

Global Future Council on Financial and Monetary Systems

The Global Financial and Monetary System in 2030

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Introduction

The global financial and monetary system is at a crossroads. A decade after the onset of the global financial crisis, the world economy is showing signs of recovery. Growth in 2017 was broad-based, accelerating in about 75% of all countries. Boosted by a recovery in investment, global trade growth has rebounded from its low point in 2001. The improved economic outlook, in an era of low interest rates, has boosted equity valuations and growth prospects for 2018 and 2019 are also robust.

However, significant challenges remain. Based on per capita numbers, growth in almost half of emerging economies lagged behind advanced economies, and up to a quarter of developing countries have seen declines. In addition, the labour share of income continues to decline globally, as returns to capital increasingly contribute to global incomes. Thus, achieving inclusive growth remains the paramount objective.

The world community has agreed to the UN Sustainable Development Goals (SDGs), which are part of a broader 2030 Agenda with specific milestones related to sustainable development. By any yardstick, the scale of what needs to be achieved is exceptionally large, and the urgency of needed changes is exemplified by the weight of demographics and urbanization in the developing world. The global objectives of inclusive and sustainable growth place extraordinary demands on investment in infrastructure, much of it in countries that historically have not attracted much international capital for this purpose.

The SDGs have to be met at a time when the international monetary and financial landscape itself is going through dramatic transformation: (1) new economic poles are emerging; (2) power is moving away from public institutions to non-state actors; (3) accelerating technological changes are disrupting existing business models, threatening the future of jobs but also providing new opportunities that were unimaginable a decade ago; and (4) demographics are shifting. All this is happening in a political atmosphere still tainted by the financial crisis of 2008 and decades of increasing inequality within most societies.

In meeting these challenges, the global financial system has to balance two seemingly opposed forces: decentralization and integration. To prevent excessive systemic disruption and fragmentation, the international financial architecture will need to adapt.

Value to society

The financial system facilitates the efficient allocation of capital and in doing so gives access to savings and financing solutions through safe payments systems. It offers financial protection and the sharing and diversification of risks. Broad and reliable access to financial services is essential for a resilient real economy and social cohesion.

The promise

Successfully harnessing the two opposing forces of decentralization and integration can reinvigorate the global financial system and provide universal access to financial services to fund real economic activity, manage wealth, and diversify risks. Enhanced financial inclusion could facilitate a downhill flow of capital and a reduced reliance on debt financing. A well-functioning financial system is our best hope to solve the global structural transformation challenge.

Decentralization

1. The US dollar loses its pre-eminence

Today's centralized global monetary and financial system – featuring a dominant US dollar – mutates into a world with multiple reserve currencies and financial powers of influence, mirroring the shift from the British pound to the US dollar as the reserve asset. As economic importance traditionally leads financial and monetary pre-eminence, the euro and renminbi are likely to gain importance alongside the US dollar and increasingly meet the world's demand for the reserve currencies and safe assets.

2. Decreasing use of paper money

Digital money – issued privately or by central banks – and decentralized ledgers proliferate with implications for monetary and financial policy-making. In countries, where changes are rapid, the growing fintech industry is providing specialized financial services using a range of digital innovations, including those that supply credit and payments services to households and businesses through online platforms. Acceptance and adoption of cryptocurrencies will continue to spread. These developments will bring together markets, institutions and infrastructure in a multi-polar, complex and interconnected world, which will challenge the conduct of monetary policy and have implications for financial stability.

3. Traditional bank business models will be challenged

Fintech will transform traditional banks and insurance companies, with the emergence of newly decentralized entities providing liquidity and new financial services in a disintermediated way. The development of new technologies will create new asset classes that directly match savers and borrowers and foster risk mitigation through the commoditization of financial data but also lead to more fragmentation and dislocations.

Integration

1. Global financial integration accelerates

Powered by shifting demographics and new technology, the post-global financial crisis stall has been replaced by a new golden age in global financial interconnectedness, promoting a more tight-knit network between countries, enterprises and individuals in developed and emerging countries. A predicament for global financial integration is a collaborative political infrastructure. The emergence of political fragmentation and higher political uncertainty could pose a risk to the global interconnectedness through higher trade barriers or greater financial protectionism.

2. Greater financial inclusion with developing economies

China, India and emerging Asia join the big leagues, leaving Africa as the final frontier for global investors – with new technology offering novel solutions to traditional governance mechanisms, property rights registration and contract enforcement.

3. Universal access to financial services

Universal financial inclusion and access to financial services become a reality. The development of new technologies and decreasing intermediation through traditional banks will give all adults access to transaction accounts to store, send and receive payments.

The challenge

A more decentralized but interconnected system could be the source of increased risks. Managing these will require developing an agile supportive overall infrastructure – notably powerful and nimble backstops, effective regulation and new crisis management tools – while facilitating the implementation of new technologies and not stifling the system's healthy expansion.

Managing disruptions

1. A decentralized system at risk of disruption

Just as previous waves of structural change and financial innovation have posed risks to financial stability, market order and investor protection, a more decentralized and integrated financial system will remain vulnerable to shocks, including cyber threats, market exuberance and changing patterns of credit, liquidity, contagion and operational risks.

2. Need for new forms of regulation and crisis management

Changes of the global financial landscape will blur traditional boundaries between financial intermediaries, markets and service providers, as well as those based on nationality or residency. As geographic and sectoral boundaries become less meaningful, nationality/residency and sector-based taxation and regulation diminish in effectiveness.

With decentralization and integration as key forces behind the development of the financial system, the regulatory and supervisory architecture will need to evolve to prevent market failure, foster stability through resilience and promote level playing fields for established and innovative markets. This adjustment will require policy coordination at

supranational and national levels and a dynamic adjustment of rules and supervisory practices to ensure the coverage of relevant financial entities and activities.

In this white paper, we single out three key aspects of the risks and challenges associated with the two seemingly opposed forces of decentralization and integration, to which the international financial architecture will need to adapt. We organize the examination of these aspects into three chapters that focus on regulatory challenges (Chapter 1), the transformation of the financial system through digitization (Chapter 2), and current macroeconomic risks (3). While these chapters are by no means exhaustive, they serve the purpose of stimulating a discussion on the risks and challenges faced by ongoing changes to avoid future systemic disruption and fragmentation of the international financial architecture.

More specifically, in Chapter 1, Axel Lehmann and Steffen Kern discuss the need for global regulatory coordination to safeguard the health of the financial architecture and global economic growth and peak beyond the completion of the G20 agenda of global policy coordination.

In Chapter 2, Karen Fawcett, Jeff Tessler, and Claudio Scardovi, with the support of Oliver Frischmeier and William Park discuss the impact of digitization on financial services providers and general access to finance. They focus on the crucial role of financial disintermediation in the payment services industry, the role of big data and the importance of the growing use of the distributed ledger technologies (DLT) and crypto assets. In a second part, Olli Rehn discusses policy orientations and communication lines on digitization from a central bank's perspective.

Finally, in Chapter 3, Hélène Rey and Jeromin Zettelmeyer discuss the current macroeconomic risks and challenges faced by the financial community, in particular the low interest rate environment. They examine the impact low interest rates have on financial intermediaries, what we may expect about monetary policy and the potential policy implications.

Chapter 1: Regulation

Authors: Axel Lehmann and Steffen Kern

Renewing the commitment to global regulatory co-ordination

The year 2017 marked the 10th anniversary of the outbreak of the global financial crisis. It took a serious toll on the global economy, with a cumulative loss of one quarter of a year's global GDP, according to the Financial Stability Board (FSB), and it had a significant impact on national and global politics.

The G20 crisis response marks an impressive advance in the coordination of financial market policies at a global level. The financial industry has been supportive of efforts to improve regulations to build a reliable framework for investors and financial services.

As a result, and in addition to many other significant measures to enhance their resilience, banks have built higher, and better-quality, capital and liquidity buffers. In securities markets, the clearing of financial derivatives has been fundamentally reformed and credit-rating agencies, money market and hedge funds have been brought within the regulated perimeter.

Financial markets have proven remarkably resilient in recent years, even when faced with adverse or severe developments. Critical episodes such as the debt crisis in some European Union member states, massive swings in oil prices, non-performing loans and profitability risks in some banking sectors, as well as the United Kingdom's vote to leave the EU, passed without significant turmoil on financial markets so far.

Consistent completion of G20 agenda

As the G20 regulatory programme nears completion, it is important to look ahead. Global policy coordination will remain essential and the future agenda should cover three areas.

First, as post-crisis reforms mature, evaluating their effects is a key task. We need a thorough understanding of the effectiveness of the measures implemented around the world, as well as possible unintended consequences. This applies in particular to the cumulative effects on banks, insurers, asset managers and others and how these may feed through to clients and the wider economy.

Global coordination essential

The FSB's framework for post-implementation evaluation of the impact of G20 financial reforms is an extremely important initiative, and close consultation with market participants and other stakeholders should help to identify the wide variety of effects and transmission channels.

Second, while it is the right time to review the effectiveness of the reforms of the past decade, it remains important that any ongoing and future work is done in a globally coordinated way. Initiatives such as the review of financial reform, ordered by the US government, and the European Commission's call for evidence are important and any follow-up to their findings should be aligned to avoid an even more fragmented global financial system. It is also important that the final Basel capital framework is calibrated in a way that supports consistent implementation among regulators across the main jurisdictions to remove unnecessary complexities and inefficiencies. Besides, international cooperation should adapt to demands for more transparency and accountability. The credibility of international bodies' work depends on such features.

Regulation for future financial system

Third, the past decade has brought about tremendous technological progress in areas such as algorithmic information processing, artificial intelligence, big data handling and vastly enhanced calculating and storage capacities, as well as widespread broadband internet access.

These developments transform financial intermediation through crowdfunding and automated financial advice and market infrastructure through distributed-ledger technology. At the same time, as finance is becoming increasingly digitized, vulnerabilities to cyberattacks and technical glitches become more salient.

For many banks and other financial firms, innovation and digitization have become key strategic priorities. While the impact on revenue of digital disruption is still fairly peripheral, the substantial uptick in financial technology investment indicates the growing importance of this field.

Policy-makers around the world are right to take a strong interest in these developments, not only with an eye on possible financial stability and consumer protection risks but also sensing the positive potential for their economies. To remain effective, regulation and supervision should work towards internationally agreed responses to these developments and be equipped with the capacity needed to promote stability in the new environment. If regtech applications are adequately developed, standardized and implemented, they could benefit both regulated entities and regulators, contributing to more efficiency and enhanced safety and soundness of the financial system.

As a consequence of these three imperatives for the future of the regulatory agenda, it becomes clear that the global financial system cannot afford falling behind on international coordination. Finance continues to develop in a global dimension, as new challenges from the market environment and technology show. The economic rationale for the global policy cooperation of the G20 and FSB is, therefore, as strong as ever.

Chapter 2: Digitization

Authors: Karen Fawcett, Jeff Tessler, Claudio Scardovi, Oliver Frischeimeier and William Park

Future of Financial Services in 2030 – Impact of Digitization

With the proliferation of the mobile phone and rapid digitization, the financial services sector has been caught in a tide of change. Technological progress and its rapid adoption by consumers are disrupting the essential elements of financial services – namely **trusted means of exchange** (using “fiat” currencies and network), **management of wealth** (storage and accumulation of wealth) and **custody of personal data**. The question is whether client choice and systemic risk will be improved or worsened in this process.

The digital world has introduced a wave of new capabilities, removed barriers of entry to the sector and elevated customer expectations – all in a relatively short timeframe. Three digitization forces are in play and determine the future of the financial services sector: (a) payments disintermediation; (b) data aggregation and artificial intelligence; and (c) distributed ledger technology. In the early 2000s, the advent of start-ups predicted an era of disruption using technology as a decentralizing force freeing up competition and creating choice. However, nearly 20 years on, this has been only partially true. While huge creativity has emerged through a myriad of start-ups, arguably most disruption is coming from new entrants in the form of large technology companies such as Facebook, Alibaba and Samsung – triggering incumbents to initiate their own projects in a bid to counter the trend and actively seek start-ups for partnership opportunities

Consumer behaviour is evolving just as fast. Today, 70% of consumers still trust their bank most with their personal data (Accenture, 2016), but with the digital generation (Generation X and Y) forecasted to represent 70% of the global workforce by 2030 (United Nations, 2017), this precedent will be challenged dramatically over the next decade. In the UK, for example, while more than half (54%) of consumers between 54 and 64 years old would not trust anyone to aggregate their personal account information, only 15% of the 18-to-24-year-old age group feel the same way (United Nations, 2017). Furthermore, in emerging markets, we can expect this process to be accelerated by technology leaps. In Kenya, for example, about 40% of the GDP already takes place on the M-Pesa platform, a mobile money platform created by Vodafone only a decade ago (Runde, 2015).

By 2030, financial services will be completely transformed requiring substantial steps to be taken today by the industry, new entrants and regulators to ensure a positive outcome of the transformation. If unchecked, the impact of these forces on client choice, the range of providers and the level of risk in the system is going to be dramatic, resulting in a financial system dominated by a few large techfin players fuelled by their power of data aggregation relatively unencumbered by the current levels of regulation plus a handful of today's incumbents.

Examples of the impact of the three digital forces on financial services

	Three Forces		
Key Elements of Financial Services	Payment Disintermediation	Data Aggregation and Artificial Intelligence	Distributed Ledger Technology (including Cryptocurrency)
Means of Exchange	Choice and competitive service Lower oversight and screening Merging of finance and commerce	Better experience and risk management Concentrated power influencing purchase decisions	Choice and efficient processing More infrastructures Reduced monetary control
Management of Wealth	Extension of payments freedom Rise of quasi deposits	Enhanced bargaining power via new aggregators Broader regulatory burden	New asset and efficiency Lower oversight – need for taxonomy of trust
Custody of Personal Data	De-centralized responsibility Less regulatory protection	Convenience and service Reduced consumer choice with lower regulatory oversight	Owner controlled and enhanced privacy controls Persistent data risk – almost impossible to be forgotten

a. Payments disintermediation is the key catalyst for change

Entering 2018, the payments industry has already been disrupted and disintermediated. A large part of non-capital intensive financial services has moved away from traditional banks, while they have been embroiled in global financial crisis remediation and additional compliance requirements. The impact is more evident with retail clients, with the ramifications beginning to show, but attractive services to corporate clients are also expanding fast with no reason not to mirror the retail picture.

The impact on “means of exchange” has been dramatic with a plethora of new payments solutions that are emerging from techfins such as Alipay, Apple and Google, and a few large fintechs including Mondo, PayPal, Transferwise and Revolut. These new entrants are winning by leveraging their giant new economy businesses (such as online market places, chat and search) and adding payments on to existing relationships and transactions. By targeting cash and low-value transactions they have been able to establish their own payments and e-wallets ecosystems. Huge portions of the population, including the youth, the rising group of digi-elders and the “just too busy” are enjoying a slick and seamless customer experience, powered by superb data and technology. Falling prices of mobile devices, and a willingness of consumers to make full use of their fragmented time, has permitted these techfins to cover more parts of users’ daily lives by feeding consumer appetite for convenience and instant reward – all the while collecting personal data for analytics in the background.

In some markets, huge proportions of payments have already moved by taking advantage of light regulation for lower-value payments. China is an extreme example, with 92% of college students making payments with their mobile devices in 2016, with the majority (85%) channelled through only two techfin payments providers: AliPay and TenPay (iResearch, 2017).

On the one hand, the disruption of the retail financial services has been refreshing, injecting much-needed impetus for the industry to innovate and provide a better service to their customers. On the other hand, it is reminiscent of many times in history when commerce and financial services come closer together, followed by inevitable regulatory separation. On the surface, regulations appear to lock techfins into lower transactions, but this may be deceptive. Taobao, the marketplace primarily for individuals with payments powered by Ant Financial, auctioned two Boeing 747s recently (Scheetz, 2017). Such activity will only build temptation for techfins to branch out and handle larger transactions.

Via payments, techfins have crossed over to the core of wealth storage and management. The largest money-market fund in the world, Chinese Yu'e Bao, was formed Charles Schwab-style by sweeping up idle balances in the wallets of nearly 1 billion people. Individual balances are tiny, but their combined power created the largest money market fund at \$165 billion (Lucas, 2017). A plethora of fintech wealth advisory services has been launched – focusing on the large

and underserved emerging affluent segment. These provide choice and potentially slicker services for busy professionals, but for now are mostly confined to an advisory/brokering role rather than underlying asset management.

The impact on personal data is evolving. Many services are piggybacking on services provided by banks either via credit and debit cards or bank accounts, which enable the transactions or fund wallets, but rising KYC requirements across all players mean personal data is being given to an ever-increasing number of institutions and by 2030 a meaningful shift into companies outside traditional highly regulated financial services providers is expected.

b. Data – the new oil – and artificial intelligence

There is no doubt that data is the “new oil” of the digital era. Artificial intelligence is the means of using this power rapidly and efficiently; winners will have superb skills along this spectrum. How the battle for this data (the historical bastion of banking secrecy) progresses is key to ensuring this digital transformation renders economies and societies more efficient and effective, safe and sound, while preserving the core values of freedom, democracy and equality that should constitute the backbone of any developed ecosystem.

Aggregators are the new focus of attention. Tools such as Quicken have been around for decades but now regulatory freedom plus application programming interface (“API”) technology protocols, particularly in the EU, are making instantaneous real-time data sharing the new reality. It is starting with payments, but given that payments are the route to the management of wealth and custody of data, we expect aggregators to be soon making offers to their clients and anchoring their role in the centre of relationships. In January 2018, a new raft of account information service providers (AISP) will appear to meet our increasing information needs.

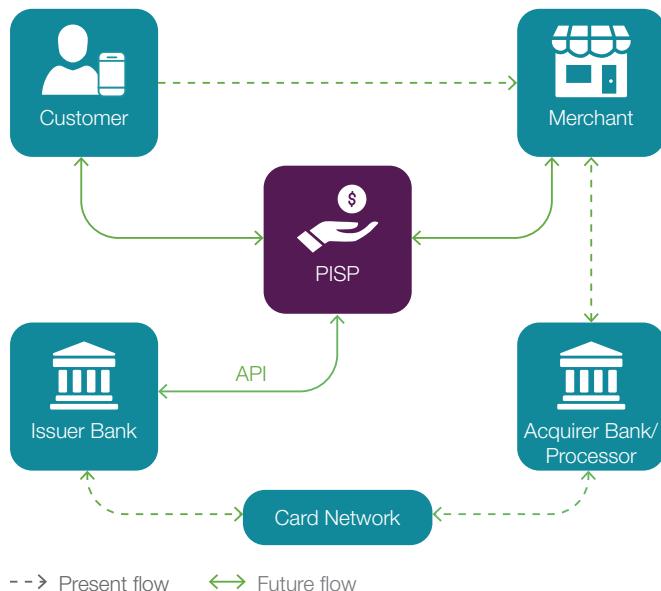
From a consumer’s perspective, aggregation is the ultimate convenience – replacing the historical relationship bank that did everything for you. All financial data in one place, with additional services on offer to maximize your yields, minimize idle balances and make many tough and often annoying decisions on your behalf.

Consumer choice in who holds your most precious data is about to open up massively. The speed and extent of impact is yet to be determined, but we should prepare for a massive shift of power into a lower regulated environment with all the issues related to consumer protection and cyber security coming to the fore. The slightly concerning aspect is that the information on large portions of our lives is already consolidated – our online lives with internet and search providers, our social lives with the likes of Facebook and Snapchat, our home and personal needs with the huge marketplaces of Amazon, Taobao and Lazada. The race is on as to who will manage to put all the pieces together first and maximize the value of knowing corporates and individuals inside out.

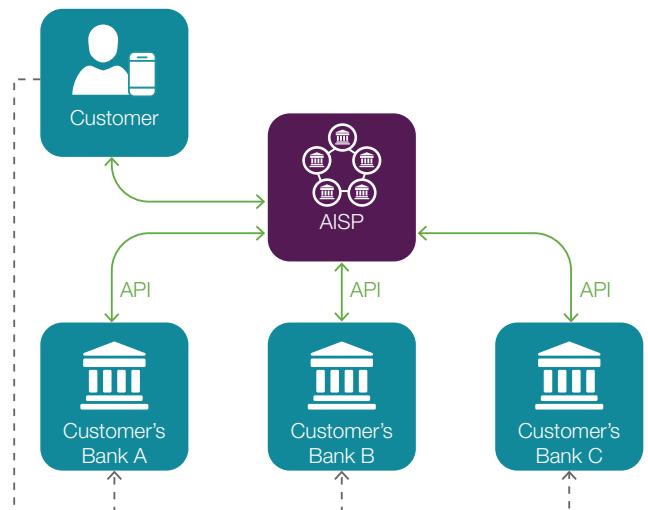
European Payments Service Directive 2; new players AISP and PISPs

Source: Accenture (2016): Seizing the opportunities unlocked by the EU's revised payment services directive

AN UPDATED PAYMENT MODEL INCLUDING A PAYMENT INITIATION SERVICE PROVIDER (PISP)



AN UPDATED INTERACTION MODEL INCLUDING AN ACCOUNT INFORMATION SERVICE PROVIDER (AISP)



Within financial services, these aggregators will wield huge power as buyers of services, potentially moving large amounts of liquidity around at rapid pace. The implications for banks, insurers and fund managers are massive as they are potentially relegated to second place in the relationship and no longer in control of balance sheet swings.

Some big questions are unanswered:

- Who will these aggregators be? The new tiny fintech players, or, more likely, will there be another battlefield for techfin versus incumbents?
- Will consumers become smart enough fast enough about who they can really trust with their data and will regulators have the capacity to police but only a few?

c. Distributed ledger technology (blockchain) and crypto-currencies

Blockchain at its crux is a technology that has the potential to create new, efficient foundations for economies and social systems to run on. Ultimately, the end game for blockchain technology would be to use it as a basis to create one single record for everyone to use (all assets would be housed on the internet), creating a genuine “internet of assets”. Whilst still in the early days, the use cases are exciting and practical.

Applicability is across a huge range of existing asset classes and enables the development of new ones (e.g., cryptocurrencies). The range is becoming enormous; e.g., fine art (Maecenas), livestock-backed financial services for unbanked (Sentinel), identity verification and attestation (Bloom and Civic) to name but a few.

A lot of large players are using distributed ledger technology (DLT) to enhance many core operational processes including the accuracy and transparency of distributed record keeping – lowering levels of complexity due to lower levels of intermediation and lower levels of compliance requirements. Improving traceability, eliminating data discrepancy and need for reconciliation. Harmonizing platforms, particularly across borders, and all of this improving trust in the system – it is difficult to alter blockchain records and the chances for fraud are reduced and easily identifiable.

Examples in Clearstream (as part of Deutsche Börse) and Standard Chartered illustrate the magnitude of activities. Clearstream is counteracting collateral scarcity with a joint liquidity alliance ledger with four other central securities depositories (CSDs). Commercial bank payments are becoming risk free through colcos (collateral colored coin) that combine blockchain technology with an existing key infrastructure – Eurex clearing.

Standard Chartered is bringing blockchain to life with ventures such as TradeSafe, leveraging DLT to reduce the risk of duplicate invoicing and fraudulent activity. Also partnering with Ripple (Ripple), a US fintech that is pioneering global financial settlement solutions through a multi-bank initiative that offers straight-through processing, real-time settlement, low costs, elimination of reconciliation between multiple internal ledgers, improvement of liquidity and cash flow, reduction of the cost of capital and better pricing.

Crypto-currencies could be viewed as the pinnacle of DLT applications. They represent disintermediation of central bank currencies by offering new non-fiat asset classes and increasingly a means of corporate fundraising with “initial coin offerings,” albeit many are currently using bitcoin, bypassing banks and corporate finance teams.

Non-fiat currencies are multiplying, fuelled primarily by retail buyers and speculation. The world is mesmerized by the incredible surge of crypto-currencies and their value, the gold fever-like run of investors into the market being looked at as either a giant bubble or the next leap in the evolution of money itself. In any case, crypto-currencies have become part of the new normal as companies are starting to accept

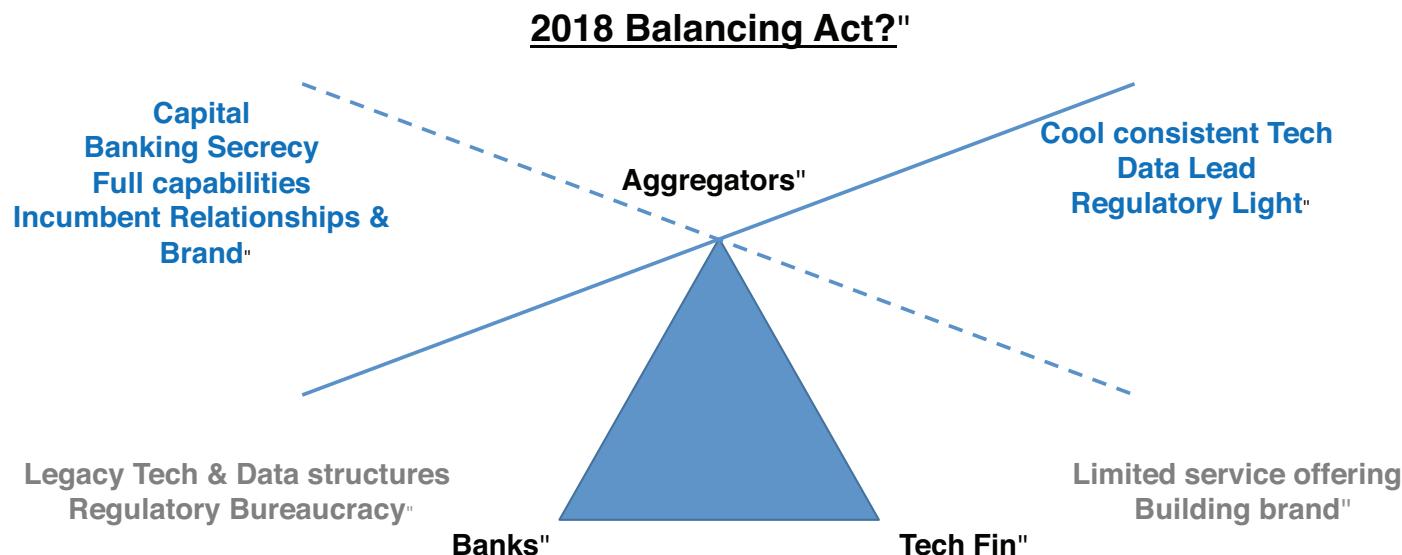
crypto-currency (PayPal, Expedia and Subway (Nasdaq, 2018)) and governments are opening their payment systems to it; for example, the Swiss municipality Chiasso (Allen, 2018). Time will tell whether crypto-currency and fiat money will coexist or whether these two ecosystems will be consolidated eventually as central banks find blockchain-compatible methods to make fiat currency payments at the speed required.

The benefits of blockchain are clear. However, there are inherent and implementation challenges that need to be overcome:

Inherent Risks	Implementation Risks
Persistent data – Almost impossible to be forgotten	Fragmentation of standards – Given the current lack of integration, standardization and systematization in approach
Consensus decision limitations – May lead to misinformed, slow or simply no decisions	Regulation for blockchain providers – Including questions on KYC, anti-money laundering and source of wealth
Excessive power consumption – This may be overcome by simply using private ledgers or deploying alternative consensus algorithms such as Hashgraph ^[14] , and as some argue, The Tangle ^[15]	Complexity – Do we need a new taxonomy to help navigate this new world for customers?

2030 vision for financial services

The race between incumbents and new entrants has already begun and while it is not clear who will end up winning, financial services are likely to change more in the next decade than ever before.



A few scenarios could play out:

- A lively ecosystem populated by thousands of fintechs providing specialized digital services to customers, while aggregators act as utilities that provide data to them in the background
- Traditional financial services players fighting back and maintaining their role as the storage of choice for data – especially asset servicers playing a critical role in authentication
- A few large banks and techfins dominating the picture; a picture of likely consolidation followed by the inevitable decline in client choice as economics and competition even out the field

In all likelihood, by 2030 financial services will be completely transformed, but the steps taken today by industry, new entrants and regulators will define towards which scenario we are headed.

The implications for each participant are dramatic, requiring immediate recognition and action to keep pace with the digital transformation, lest we want to face a doomsday scenario where our privacy is invaded, our decision-making is continuously being manipulated and a few titans grow as transnational oligopolies

Regulators – framework designers

- Embrace techfin involvement and create a level playing field
- Be clear on regulatory influence over client data in the new world of aggregation
- Develop the required “taxonomy of trust” for asset safekeeping
- Broaden legislative framework to address risks relating to artificial intelligence

Commercial banks – bastion of relationships bolstered by data

- Retain close relationships with clients, even in an increasingly low-touch world
- Get ready for innovation, digitize end to end, strive to be as lean, flexible and appealing as cool as techfin
- Aggregate – expand your “safekeeping” role and harness the power of existing data
- Fill gaps across services directly or via partnerships and M&A creating techfin capabilities

Techfin – backwards integration from payments to custodians and miners of data

- Aggregate – build on data skills to broaden role
- Broaden services to regulatory limits or via partnerships
- Get compliant, get ready for the inevitable regulatory controls
- Develop a competitive proposition in artificial intelligence (AI) across multiple use cases
- Extend and democratize access to global finance to the unbanked specifically

Asset and wealth managers – impartial authenticators

- Evolve and embrace new technologies to deliver higher alpha or cheaper beta
- Develop and communicate working with regulators to design a taxonomy of trust
- Lock in institutional relationships with retail banks and techfin
- Extend into new business models; i.e., ensuring global finance opportunities to SMEs
- Develop competitive advantages in asset allocation, hence ensuring optimal allocation at system level as well

Individuals and corporates – savvy selectors

- Care about your data and get tech-savvy
- Defend and protect your digital identity and trade your information for their right value
- Choose wisely; focus on a few strong providers, capturing value from the new convenience and intelligence on offer without getting lost in the excess of supply
- Retain your own brain power and decision making – don’t get too carried away by AI apps

With these actions, this journey can be turned to the benefit of the whole society, ensuring that both client choices are improved and systemic risks mitigated as we reach 2030.

Policy on digitization

Author: Olli Rehn

Today, there is much excitement about many financial innovations, such as mobile banking, robot advisory, algorithmic trading and peer-to-peer lending. There are also phenomena like crypto-assets and initial coin offerings that resemble the new economy boom around the turn of the millennium. But we should not only take a technology-driven view on digitization. Instead, we want to look at it from the citizens’ point of view; i.e., from the standpoint of what is good for society and for its citizens, whether they are consumers, clients or investors.

Therefore, it is of paramount importance to identify what is real and what is hype in the digital revolution of the financial industry. Entrepreneurs, investors and authorities must all face this problem.

I will divide the relevant issues and developments into three categories:

1. Those that increase societal welfare and should be benefited from, such as mobile and real-time payments – as long as we take care of enhancing the financial literacy in this brave, or grave, new world
2. Those that should be watched, or even prevented, such as booms and busts related to crypto-assets and initial coin offerings
3. Those that could be further developed, such as blockchain or DLT, even if for now central banks, for instance, are developing their operations by other means, such as the introduction of new systems enabling real-time payments, like the TIPS and T2S

Digitization creates new business models

Digitization is the single most significant force changing the financial sector today; the other two are **regulation** and **consumer behaviour**. In the coming years, we will see many more agile **fintech** companies enter the market. Hundreds of fintech start-ups have already emerged, with business models that are very different from incumbents. At the same time, global **big-tech** companies (Google, Apple, Facebook, Amazon, Alibaba, Tencent) are enlarging their foothold to new business areas, including payments.

Regulation is the second driver. The EU's revised Payment Services Directive (PSD2) will promote competition in the financial sector, help create better services and boost lower prices. It will open the market to third parties; i.e., payment initiation service providers and account information service providers. Its effects will become gradually visible, not overnight. This change is probably comparable to what happened in the telecom markets in the early 2000s.

Consumer behaviour is the third factor shaping financial services. Consumers are moving online and, once there, will stay connected around the clock. They seek information from various sources, including social media. This puts the consumer centre-stage in digitization. Future success stories are likely to be those that provide the best user experience and value for the consumer. But remember, the first-mover advantages are also significant in this competition.

The payments playing field is changing: is it an old game with new rules or an entirely new game?

Where is the transformation most visible to the consumer, in the business of payments? Is it an old game with new rules – or an entirely new game? More ways to pay have been born, as various mobile applications have emerged alongside card payments and cash. All of these new payment services have three things in common.

First, they are **real-time and instant**. Money is transferred from one person to another in seconds. Second, there will be **fragmentation**. Consumers are using several methods of payment, just as they now use for communication – phone calls, text messages, email, WhatsApp, Skype, Snapchat, etc. Third, payments will be **seamless**. They will be used in a simple way; for example, by confirming payments with fingerprints or facial recognition. The payment action is disappearing from the foreground and becoming an integral part of the customer experience.

Importance of digital skills and financial literacy

Digitization, in general, and in the financial industry, creates the need for new skills. For instance, every citizen needs at least basic knowledge of cybersecurity and data protection.

Citizens should also understand their rights as data subjects. Families, schools, authorities and financial services providers have an important role in increasing public awareness of these issues.

Instant payments – i.e. real-time account transfers – are just around the corner. Payments are disappearing into the background and becoming part of the customer experience. This makes financial management more challenging for households and underlines the need for financial literacy. Financial literacy skills are a necessity in the digital age.

Financial literacy is promoted by various actors: financial services providers, supervisory authorities and third-sector players. It is crucially important that these different parties cooperate to ensure adequate financial literacy throughout the whole of society. Responsible behaviour is expected from the service providers: the sustainable interest of their customers should be the primary focus.

Blockchain versus centralized payment systems

Part of financial literacy is to understand new phenomena like crypto-assets. Bitcoin and other crypto-assets are now mostly used for speculation, but the technology underlying crypto-assets – i.e. blockchain or DLT – is actually quite promising. It makes certain processes faster, and suitable versions of DLT have been developed for the financial sector. They are mainly being developed by private actors and are good examples of the diversity of digital transformation in the financial sector.

Summary

Digital transformation in the financial sector is well under way and moving fast. With the right policy choices, this can be turned to the benefit of the whole society. To build flourishing ecosystems, it calls for cooperation between small and large, old and new players. And it calls for a dynamic and competitive financial industry that can turn innovations into services that genuinely enhance economic and social welfare.

But it also calls for confidence and trust, rock-solid financial stability and good consumer protection. As financial services are moving online, there is a growing need for digital skills and financial literacy. It is important that the financial industry and other stakeholders share these worthy goals and work well together in reaching them.

Chapter 3: Macro Risks

Low for how long? Interest rates and the future of financial systems

Authors: Hélène Rey and Jeromin Zettelmeyer

Global real and nominal interest rates are at historic lows across advanced economies, both at the short and long end of the term structure (Figure 1). Sustained low interest rates can negatively impact the financial system through two channels: by causing problems for financial stability through increased risk taking (“search for yield”); and through their impact on the sustainability of business models of financial intermediaries such as banks, life insurance companies and occupational pension funds. As such, the future macroeconomic environment could have a significant impact on the structure of the financial system, perhaps second only to the effect of changes in financial technology. The longer the low-interest environment persists, the stronger this effect.

This note explores the likelihood and some of the implications of an extended period of low interest rates. Section 1 briefly reviews the channels through which low interest rates impact the business models of banks and insurance companies and discusses some possible long-term consequences for the financial system. In section 2, we introduce a way of thinking about the causes of the low interest rates, which has some implications for how long one might expect low rates to persist. In the conclusion, we suggest some ways in which policy-makers may want to respond.

Implications of “low for long” for the financial system

The essential difference between a transitory period of low interest rates and an entrenched one is that the latter – once reflected in expectations – leads to a flattening of the term structure of interest rates, i.e., low interest rates along the entire maturity spectrum. This occurs for two reasons. First, short-term interest rates are expected to remain low for many years. Second (and as a result), the volatility of short-term rates will be expected to decline, and hence the interest rate risk associated with holding longer-dated bonds. This, in turn, induces a decline in the term (risk) premia associated with longer maturities. Figure 2, taken from the International Monetary Fund's *Global Financial Stability Report April 2017*, shows that both of these phenomena have already occurred to some extent.

A protracted flattening of the yield curve at zero or near-zero interest rates may reduce the profitability of both banks and insurance companies, particularly life insurers.

- Because the traditional core business of banks consists of maturity transformation – borrowing short term and lending long term – a flattening of the yield curve will all else equal lower the profit margins of banks.
- Investing in medium and long-term fixed income products is a significant income source for insurance companies. At the same time, life insurances and pension funds have large existing stocks of liabilities offering guaranteed returns. According to the European Insurance and Occupational Pensions Authority (EIOPA), as of 2013 more than half of European life insurers were guaranteeing an investment return to policy-holders that exceeded the yield on the local 10-year government bond (EIOPA 2013).

Figure 1: Long yields for US, Germany, UK and Japan, 1980-2016

Source: Gourinchas and Rey (2016)

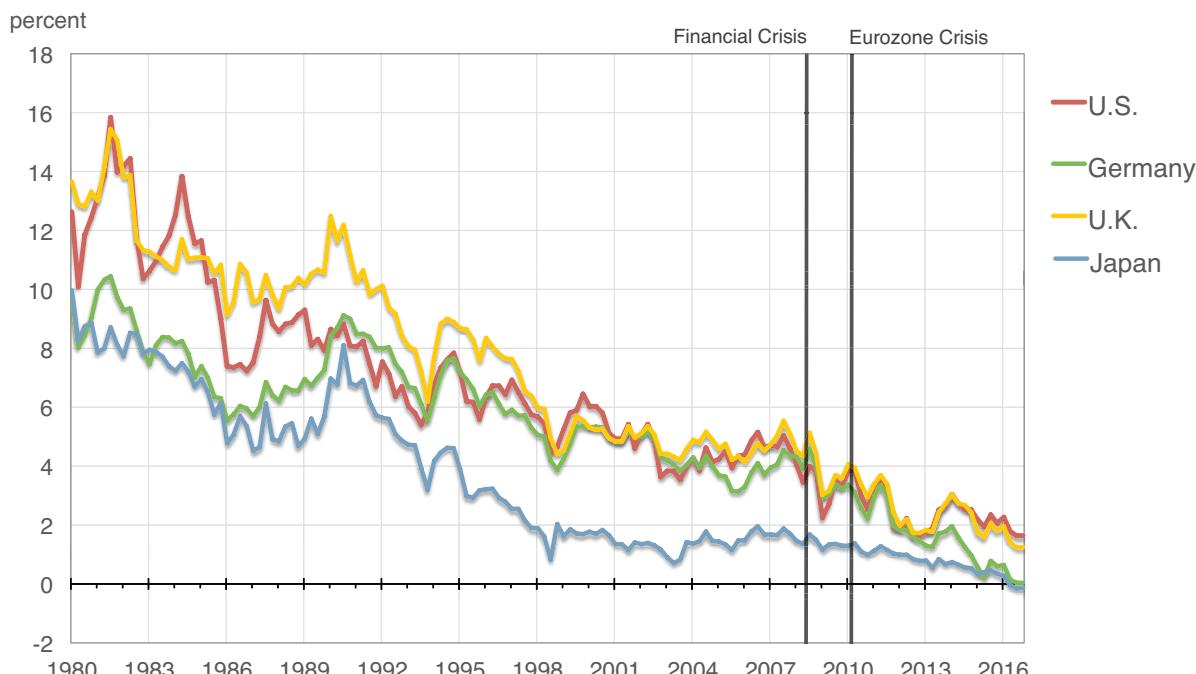
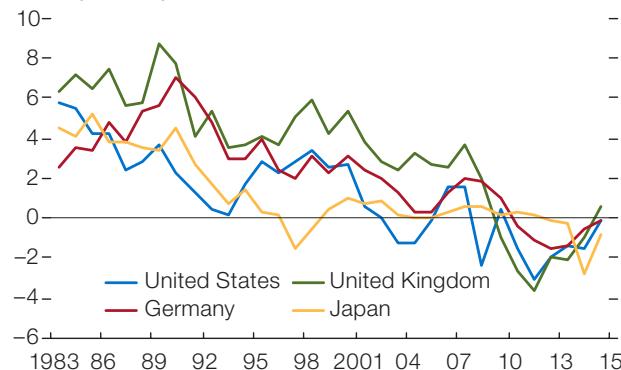


Figure 2: Interest rates, term spreads and volatility in advanced economies

Source: International Monetary Fund, *Global Financial Stability Report April 2017*, Figure 2.1.

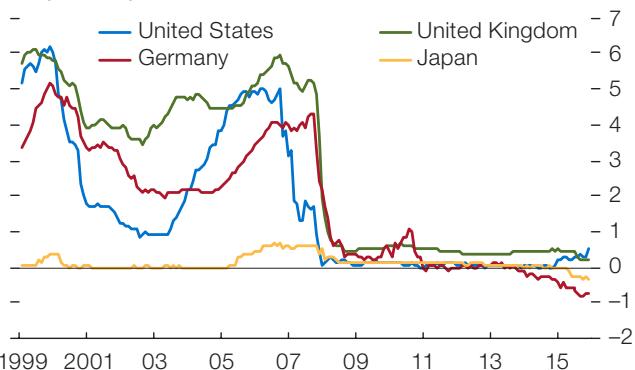
Real interest rates have been decreasing over the past three decades.

1. Real Short-Term Interest Rates, 1983–2015 (Percent)



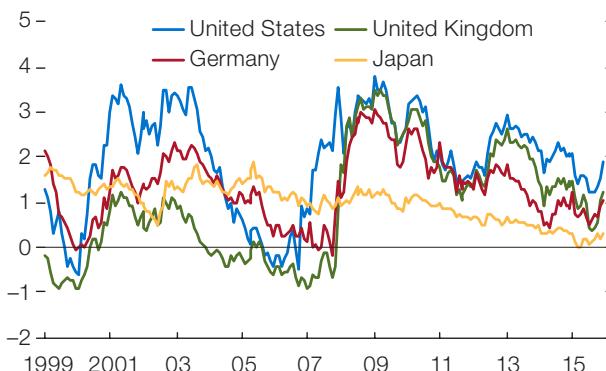
Nominal interest rates have fallen.

2. Selected Three-Month Treasury Bill Yields, 1999–2015 (Percent)



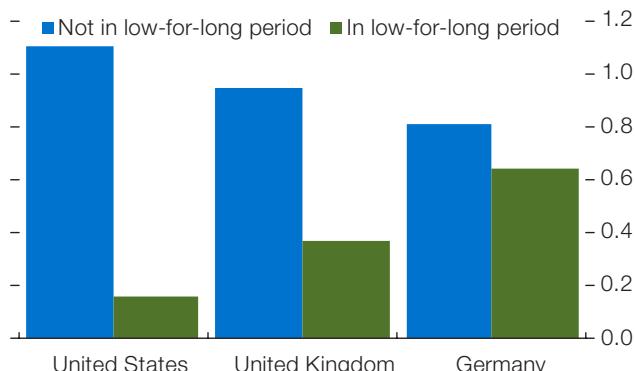
Yield curves have flattened.

3. Term Spreads, 1999–2015 (Percent)



Interest rate volatility has declined.

4. Standard Deviation of 10-Year Yields (Units)



As a result, protracted low interest rates can create financial stability risks through both direct and indirect channels.

The direct channels affect particularly the insurance sector: depending on the composition of their balance sheets – i.e., the extent to which insurers have invested in medium to long-term government bonds, and the extent to which their liabilities involve guaranteed returns – the solvency of some institutions may be under threat. Lower interest rates also increase “duration mismatch” because they increase the value of discounted long-term liabilities relative to medium-term assets. The indirect channels refer to increased risk-taking, as both banks and insurers might want to restore profitability by investing in higher-yielding assets. In addition, there is the risk of credit booms both to the household and the corporate sector, potentially leading to housing booms and excessive leverage of some borrowers if interest rates were to remain low and to financial distress if rates were to unexpectedly rise.

Both banks and life insurers could potentially restore their profitability without incurring additional risks by changing their business models. In particular, they could seek to take advantage of their large customer bases (both depositors and borrowers) to offer financial services for a fee. However,

this is an area where banks face competition not only with each other but also with non-bank providers of such services, for example, in the payments area (fintechs). Similarly, life insurers will likely move away from offering interest-guaranteed products and instead offer higher-yielding products in which customers bear some of the risk of asset-price volatility. However, “it is unclear what fundamental advantages insurers have in offering these products ... compared to retail investments offered by asset managers” (IMF, 2017). Hence, a long period of low interest rates will likely cause the banking and life insurance sectors to both change and shrink.

2. Learning from history: secular determinants of low rates

From the perspective of the future of the financial industry, it is important to understand the potential causes of the decline in real interest rates, for two reasons. First, it can inform expectations about how long interest rates will remain low. Second, it can give clues as to how the demand for financial products might evolve. This is related to the question of whether the decline in interest rates could offer upsides as well as downsides. For example, if the persistent

decline in real interest rates is related to population ageing, then it could be associated with an increase in the demand for health and long-term care insurance, helping to offset the decline in demand for traditional life insurance products (Koijen, Van Nieuwerburgh, and Yogo 2016).

There are at least four candidate explanations for the decline in interest rates: a slowdown in technical progress, demographic forces, a savings glut and a decline in investment, possibly due to a decline in its relative price. The first force is well-understood: a slower rate of technological progress reduces the marginal product of capital. Demographic forces, especially a slowdown in fertility, or an increase in life expectancy, also have the potential to increase savings, depressing equilibrium rates of return. The “savings glut” explanation has multiple components. It may originate from the combination of low levels of financial development and incomplete social safety nets in emerging market economies and rapid economic growth relative to advanced economies. But it is also possible that demographic trends are a major determinant, as an increased amount of wealth is being managed on behalf of more risk-averse investors (e.g., pension funds).

Low short-term real interest rates could also result from an increased cyclical demand for “safe assets”. In the aftermath of financial crises, households, firms and governments simultaneously attempt to repay debts to repair balance sheets. Post-crisis weakness in the banking sector, which often shuts out small businesses from credit markets, and the re-regulation of the financial sector which limits risk-taking and may involve some degree of financial repression, also contribute to low real interest rates. A faster decline in the price of investment goods can also reduce natural rates of interest, if the elasticity of the volume of investment to the real interest rate is not too high.

If the demographic explanations are right, real rates should continue to trend down. In most advanced economies, as well as in China, populations are ageing. Only when this trend reverses, as large numbers of people begin to “dissave” to finance their retirement or education of their children, would we see an increase in rates. If the right explanation is low productivity growth, the future of real interest rates will depend on whether, and when, productivity growth picks up again. If the savings glut story is right, interest rates may start rising only after emerging market growth slows significantly in relation to advanced countries and their social safety nets and pension systems catch up. Finally, if low interest rates are related to a higher propensity to save or to a shortage of safe assets, real rates may begin to rise only after deleveraging and balance sheet repair have run their course.

There is no hard “test” to discriminate between these stories and they are not mutually exclusive. However, it is possible to gain insights on which story may have the most predictive power by analysing historical patterns in real interest rates, consumption and wealth. Basic accounting identities imply that today’s consumption-to-wealth ratio reflects the net present value of future expected returns to wealth minus future expected consumption growth. A low consumption-to-wealth ratio today implies either that future returns to

wealth will be low or that future consumption growth will be high. Future returns to wealth can, in turn, be decomposed in future safe returns (future real interest rates) and future risk premia.

When data for four large industrial countries (US, UK, France and Germany, taken in aggregate as a proxy for the world economy) are being analysed since the 1920s, it becomes apparent that the consumption-to-wealth ratio and the net present value of future real rates are very closely related (see Gourinchas and Rey (2016) for details). The top chart in Figure 3 shows the average real interest rate in four large industrial countries since 1920 (as a way of approximating the “world” real interest rate). The bottom chart in the same figure shows the ratio between consumption and wealth in the same countries.

There are two periods during which the consumption-to-wealth ratio behaves similarly: the 1920s (followed by the Great Depression) and 1990-2000 followed by the financial crisis of 2008. After these two large financial crises, real rates have remained low for long periods of time. This suggests that powerful financial cycles are at play. During the “Roaring 20s” and the “irrationally exuberant 2000s”, there were asset price bubbles and large overvaluation of wealth, in both cases driving down the ratio of consumption-to-wealth quickly. In both instances, this irrational exuberance was followed by a financial crisis – the Great Depression in 1929 and the Great Recession in 2008.

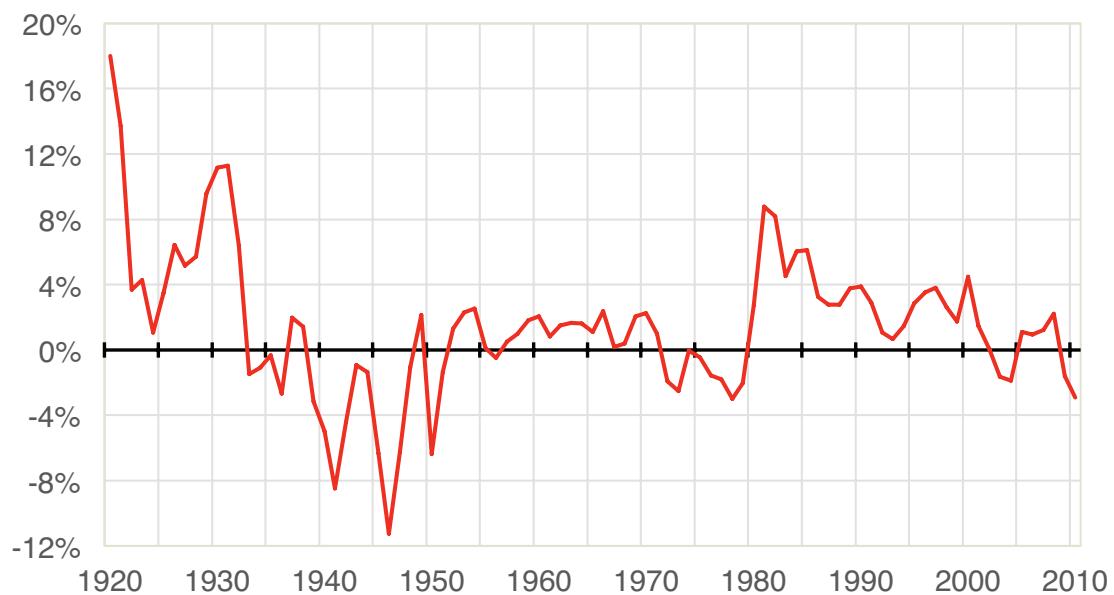
In the wake of the 1929 crisis, there was deleveraging and weak consumption, which is when the economist Alvin Hansen (1939) first coined the term “secular stagnation”. The same phenomenon has been happening since 2008, not coincidentally at the time when Larry Summers (2013) talked about secular stagnation. This deleveraging goes hand-in-hand with low real rates as a larger propensity to save drives down interest rates. The drag of debt overhang and deleveraging by constrained households or financial institutions and governments have long-lasting macroeconomic effects. Econometric analysis suggests that the similarities of these two episodes are not a coincidence: the story behind the low levels of real rates in the 1930s and now is really one of two gigantic financial booms gone bust.

Gourinchas and Rey (2016) show that the systematic relationships between consumption, wealth, interest rates and risk premia can be used to forecast real interest rates using a standard autoregressive model. Their model suggests that the world real rate of interest is likely to stay negative (around -1%) until 2021.

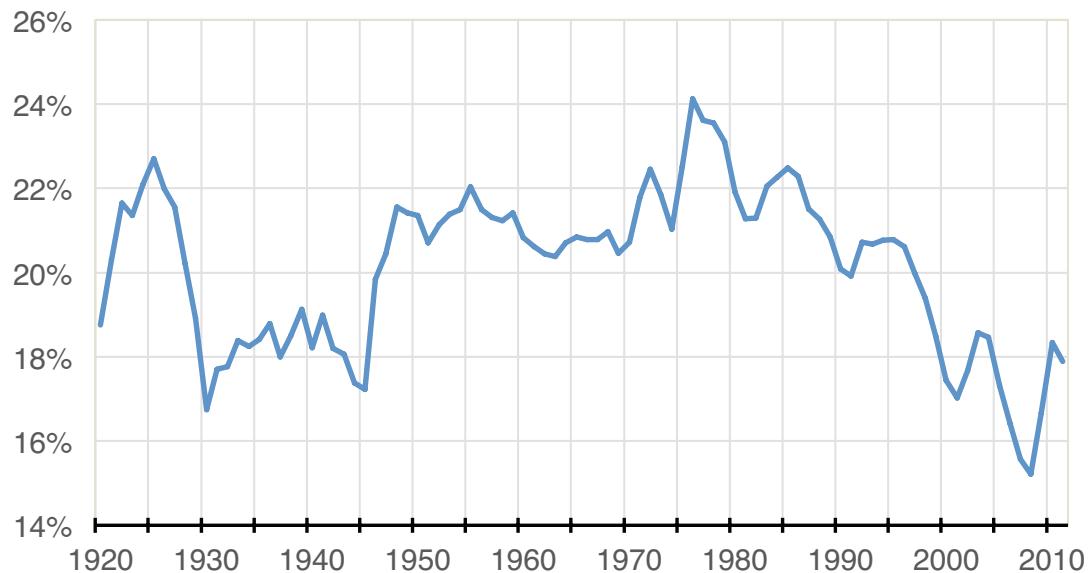
Figure 3: The dynamics of interest rates and the consumption-to-wealth ratio

Source: Gourinchas and Rey (2016)

Average short-term real interest rate in the US, UK, France and Germany 1920-2011



The consumption-to-wealth ratio in the US, UK, France and Germany 1920-2011



3. Policy implications

As argued in Section 1, a long period of low real rates has consequences ranging from the sustainability of the business models of banks and insurance to the solvency of pension plans. It also makes it more likely that several countries fall into (or stay in) a “liquidity trap” in which monetary policy loses its power to stimulate output and inflation. In a world where many central banks are constrained by the zero-lower-bound on interest rates, countries may be tempted to reallocate global aggregate demand in their favour by pursuing non-cooperative policies, including protectionist trade policies, or competitive devaluations. A world of low real rates also comes with unequal burdens. Safe-asset providers face a large demand for their assets, as they provide insurance when a global shock hits.

Unlike the US, whose net foreign-asset position massively declined in 2008 (as a result of flight into US assets and dollar appreciation), core eurozone countries have postponed or avoided losses on their external assets, forcing euro-area economies of the periphery to reduce consumption and investment to make good on their external debt. This deleveraging by euro area periphery countries has translated into a large aggregate current account surplus of the euro area, effectively exporting weak demand abroad.

The broad implications of this analysis are that governments need to address both debt overhang and “debt hangover” – i.e., lack of aggregate demand due to deleveraging. The former requires both the restructuring of bad assets and the creation of safe ones. The latter requires demand-increasing policies that go beyond monetary policy, as follows.

First, increases in public investment, financed by issuing long-term debt at fixed interest rates. In the current low interest rate environment, in which real interest rates are generally equal or lower than real growth rates, such investments will not threaten debt sustainability and should improve it by “crowding in” private investment and increasing long-term growth (Blanchard and Summers, 2017). Redistribution from households with low marginal propensity to consume to households with large propensity to consume would also help. This calls for progressive taxation as well as effective ways to tax offshore wealth.

Second, exploring options to develop safe assets at the level of the euro area (Brunnermeier et al 2017, Leandro and Zettelmeyer, 2018) if the eurozone were to issue safe assets on a larger scale instead of relying only on bunds, French OAT, or on Swiss deposits, would increase the supply of safe assets and presumably increase the real rate. Greater use of assets whose safety is not aligned with geographical boundaries but rather spans the entire euro area would also avoid destabilizing cross-border capital flows during periods of high risk. Euro area banks should be given regulatory incentives to substitute exposure to individual sovereigns – particularly their own – with euro area-level safe assets. This will help to protect the financial system from sovereign risk, particularly when combined with meaningful and effective risk-sharing mechanisms such as European deposit insurance (Benassy-Quere et al 2018, Veron and Schnabel 2018).

Third, mechanisms that allow for orderly loss-taking after large crises. When losses are not realized and deleveraging drags on, recession takes hold, becomes self-defeating, or is exported abroad via current account surpluses. Insolvency frameworks must be strengthened to prevent “zombie lending” and allow the timely restructuring of non-performing loans (NPLs) in the portfolios of banks. A sovereign debt-restructuring mechanism for the euro area would prevent a repeat of the endless cycle of austerity, recession and deleveraging that we have witnessed in the case of Greece (Weder di Mauro and Zettelmeyer, 2017). It could also provide incentives that prevent the future accumulation of excessive sovereign debt.

Fourth, better developing capital markets involving contingent instruments (unlike debt). Risk sharing through such assets – such as FDI and equity – would accelerate loss realization and reduce the deleveraging needs of the debtors. GDP-linked bonds could also help (Shiller et al, 2018).

Lastly, increased monitoring of large banks and financial intermediaries and macro-prudential policies should enable regulators and supervisors to avoid future boom-bust cycles in financial markets. Both the global financial crisis and the euro area crisis were preceded by periods in which banks borrowed globally and lent across borders. Some of that increase in financial sector exposure reflected risk shifting and expectations of bailouts using taxpayer money. The same may be happening today. A careful monitoring of financial fragilities and imbalances, especially for countries that are safe-asset providers is necessary to prevent future financial instability.

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