversified and includes mutual fund shares, stocks, and bonds from a variety of different countries."

The example continues: With Mr. Odermatt's consent, his bank sends the tax data to SIX, which evaluates the tax refund amount that Mr. Odermatt can reclaim. SIX then prepares all of the necessary forms and documents and sends them to the local tax authority in Lucerne. Once those papers are officially stamped and returned, SIX then forwards them to the foreign tax authorities. When SIX finally receives the tax refund amount, it remits it to Mr. Odermatt's bank. He thus



ultimately receives a refund of the overpaid withholding tax.

“This service meets a big need,” says Valerio Roncone, Head Product Management & Development in the business unit Securities & Exchanges of SIX. The feedback from the market has accordingly been enthusiastic, he adds. “Raiffeisen was the pilot customer, but 10 new banks additionally climbed on board within months of the market launch. Others have shown definite interest: We are currently evaluating 40 banks.”

Many banks already provided tax refund services for their clients. But since they had to do much of that work manually, it was worthwhile only when large asset holdings were involved. Moreover, they sometimes lacked the necessary know-how, particularly in dealing with complicated foreign tax regulations.

SIX has automated many steps of the process with its Tax Reclaim service. This reduces banks’ expenditures of time and resources and boosts private investors’ returns. “But we at SIX do not maintain a business relationship with private investors,” Michael Ripken emphasizes. “Our aim is to help banks improve their own offerings.”

Investing Better

The project TaxCube from SIX is even younger than its Tax Reclaim service – it just finished its pilot phase, in which three different large banks participated. “We want to help banks incorporate tax elements into investment decisions right from the outset in the interests of their clients,” says Janine Hofer-Wittwer, Senior Product Manager in the business unit Financial Information of SIX, and the initiator of TaxCube.

She previously worked at a large bank herself and recognized the need for such a service. There were countries, for example, that tax dividends more heavily than capital gains, she notes. “In such places, a stock that delivers a small earnings payout can actually be more attractive than it seems at first glance. If the share price rises, the resulting capital gain has less of a tax impact.” She fed her idea into InnoHub, the internal innovation program of SIX that is open to all employees, and is now

guiding the project through to market maturity.

TaxCube is a data feed that banks can integrate into their investment advisory services to differentiate themselves from competitors. “It enables them to hand their clients an analysis that delivers an all-inclusive depiction of the expected performance after taxes,” Hofer-Wittwer explains. And isn’t what’s left over in the end really the most important question in all tax matters? Regardless of leaving a tip or not. ■

→ More information:
six-group.com/tax-ready-data,
six-group.com/tax-reclaim

Lexicon

AEOI and CRS Governments around the world are trying to recover taxes that have been hidden from fiscal authorities through offshore accounts and investment vehicles. The Organisation for Economic Co-operation and Development (OECD) introduced an automatic exchange of information (AEOI) procedure in tax matters for this reason. Governments exchange data on bank clients with foreign tax domiciles annually under the Common Reporting Standard (CRS).

FATCA The Foreign Account Tax Compliance Act (FATCA) was enacted by the USA as part of a jobs stimulus bill. It is aimed at preventing US citizens from evading their taxes through the use of accounts with financial institutions outside the USA. Those foreign financial institutions are required to register with the US Internal Revenue Service, to identify clients who are US citizens and to disclose their accounts. Non-cooperation results in a withholding tax of 30%.

IRS 871(m) Section 871(m) of the US Internal Revenue Code has far-reaching consequences: Investors who own derivatives or structured products whose underlyings are based directly or indirectly on US stocks are likewise subject to tax and reporting obligations in certain instances.



TaxCube from SIX is the key tool that allows banks to factor tax elements into their investment advice to clients.





More Than Meets the Eye

Switzerland's first augmented reality showroom presents visitors to the headquarters of SIX with the most important facts about the company – not in a printed brochure, but three-dimensionally, animatedly and interactively in a decentralized way. Holographic glasses project visualized data strings throughout the space surrounding the visitor reception area. The data strings take the wearers of the glasses on a virtual journey through the content, which includes not just facts and figures, but also a “tour” of the data center and the high-security vault at SIX – places that are otherwise off-limits to outsiders. The real and virtual worlds are intermingled to make the abstract processes of an infrastructure provider practically tangible and thus easier to understand.

→ Get a little foretaste of augmented reality showroom from SIX: six-group.com/ar-showroom

How Much Money Is There in the World?

In 2017, Swiss Exchange by SIX registered six initial public stock offerings with a combined transaction volume of CHF 4.5 billion, putting the Swiss market in third place in Europe. This year has also already seen some early IPO action. The market capitalization* of the Swiss equity market currently stands at CHF 1,284 billion. A list of assets worldwide** puts just how much money that is into a comparative perspective. According to calculations by the online portal Visual Capitalist, all of the assets in the world amount to more than USD 171 trillion, a number with 12 zeros.



Stocks

Free-float market capitalization



Bank Deposits

Savings and term deposits



Cash and Sight Deposits

Money available every day



Gold

Personal assets, central banks, jewelry



Cryptocurrencies

Bitcoin, Ethereum, etc.

**World's
Most Valuable
Company***

APPLE



USD 851 bn

**Most Valuable
Company on the
Swiss Exchange***

NESTLÉ



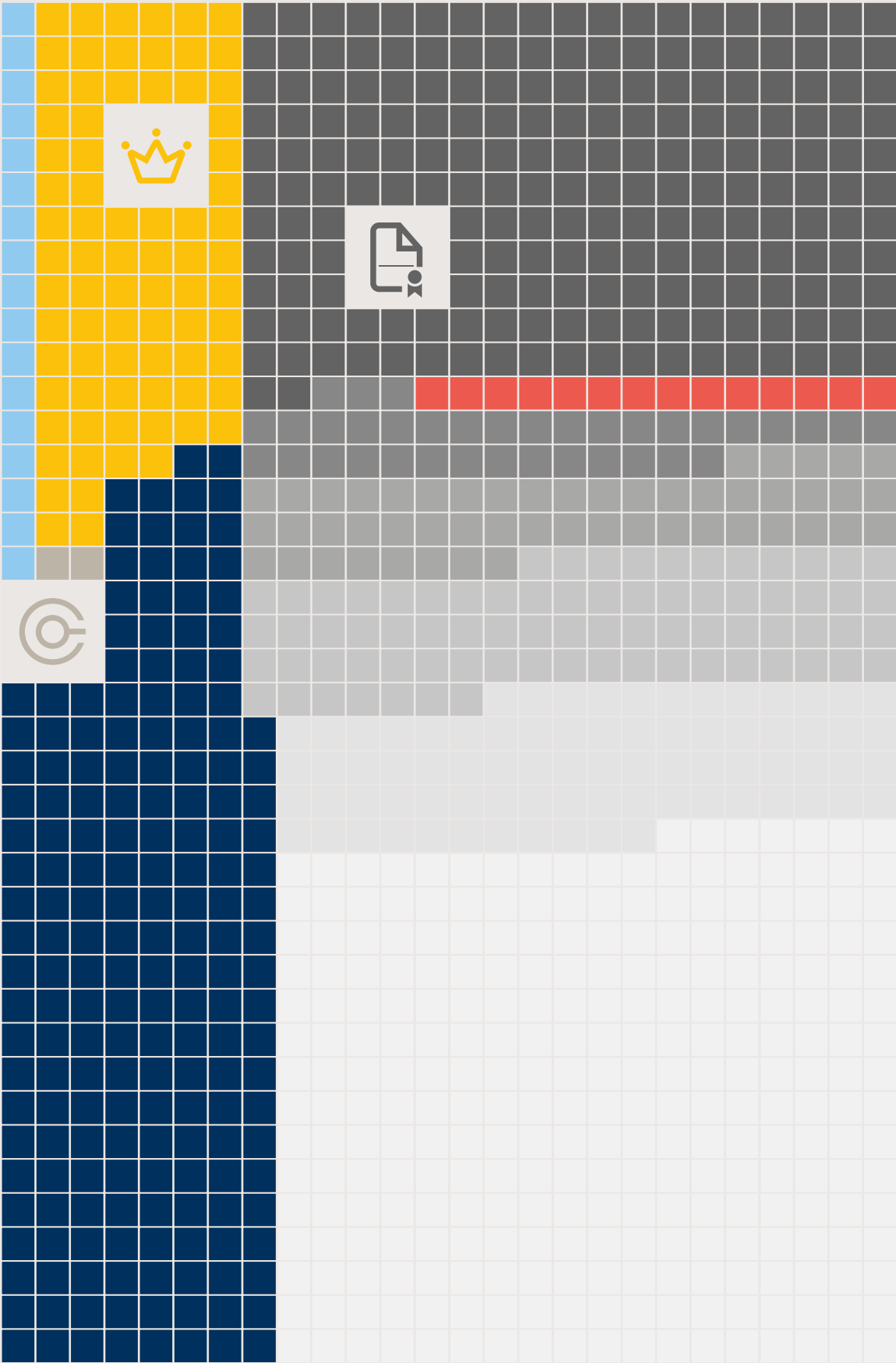
USD 244 bn

USD 100 bn



* Free-float market capitalization as of March 31, 2018

** Excluding real estate



SWISS EXCHANGE

UK
(incl. London Stock Exchange)

JAPAN
(incl. Tokyo Stock Exchange)

CHINA
(incl. Shanghai Stock Exchange and Shenzhen Stock Exchange)

EUROZONE
(incl. Euronext, Frankfurt Stock Exchange, OMX Nordic Stock Exchange, BME Spanish Stock Exchange and Oslo Stock Exchange)

USA
(incl. New York Stock Exchange and NASDAQ)

Source: The Money Project (Figures 2017), Visual Capitalist, SIX

#SIXHackathon 2018

Sleepless in Zurich

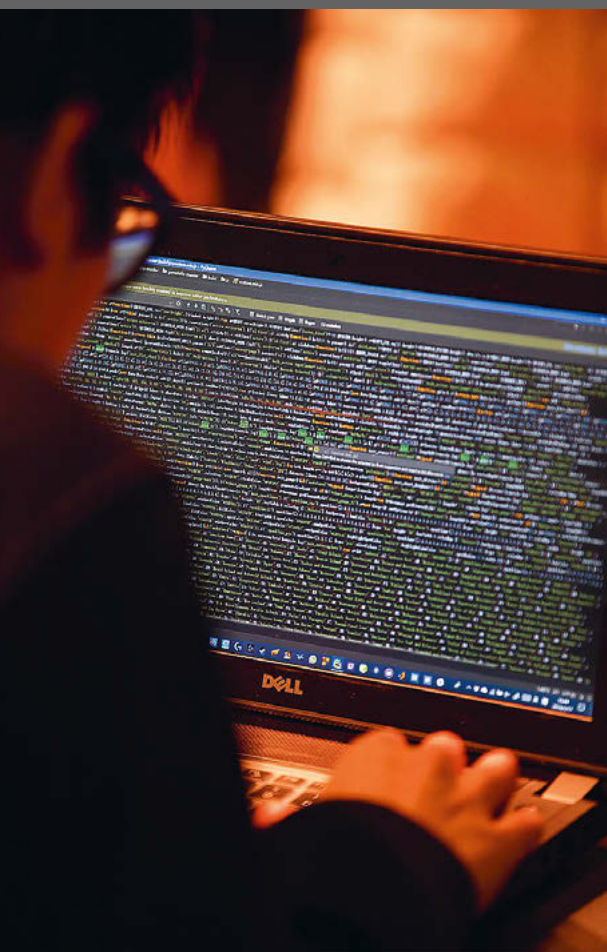
The fourth #SIXHackathon brought 130 contestants from 12 countries to Zurich. Broken up into 24 teams, they confronted a variety of fintech challenges. SIX challenged each team to turn its idea into a functioning prototype and to devise a corresponding business model, all within 48 hours. Sleep became a side issue. In recompense, massage chairs, yoga sessions, and a dance battle loosened up the competitors' limbs, as well as their strained neurons.

→ Watch video highlights of the #SIXHackathon: six-group.com/hackathon18



👤 *"I'll be finishing my degree program next year, so I view the #SIXHackathon also as a platform for networking."*

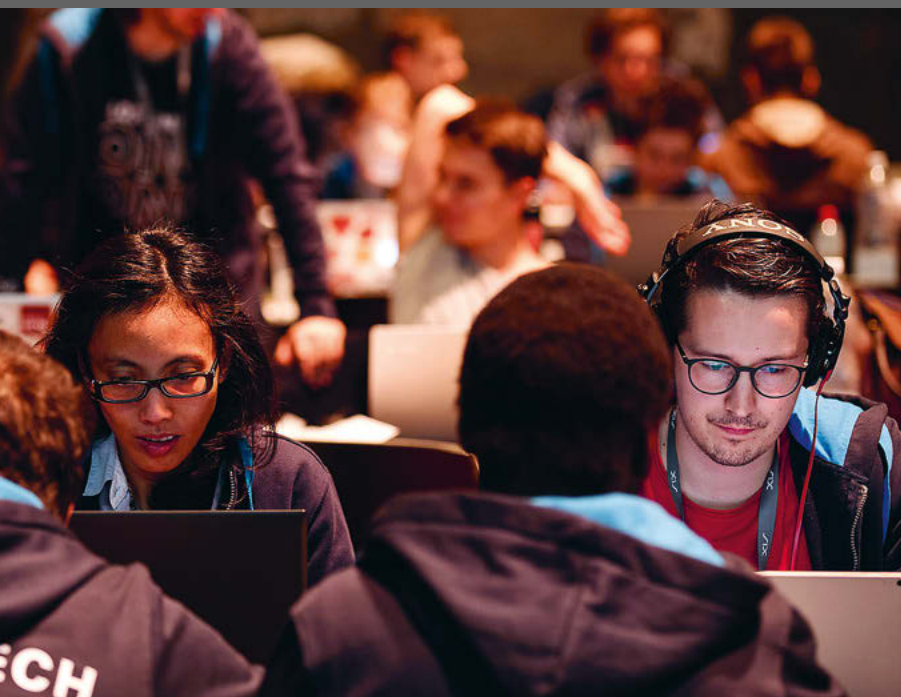
Jia Lai (right), member of team "LZ," and student of computer science at RWTH Aachen University in Germany





👤 *“Part of my job on the team is to fine-tune our idea to the benefit of SIX and its customers.”*

Ceynur Cinar, member of winning team “sustAID,” and employee of SIX



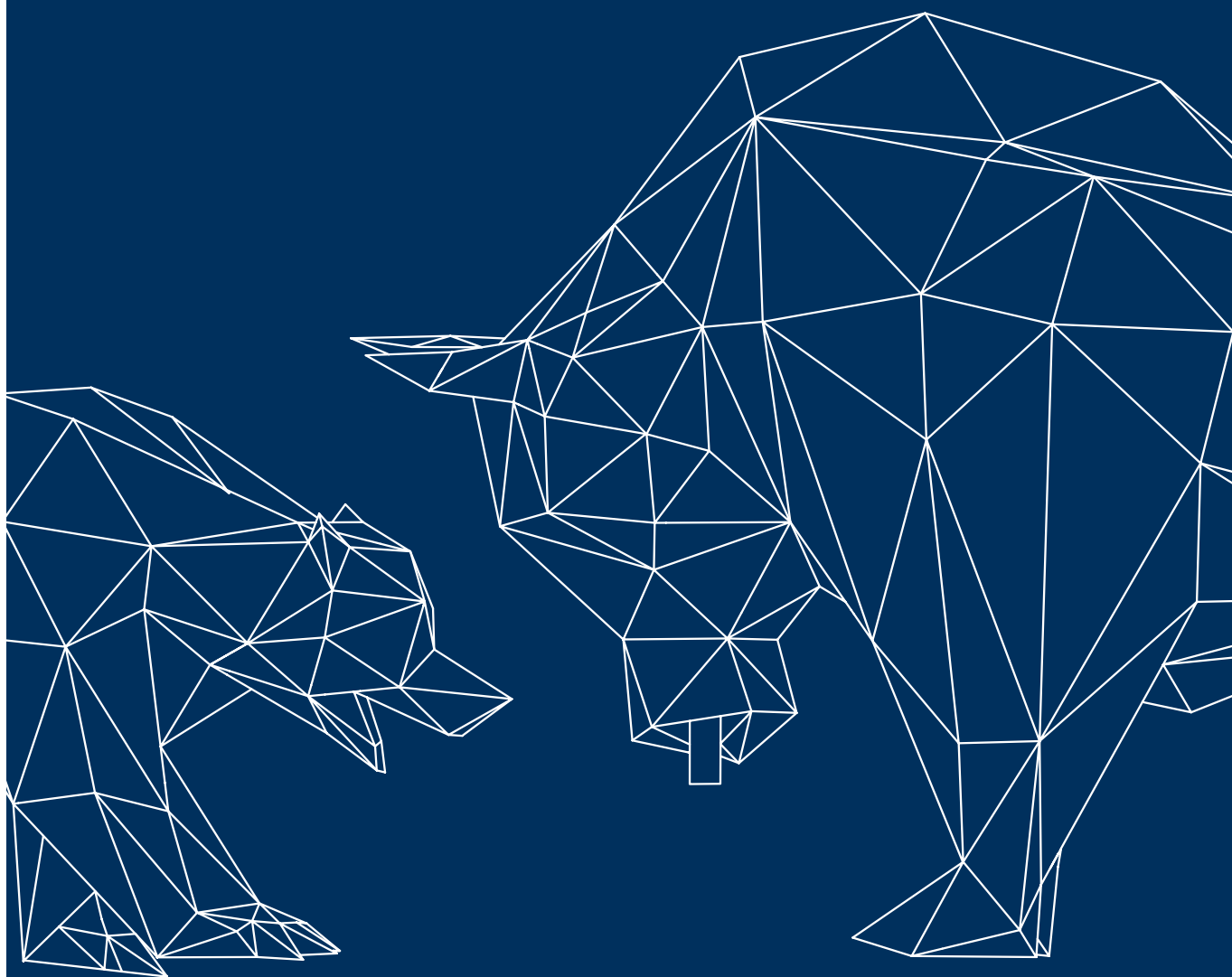
“I’ve learned a lot of new things here in a short time. Our team, for instance, developed a voice assistant that might be capable of simplifying bank-client interaction.”

Dominik Bucher, member of team “Heidi,” and PhD student in geoinformation engineering at ETH Zurich



30 YEARS SMI – EQUITY INDICES EXPLAINED!

New special exhibition at the
Finance Museum starting 1 June 2018



www.finanzmuseum.ch

The Internet of “Bring!”

Smart E-Commerce Before the advent of refrigerators, the milkman delivered fresh milk to homes. Today, refrigerators are getting smart and are ordering milk on their own. SIX may orchestrate the platform for that in the background.

Text **Mirjam Stegherr**

Shoes, clothing, washing machines: consumers are buying more and more products over the Internet. E-commerce is rapidly growing, particularly in the areas of home electronics devices and fashion apparel. Experts predict that only two years from now, the average Swiss household will be making one-fifth of its total purchases over the Internet. There is still greater reluctance toward online shopping for groceries, but smart kitchen appliances may soon change that. A smart refrigerator, for instance, not only keeps food fresh, but also replenishes it. Using an Internet connection and its own sensors, it can order milk when it has run out or can order the ingredients called for in a recipe.

A Win-Win-Win Situation

US market research firm Gartner projects that 20.4 billion networked appliances worldwide – being part of the Internet of Things – will be in our homes by the year 2020. Already today there are hardly any televisions left that are not internet-ready. “Digitalization will radically change our everyday lives, including our shopping behavior,” says Urs Gubser, Senior Strategic Project Manager E-Commerce at SIX. He’s

**There
will be
20.4
billion
networked
appliances
in homes
worldwide
by 2020.**



in charge of a new internal startup at SIX (see box) that has to do with more than just secure payment transactions: It’s about building a complete infrastructure for e-commerce over the Internet of Things.

SIX, in collaboration with partners, wants to combine three different elements – ordering, supply, and delivery – together (see diagram). The order is placed via the smart kitchen appliance, either automatically or manually. For example: When milk runs out, the refrigerator can order more on its own, or can first notify the consumer. SIX then directs the order to the retailer of choice and dispatches an available delivery courier. Orders based on criteria such as price, regionality, or organic quality would also be conceivable. SIX would transmit the order to an appropriate retailer using a fair distribution formula. The adaptive system from SIX could continually integrate additional criteria.

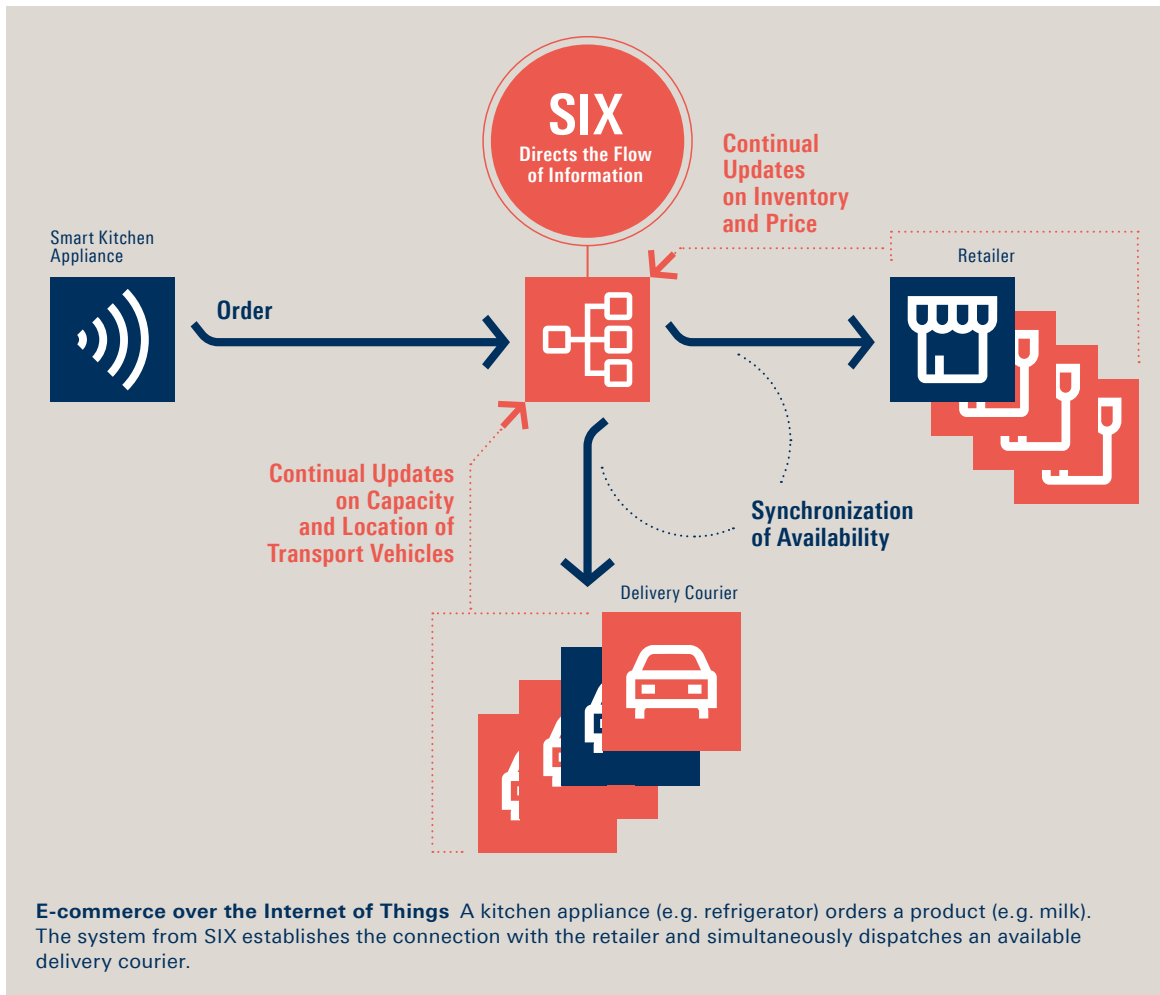
As an intermediary, SIX would act neutrally and would even include small retailers that lack the resources to set up their own infrastructure. “It’s a win-win-win situation,” Gubser says. A new, secure platform would come into being. “The consumer wins because it’s more convenient. The retailer wins because it gets a new sales channel. And the delivery courier wins because its transport capacity is better utilized.”

By engaging in this project, SIX is investing in the future. Digitalization is coming, and it will also revolutionize the fresh groceries market. Swiss consumers currently order only around 2% of their groceries online – they particularly want to see and touch fresh fruit and vegetables before buying. But that has changed in the USA, where around one in four households already orders at least some of its groceries over the Internet today. It’s practical not to be constrained by store hours.

Variety Instead of Monopolies

This trend will further intensify when new platforms become intuitive to use, Gubser is convinced: “Success in e-commerce always hinges on convenience and security.”

SIX won’t bring its system onto the market until it functions flawlessly, he says. Its first trial run as a minimum viable product (see box) will start in the summer of 2018, when a small group of users will test the system and help optimize its processes. Manufacturers capable of supplying smart



refrigerators as an interface already exist, Gubser says. Retailers and delivery couriers are also expressing interest.

"We're at the start – not the end – of digital evolution. So we have to invest today," Gubser asserts. Digital companies in the USA have recognized the trend: Amazon took over the Whole Foods organic supermarket chain in 2017, and shortly thereafter Google started a partnership with grocery behemoth Walmart. Investments by grocery retailers in Europe thus far haven't been profitable, at least not yet. The market can change rapidly, though, as evidenced by Facebook, the world's largest social network. Facebook didn't even exist 15 years ago, but today it has more than 2 billion members worldwide. The system from SIX is aimed at helping to ensure variety in a digital market that is increasingly dividing itself into monopolies. A smart refrigerator can be a first step toward that vision. ■

SIX Startups in the F10

From Prototype to Product

With its Internet of Things project, SIX is already sending its third internal startup into the F10 FinTech Incubator & Accelerator. Its forerunners were xChain, a community for corporate actions, and DealPool, a platform which is aimed at automating the bond issuance process. Each year, 30 startups from around the world, split into two batches, get a chance to participate in the F10 accelerator program. With the support of in-house coaches and external mentors, they work for six months on a minimum viable product (MVP). An MVP, in contrast to a prototype, is a product or service that already offers enough functionality to provide added value for prospective customers. The time spent in F10 enables the founders of internal startups at SIX to bring their ideas to fruition away from day-to-day business exigencies. SIX is the originator, co-founder and main sponsor of F10.

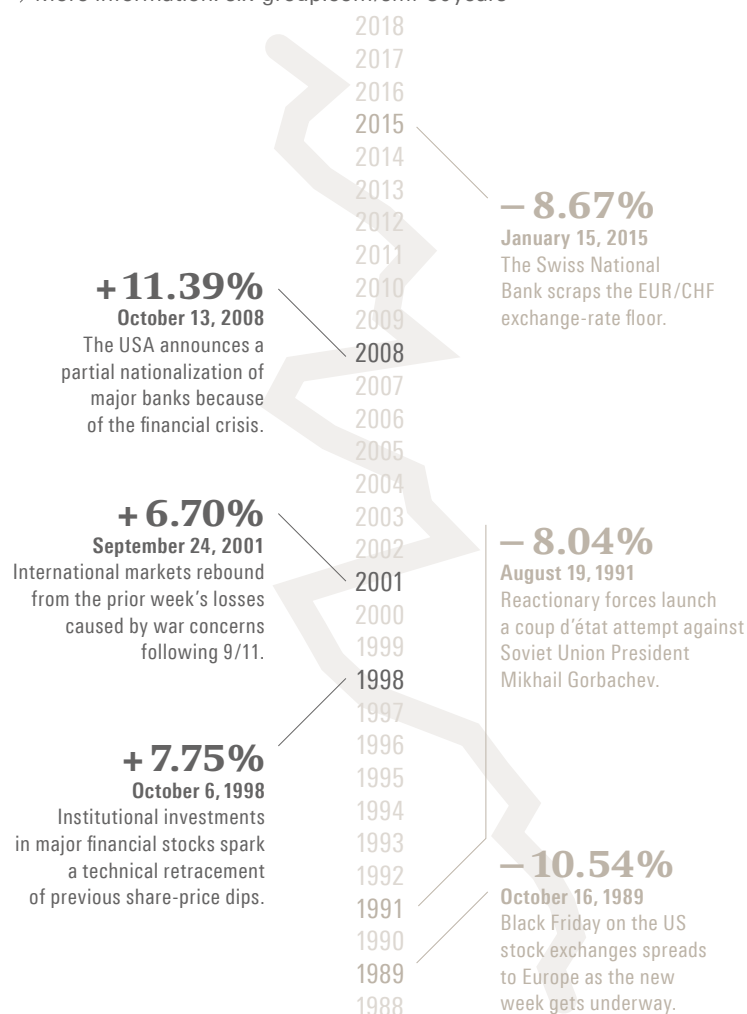
→ More information: www.f10.ch

The Statistic

SMI Celebrates 30 Years: Upward Trend Overall

The Swiss Market Index (SMI) debuted on June 30, 1988, at a level of 1,500 points. In early 2018, the year of its 30th anniversary, the SMI hit a new all-time high at a level above 9,950 points. The value of the SMI has increased more than sixfold since the index's inception, but its trajectory hasn't always been pointed upward. The three biggest single-day gains and losses in the SMI's eventful past illustrate that stock indices are also chronicles of history.

→ More information: six-group.com/smi-30years

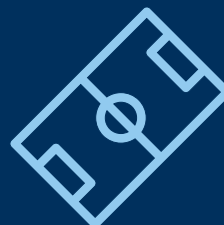


The Swiss Finance Museum is presenting a retrospective of 30 years of Swiss economic history to celebrate the milestone anniversary of the SMI. The special exhibition, featuring items including original stock and bond certificates issued by companies in the blue-chip index, runs until mid-2019.

→ finanzmuseum.ch

The List

Surprising Stats about the Football World Cup



400

The official logo of the 2018 football World Cup in Russia was unveiled by one female and two male cosmonauts aboard the International Space Station orbiting 400 kilometers above the Earth.

7,000,000

Football fans from around the world have entered requests for 7 million tickets to the upcoming World Cup. SIX securely registered 366,000 credit card numbers for those ticket applications and reliably processed the international advance ticket sales for the event through its payment transaction infrastructure once the selection drawing was completed.

334,000

Tournament debutant Iceland, with just 334,000 inhabitants, is the smallest country to ever compete in a football World Cup.

2,500

The stadiums in Yekaterinburg and Kaliningrad are 2,500 kilometers apart. That equals the distance from London to Madrid – and back.

10

There are only 10 Russian villages – hamlets not counted – that are smaller than Kedrovoy in Siberia, where Ekaterina Bocharova was born. She designed the mascot – a wolf – for the football World Cup in Russia.

The Glossary

Radio Waves

Fiber-optic cables are the data highways that connect the world's financial capitals. But highways rarely take the shortest path. They track along urban centers and have to cross rivers or circumvent mountains. So it takes around 10 milliseconds for a unit of information to travel from the Swiss Exchange to London and back. That's fast, but not rapid enough for some stock-market traders. Like a trip on an airplane, travel through the air goes even faster. Radio waves take only 5.5 milliseconds to cover the same route. Not bad for a technology that has already been in use for over 100 years. Heinrich Hertz experimentally proved the existence of radio waves back in 1886. The company 12Horizons maintains point-to-point radio wave links between the financial centers in London, Frankfurt, Milan, and Zurich, and is now bringing these into a joint venture with the the Swiss Exchange. The founding of 12H reaffirms the vanguard role of SIX in further developing electronic trading through the use of cutting-edge technologies – some that may even have their origins in the 19th century.



RED
THE MAGAZINE
FROM SIX
Become a subscriber:
six-group.com/red

The Quote

*“I should probably
be about 332 years
old by then –
hopefully Bitcoin
will be worth
something.”*

Philip Neumeier has built a supercomputer to access his cryptocurrency fortune. He bought 15 Bitcoins for 260 US dollars in 2013 and afterwards forgot the password needed to access them. His supercomputer is one-and-a-half meters tall, sits in a 1,000-liter water tank to stay cool, and may take hundreds of years to crack the password code.

RED – The Magazine from SIX

Circulation: 5,000 copies

Publisher

SIX Group AG
P.O. Box
8021 Zurich, Switzerland
RED@six-group.com

Editorial staff

Claudia Holfert (SIX, Overall Direction);
Matthias Bill (SIX, Editor in Chief);
Franziska Garbe (SIX); Simon Brunner;
Mirjam Stegherr

Publication design

C3 Creative Code and Content
(Switzerland) AG, Zurich,
c3.co/switzerland

Picture credits

Thomas Eugster (cover, pp. 4/31-32);
Kyeni Mbiti (pp. 9/29); Ruben Ung
(pp. 10-11); TarikVision (pp. 12-17),
Milan Rohrer (pp. 18-19); Jorma Mueller
(pp. 22-24); Nils Sandmeier (p. 28)

Proofreading

Text Control AG, Zurich, Switzerland

English Version

Mark Rabinowitz (Translations)
Robin Scott (Copy Editing)

Printer

linkgroup AG, Zurich, Switzerland

**Subscription, Unsubscription,
Change of Address**

six-group.com/red

“The Financial System Remains Fragile”

Future Talk: The Next Crisis A decade after the last financial crisis, finance professor Manuel Ammann and ethnologist Stefan Leins engage in a discussion about the value of forecasts, the meaningfulness of economic models, and the role of teaching.

Interview **Matthias Bill**

The collapse of US investment bank Lehman Brothers is nearing its tenth anniversary. Today stock prices have recovered, banks have beefed up their equity capital, and they've refound their conception of themselves. Is the next financial crisis a long way off?

Manuel Ammann Market participants have done quite a lot in the intervening time. You mentioned banks' equity capital, but I'm thinking also of other measures that market regulation has brought about, such as the institution of centralized counterparties for certain derivative transactions. I see greater transparency and greater stability on the whole today, also because banks have now redesigned their incentive structures with the long term in mind. But there still are some structural factors that


make the financial system fragile.

The financial crisis ten years ago was partly a debt crisis, and debt in general hasn't diminished since then – quite the contrary, in fact. The growth in debt is not sustainable, and sooner or later it may lead to another crisis.

Stefan Leins As an ethnologist, I think from the perspective of people. And here, too, I can discern that something has changed. Public awareness of certain risks has certainly increased, though that in itself doesn't avert them. What's important to understand is that it's ultimately people who constitute the market, and because of that, future crises cannot be ruled out.

A Moreover, it would be illusory to believe that crisis-proof markets could even exist. Taking risks is not just part of human nature, but is also an



A full-page photograph of two men, Stefan Leins and Manuel Ammann, standing in a modern office hallway. They are facing each other in conversation. The hallway features large concrete pillars, a polished wooden floor, and large windows on the right side. Red and yellow geometric patterns are visible on the windows and pillars. The man on the left is wearing a dark blazer, a light shirt, and dark trousers. The man on the right is wearing a dark suit, a light shirt, and glasses. The lighting is bright, coming from the windows.

Stefan Leins
investigates financial analysts'
behavior patterns.

Manuel Ammann
puts economic models
in the proper perspective.



essential component of the mechanism of the market.

Which market participants were to blame, then, for the last financial crisis? When the dot-com bubble burst, scapegoats were quickly found in financial analysts.

L The *Financial Times* in 2001 even ran an editorial titled “Shoot All the Analysts.” The year 2008 was different. The problem evidently was too complex to blame it on a single group of market participants. Yet it was this financial crisis that inspired me to undertake my field research. Over a period of two years, I worked in the financial analysis department of a large bank and conducted participatory observation fieldwork there [see book tip on page 34]. Among my colleagues at the bank, there were a few who found themselves at fault. The fact that they had issued

recommendations to buy risky stocks or structured products made them guilty in their own eyes. But those financial analysts were the exception rather than the norm.

A As an economist, I harbor near innate doubts about the predictability of markets. Was that a subject of your research?

L It was exactly. I asked myself why financial analysts exist in the first place when economic theory actually delegitimizes their forecasts. In this context, and tying in with the question of fault, it’s interesting that although an individual financial analyst cannot steer markets, the entire guild of analysts can indeed move individual stocks or sectors. That’s because there’s a frequently discernable consensus across banks. Take the BRICs, for example, the construct that lumps the individual states of economic development in Brazil, Russia, India, and China into one bucket. The propagation of the BRICs story and the corresponding investments made caused the formulated expectations to actually materialize in the market.

Financial analysts didn’t cause the crisis, but they didn’t see it coming either.

A Just like the theoreticians didn’t. I do believe that the science of economics is capable of recognizing abnormal developments, but the notion that we can use scientific methods to predict the future is unrealistic. Asking a scientific discipline, or a profession in the case of financial analysts, to provide early warnings of crises in time to head them off is simply too high a demand.

L I can only concur with that. Nobody ever blames a political scientist for not having foretold a civil war. The idea of being able to predict such crises in the same way we do with avalanches implies that markets function in line with laws of nature. But in reality, they clearly don’t. As mentioned before, human beings play a central role. There are, of course, identifiable

“It would be illusory to believe that crisis-proof markets could exist.”

Manuel Ammann

patterns. But there are also phenomena that defy all economic logic.

Did rigid belief in economic models thus perhaps even contribute to the crisis? Criticism to that effect was at least directed at the teaching of economic theory.

A Could we at universities have done something differently? I repeatedly asked myself this question during and after the latest financial crisis. I ultimately arrived at the conviction that we taught and are still teaching the right theories. Those theories are the armamentarium. Economic models have stood the test of decades and help reduce complexity, but they have their limitations. If employed too aggressively, they can cause unexpected results.

L One indeed shouldn’t underestimate the impact of models. When applied in actual practice, models often take on a life of their own. When incentive systems that foster risky behavior are then thrown in on top of that, many a word of caution learned during one’s university days fades into the background. Moreover, something that I observed during my field

Prof. Dr. Manuel Ammann

Manuel Ammann is a full professor of finance at the University of St. Gallen, where he is the dean of the School of Finance and a director of the Swiss Institute of Banking and Finance, as well as the academic director of the master of arts program in banking and finance. Prof. Ammann also regularly acts as a consultant and independent advisor to business enterprises and government agencies.

Dr. Stefan Leins

Ethnologist Stefan Leins is a senior lecturer in the department of social anthropology and cultural studies at the University of Zurich, and is a member of the Anthropology of Economy research program at the London School of Economics and Political Science. He has taught at the universities of Zurich, Lucerne, Liechtenstein, and Trondheim.



“Nobody ever blames a political scientist for not having foretold a civil war.”

Stefan Leins

research additionally happens: Senior financial analysts frequently urged rookies to forget what they learned in college for the time being and to develop a “feel for the market.”

A I can illustrate that with an example. The metric “value at risk,” or VaR, expresses the risk exposure of a portfolio in a single number. But that number conceals within it a vast amount of assumptions. If, a while later, you stop paying attention to those assumptions, if you forget them or even intentionally sweep them under the table, sooner or later you are operating outside the bounds of theory. At the University of St. Gallen, we have always taught students to break away from a pure model perspective, to factor in the underlying assumptions and to even question those assumptions.

L We in the social sciences can play a part in emphasizing the human factor when analyzing markets. We have methods such as participatory observation that enable us to do that. During my time at the bank, I was able to watch what financial analysts do, how they behave within their group, and the resulting dynamics that develop over a lengthy period. If I had conducted a simple

survey, I never would have discovered what really happens to models learned at university in actual practice.

A broad-based curriculum and responsibly minded students. Is that the University of St. Gallen’s way of averting another financial crisis?

A Our curriculum is, in fact, broad-based, the financial crisis from 2007 to 2008 has been thematically incorporated into it at multiple levels, and we have long operated an institute for business ethics. However, I do not believe that it’s the job of universities to prevent crises. But we do have to explain and critically examine their mechanics, and we occasionally have to draw attention to developments that are unsustainable. I mentioned the huge amount of debt at the start of our conversation. Without debt, there wouldn’t have been a financial crisis.

L I find that interesting. How can you entice banks to curb debt accumulation when debt is an intrinsic part of their business

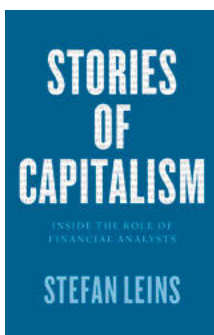
models? By persuading them of the long-term benefits?

A An individual institution optimizes its business for itself and its shareholders. It will not forsake profits for the benefit of the overall system. That’s where regulators come into play. Policymakers must create market structures that permit only a certain magnitude of risk. Tax laws like those in Switzerland, which do more to encourage than inhibit debt accumulation, could be the subject of such a dialogue. But beware: A very strict regulatory regime aimed at preventing any and all crises would unduly inhibit market participants.

L After all, susceptibility to crises lies in the very nature of markets. ■

Book Tip

In the Midst of Financial Analysts



Dian Fossey, who was made famous by the film *Gorillas in the Mist*, had to travel to the jungle of central Africa to conduct her research. All Stefan Leins had to do was to hop a tram to the outskirts of Zurich. There, on the premises of a large Swiss bank, he studied the species known as financial analysts for his dissertation by joining the bank’s financial analysis department for two years as a part-time employee. His observations made there have now been laid out in a book. *Stories of Capitalism* describes after-hours initiation rites and financial analysts’ strict cultural segregation from asset managers

and client advisors. But Leins primarily addresses the question of why financial analysts exist in the first place. After all, their forecasts are reputed to be not much more than reading tea leaves.

→ More information: press.uchicago.edu

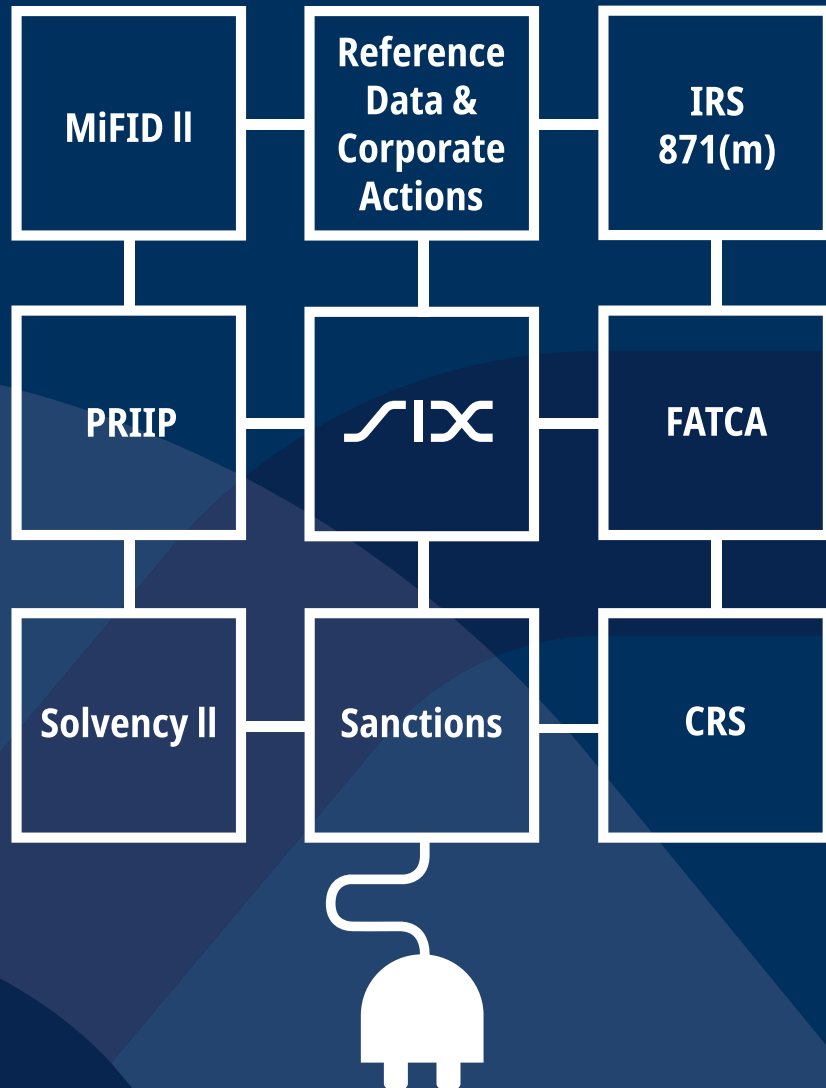


Payment Services

When two heads are better than one.

A successful business runs on a combination of passion and flexibility. This is why an efficient payment service that you can rely on at all times is essential. It leaves your hands free to concentrate on more important matters: your business. **Because quality matters.** six-payment-services.com





**Consistent Plug 'n' Play
Regulatory Data**