

An open source research programme for Smart Ledgers and new technologies



The Economic Impact Of Smart Ledgers On World Trade

Long Finance Webinar

Wednesday, 22 August 2018, 15:00 to 15:30 BST

(presentation starts at 15:02)

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 @longfinance

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FOUNDATION

Introduction



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Agenda

15:00 – 15:05	Welcome & Introduction
15:05 – 15:25	Presentation
15:25 – 15:30	Questions
15:30 – Close	Concluding Remarks

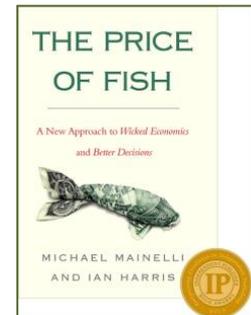
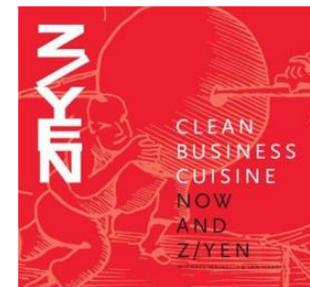
Report





- ◆ **Special** – City of London’s leading commercial think-tank
- ◆ **Services** – projects, strategy, expertise on demand, coaching, research, analytics, modern systems
- ◆ **Sectors** – technology, finance, voluntary, professional services, outsourcing

- Independent Publisher Book Awards Finance, Investment & Economics Gold Prize 2012 for ***The Price of Fish***
- British Computer Society **IT Director of the Year** 2004 for PropheZy and VizZy
- DTI **Smart Award** 2003 for PropheZy
- *Sunday Times* Book of the Week, ***Clean Business Cuisine***
- £1.9M **Foresight Challenge Award** for Financial Laboratory visualising financial risk 1997





Distributed Futures Programme



We work in partnership with many stakeholders to learn together and build the vital infrastructure needed to make Smart Ledgers a success.

Our research is structured around four themes:

- ◆ Societal
- ◆ Technological
- ◆ Economic
- ◆ Political

Directed at four outcomes:

- ◆ Expanding frontiers
- ◆ Changing systems
- ◆ Delivering services
- ◆ Building communities



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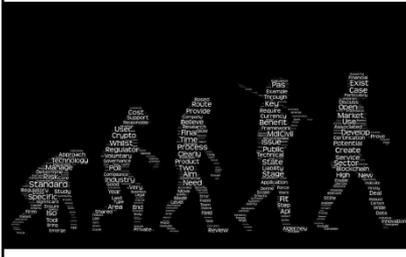


The Z/zen Group

Distributed Futures Research

LONG FINANCE **DISTRIBUTED FUTURES**

The Missing Links In The Chains? Mutual Distributed Ledger (aka Blockchain) Standards



November 2016

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STATES OF ALDERNEY **pwc**

LONG FINANCE **DISTRIBUTED FUTURES**

Responsibility Without Power? The Governance Of Mutual Distributed Ledgers (aka Blockchains)



July 2016

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LONG FINANCE **DISTRIBUTED FUTURES**

Smart Ledger Geostamping Steps Towards Interoperability & Standards



December 2017

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LONG FINANCE **DISTRIBUTED FUTURES**

The Quantum Countdown Quantum Computing And The Future Of Smart Ledger Encryption

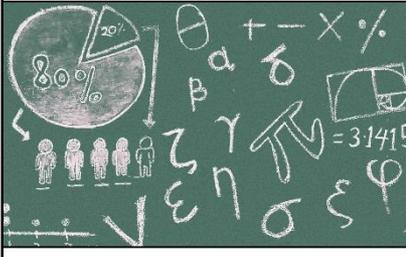


February 2018

CARDANO FOUNDATION

LONG FINANCE **DISTRIBUTED FUTURES**

Get Smart About Scandals Past Lessons For Future Finance



March 2018

CARDANO FOUNDATION

LONG FINANCE **DISTRIBUTED FUTURES**

Liquidity Or Leakage Plumbing Problems With Cryptocurrencies



March 2018

CARDANO FOUNDATION

LONG FINANCE **DISTRIBUTED FUTURES**

The Economic Impact Of Smart Ledgers On World Trade



April 2018

CARDANO FOUNDATION

LONG FINANCE **DISTRIBUTED FUTURES**

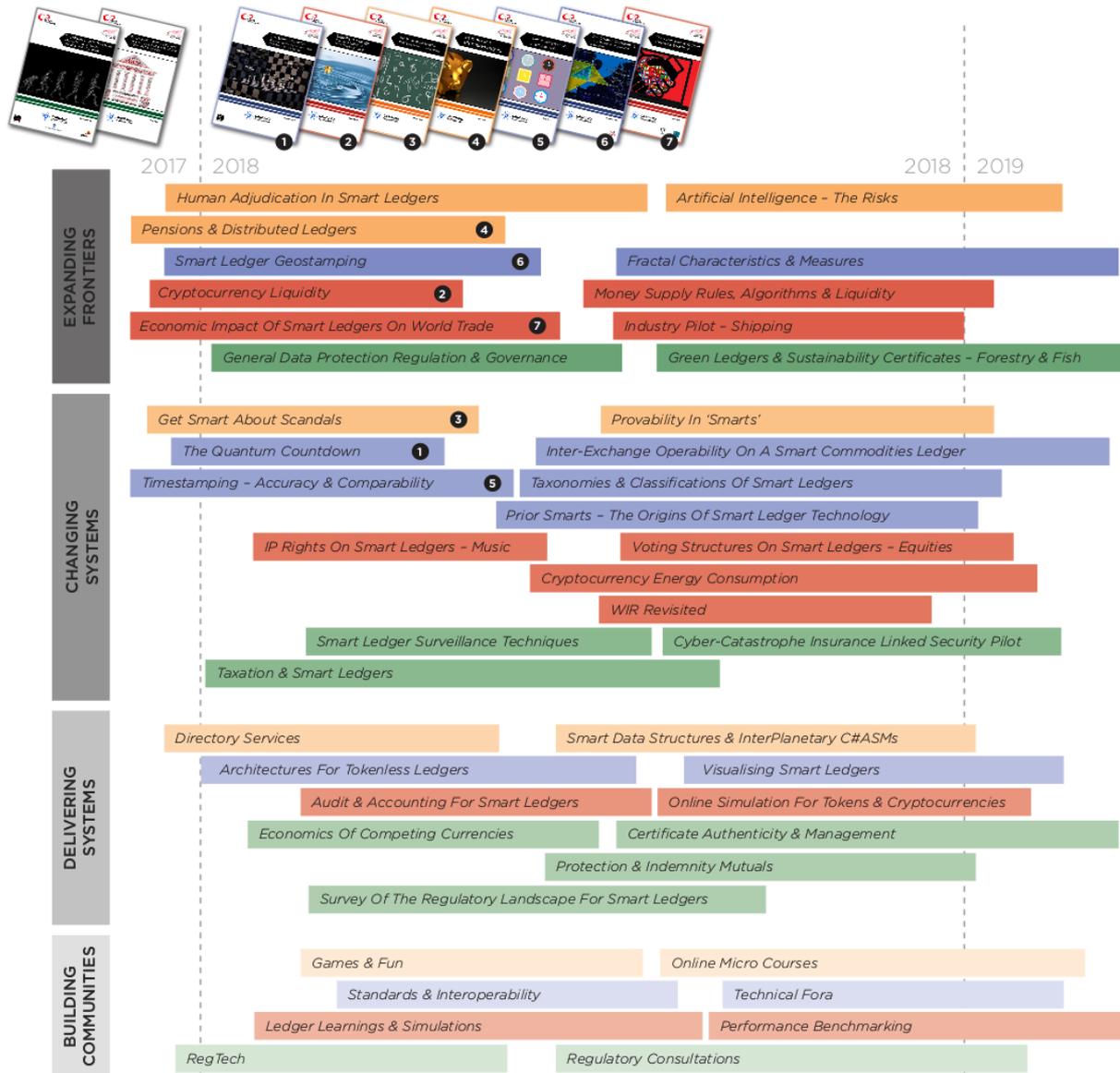
Pensions and Distributed Ledgers



April 2018

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Timeline



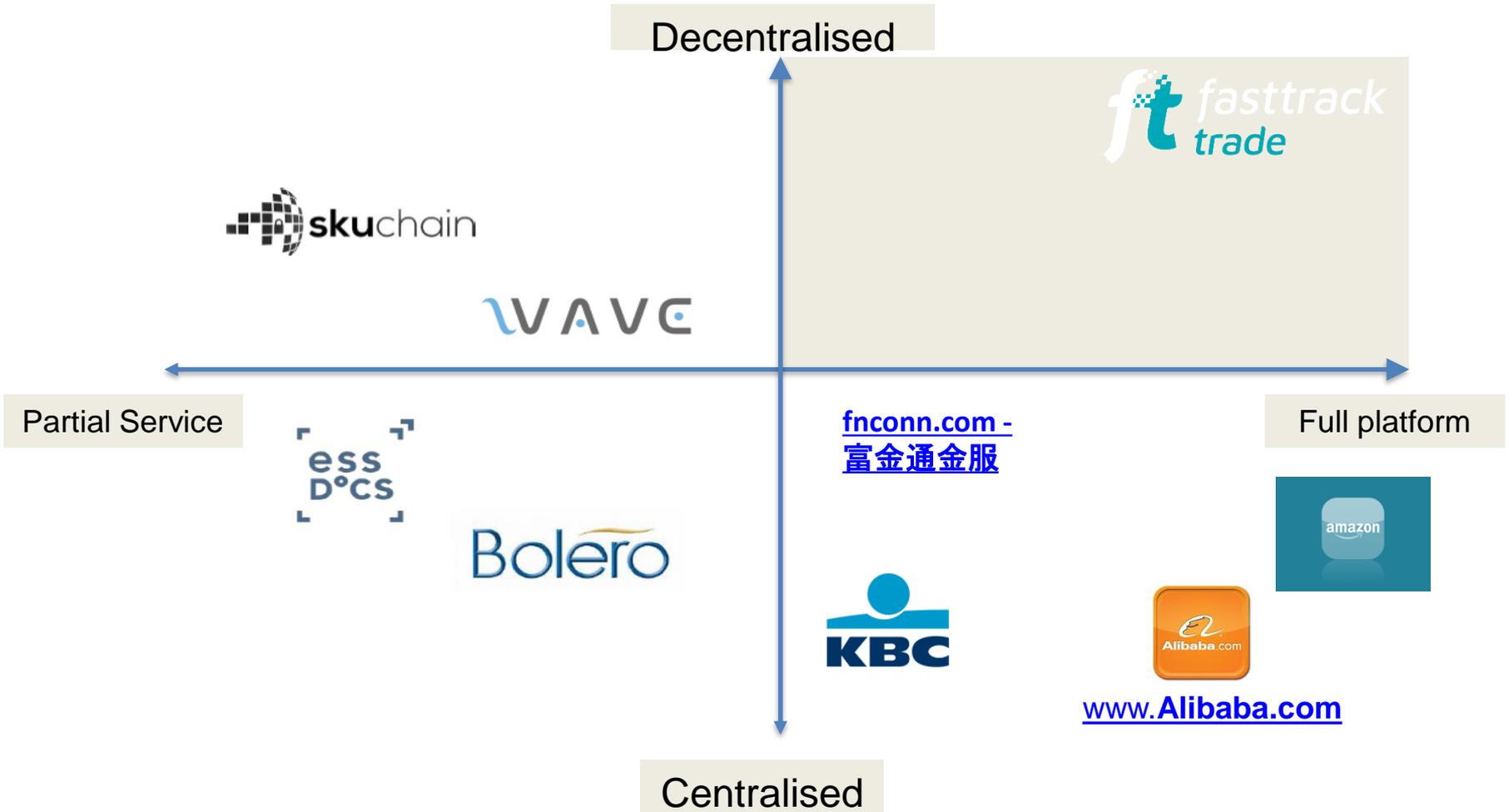
Terminology Evolving

- ◆ **ledger** – a record of transactions
- ◆ **distributed** – divided among several or many, in multiple locations
- ◆ **mutual** – shared in common, or owned by a community
- ◆ **mutual distributed ledger (MDL)** - a record of transactions shared in common and stored in multiple locations
- ◆ **mutual distributed ledger technology** – a technology that provides an immutable record of transactions shared in common and stored in multiple locations
- ◆ **blockchain** - “a transaction database shared by all nodes participating in a system based on the Bitcoin protocol”
- ◆ **smart ledger** – MDL with embedded, executable code

Smart Ledgers Hold Immense Promise

Area	Possible Applications
Financial instruments, records, models	Currency, private and public equities, certificates of deposit, bonds, derivatives, insurance policies, voting rights associated with financial instruments, commodities, derivatives, trading records, credit data, collateral management, client monies segregation, mortgage or loan records, crowd-funding, P2P lending, microfinance, (micro)charity donations, account portability, airmiles & corporate tokens, etc.
Public records	Land and property titles, vehicle registries, shipping registries, satellite registries, business license, business ownership/incorporation/dissolution records, regulatory records, criminal records, passport, birth/death certificates, voting ID, health and safety inspections, tax returns, building and other types of permits, court records, government/listed companies/civil society, accounts and annual reports, etc.
Private records	Contracts, ID, signature, will, trust, escrow, any other type of classifiable personal data (e.g. physical details, date of birth, taste) etc.
Semi-private/semi-public records	High school/university degrees and professional qualifications, grades, certifications, human resources records, medical records, accounting records, business transaction records, locational data, delivery records, genome and DNA, arbitration, genealogy trees, clinical trials, etc.
Physical keys	Key to home, hotel, office, car, locker, deposit box, mail box, Internet of Things, etc.
Intellectual property	Copyrights, licenses, patents, digital rights management of music, rights management of intellectual property such as patents or trademarks, proof of authenticity or authorship, etc.
Other records	Cultural, historical events, documentary (e.g. video, photos, audio), (big) data (weather, temperatures, traffic), SIM cards, archives, geostamping, etc.

Decentralised Digital Trade Platforms



Data Sharing Indemnification

“I want a very easy tool to sell my production abroad.”

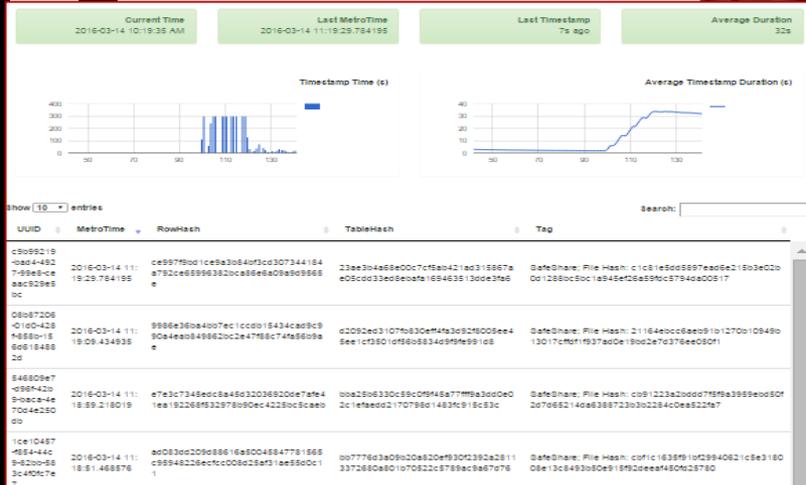
- Thuy, Siem Reap green house



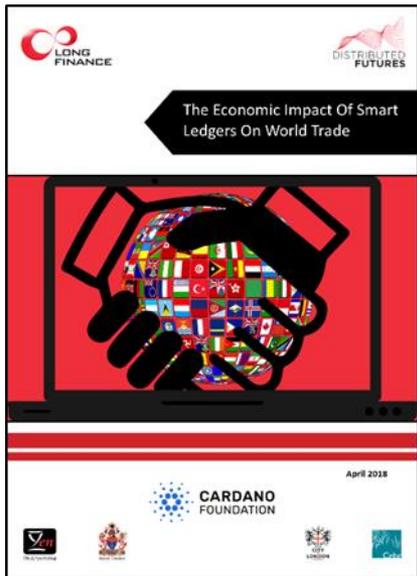
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Economic Impact: Specific Focus



Smart Ledger Application Area	Reduce Risks	Enhance Rewards	Increase Certainty (reduce volatility)
Identity			
Documentation			
Agreements			
Payments			
Transactions			

Presentation



Cristian Niculescu-Marcu
Centre for Economics and Business Research

Economic Impact of Smart Ledgers: Approach

- ◆ Background On Global Trade
- ◆ Background On Smart Ledgers
- ◆ Modelling
- ◆ Building The Economic Impacts
- ◆ Further Applications Of Smart Ledger Technology
- ◆ Conclusions
- ◆ IACCM Survey Results
- ◆ What About Brexit?

Global Trade In Context

- International trade facilitates wealth and prosperity.
- An effective global trading system allows goods and services to flow to where they are needed most, through price signalling.
- In turn, trade generates value through economies of scale and specialisation.
- International trade allows countries to exploit economies of scale by producing for a bigger mass market than would be achievable domestically. Global trade has fallen from around \$18tn in 2014 to approx. \$15tn in 2016

Barriers

◆ Direct Barriers

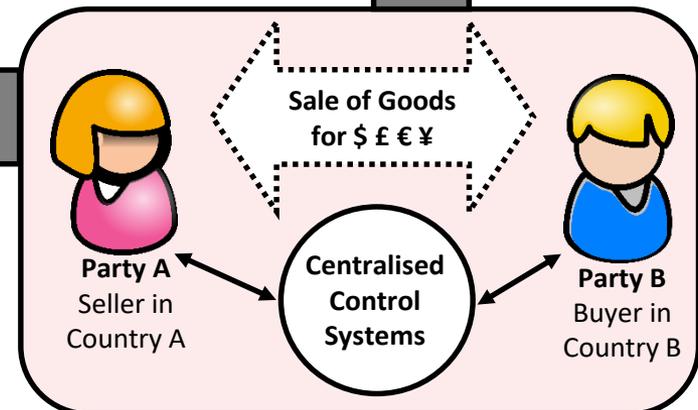
- * Tariffs
- * Embargos

◆ Indirect (Non-Tariff) Barriers

- * Quotas
- * Domestic subsidies
- * Customs delays
- * Varying degrees of development
- * Cultural & linguistic differences

Potential Problems

- ◆ Data flows liable to leaks & breaches
- ◆ Lack of control
- ◆ Need for data repositories
- ◆ Centralised checking/verification services
- ◆ Agent action/adaptation constraints



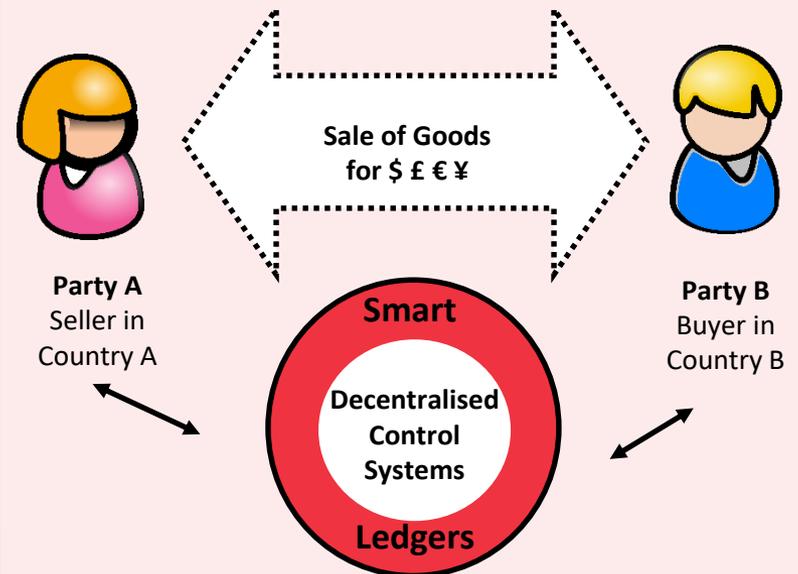
Background On Smart Ledgers

- Smart Ledgers are mutual distributed ledgers (MDLs, aka blockchains) with embedded, executable code.
- MDLs are multi-organisational databases with a super-audit trail that rely on cryptography to ensure their functionality and integrity, as well as to control viewing permissions.
- Smart Ledgers are able to specify rules about the use of data within the MDL, for example “release this ship’s location four hours after it has been recorded on the MDL.”
- International trade is an area where Smart Ledger technology could have tangible, practical applications.

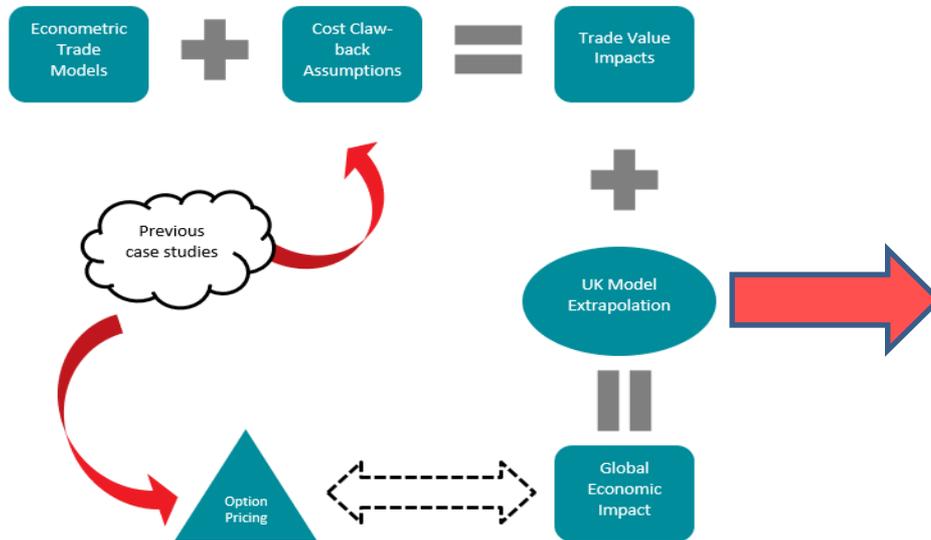
Smart Ledger Proposition

- ◆ Automated solutions relying on collaborative platforms
- ◆ Fewer information asymmetries
- ◆ Better control over central third parties
- ◆ Identity, documentation, and agreement exchange
 - *Identity validation
 - *Documentation & consolidation of trade information
 - *Agreement exchange & payment clearing
 - *Provenance - security/integrity of supply chain

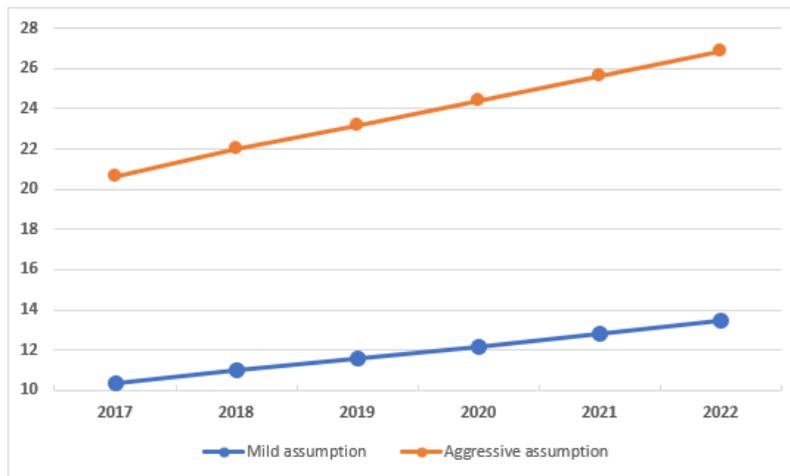
Identity, Documentation, and Agreement Exchange



Results: \$35-\$140bn Uplift In Trade



Forward projection of global economic impacts (USD bn)

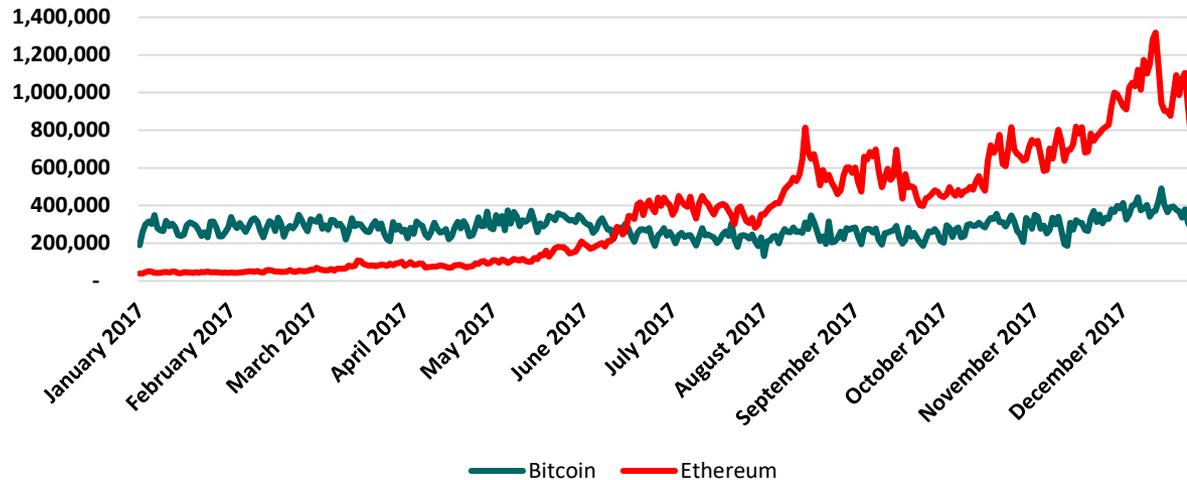


	Global USD GDP Uplift	Current Global GDP (USD bn)	Potential global labour market impact
Low scenario	10.33	79,281	449,319
High scenario	20.66	79,281	898,639

- Trade is not an end in itself, it is simply a mechanism to facilitate greater global prosperity and well-being.
- The increased trade will help global GDP through gains in scope and scale.
- These are conservative static calculations, they do not reflect dynamic impacts such as the creation of wholly new industries and the organic effects of new ideas and ways of doing things.

Further Applications Of Smart Ledger Technology

◆ Beyond Cryptocurrencies?



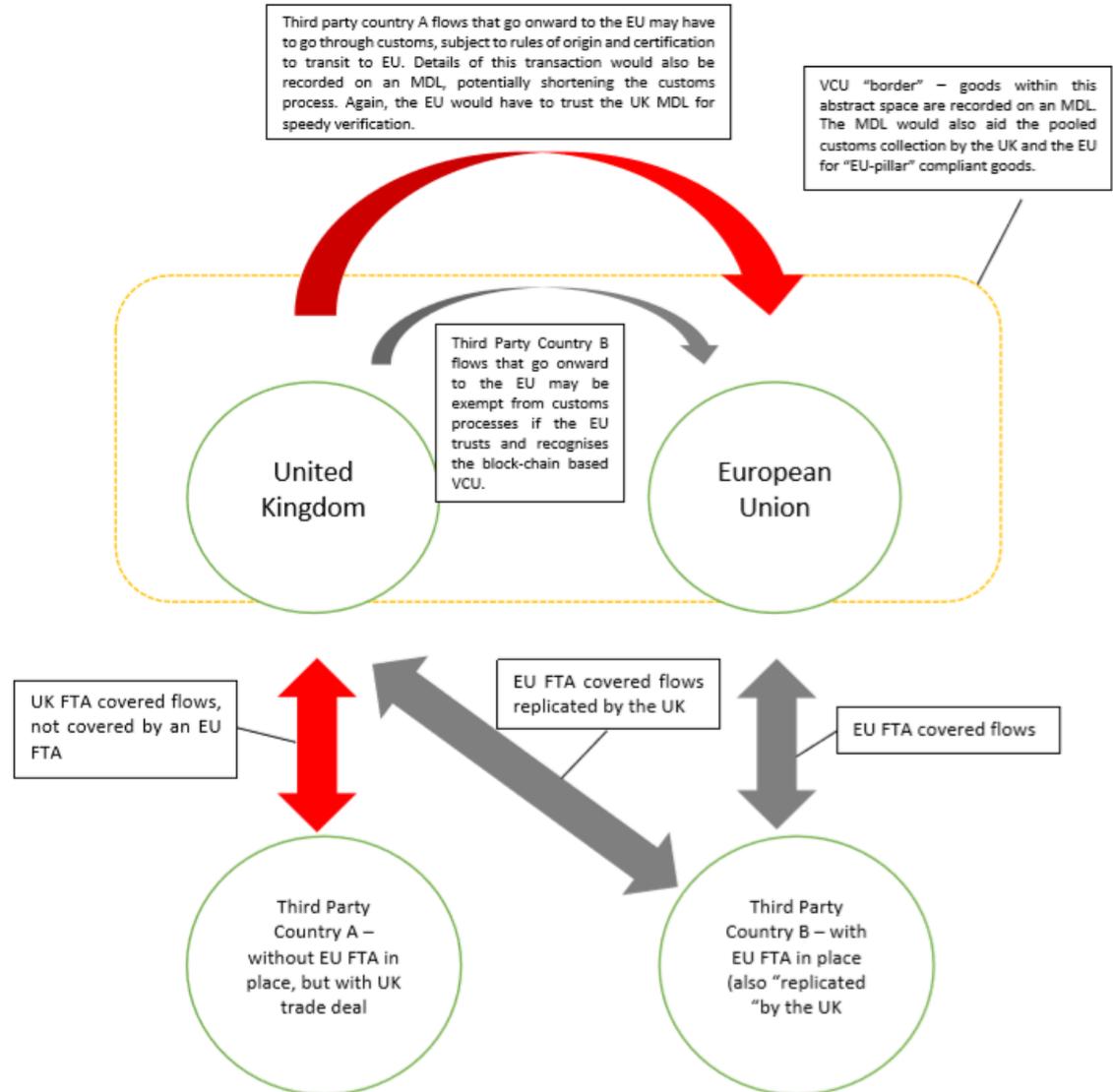
◆ Government Operations

- Taxation
- Policing
- National defence
- Health resources

◆ Internal Trade

What About Brexit?

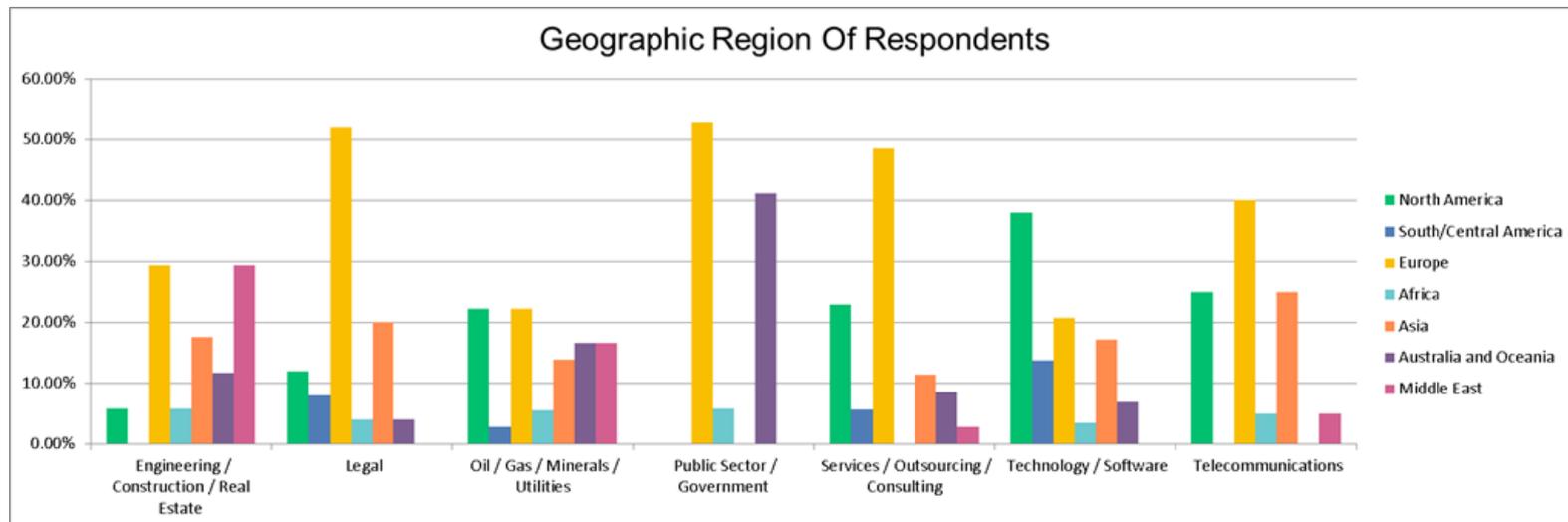
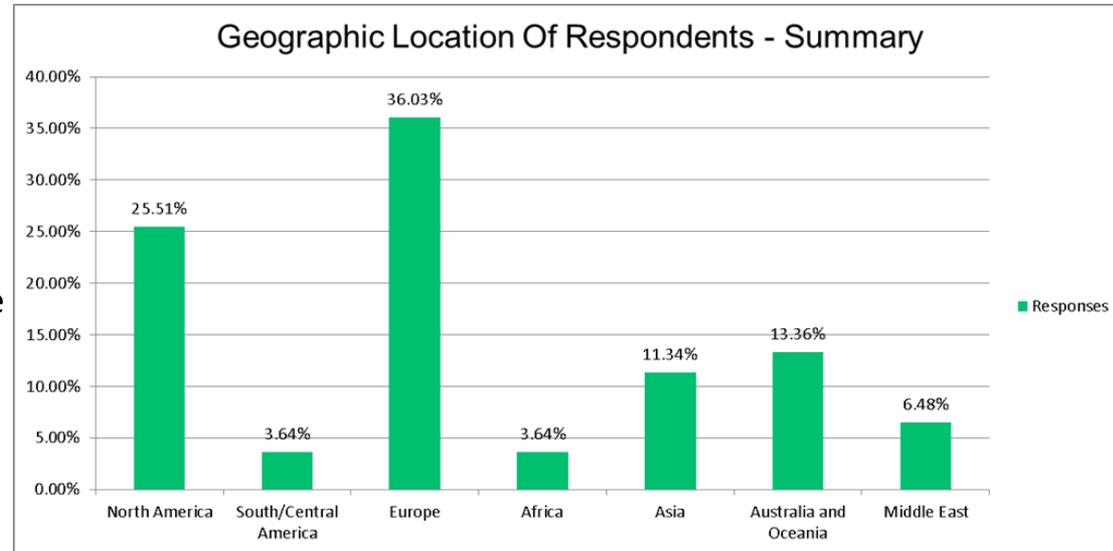
Illustration of Cebr's Virtual Customs Union concept, coupled with a Smart Ledger solution



IACCM Survey Results

◆ IACCM received responses from 247 of its members, of which 179 were from the top seven industry sectors:

- 1) Engineering, Construction, and Real Estate
- 2) Legal
- 3) Oil, Gas, Minerals, and Utilities
- 4) Public Sector and Government
- 5) Services, Outsourcing, and Consulting
- 6) Technology and Software
- 7) Telecommunications



Conclusions

- ◆ Smart Ledger technology could boost world trade in goods by at least \$35 billion dollars per annum.
- ◆ The cost of importing a single container could, therefore, be reduced by around \$46, by simplifying procedures.
- ◆ These potential benefits are driven by a 2.5% cost clawback assumption, supported by case studies on previous technological advancements in trade and industry feedback.
- ◆ If reduced uncertainty is, also, taken into account, using option pricing theory, the potential gains become even larger, with a potential monthly net cost saving of \$172 million (or, approximately, \$2 billion per annum).
- ◆ This would boost world GDP by \$10 to \$20 billion and could, potentially, add between 450,000 and 900,000 to the worldwide demand for labour, boosting wages and living standards worldwide.

Economic Impact: Food For Thought

1. The report does not look at 'services' - what are the perceived benefits here? Other areas of benefit?
2. How important are Smart Ledgers to the wider 'digitisation' of world trade?
3. What should the UK be doing?

Questions

The Economic Impact Of Smart Ledgers On World Trade

Q&A

Concluding Remarks



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When Would We Know Our Commerce Is Working?



“Get a big picture grip on the details.”
Chao Kli Ning

Thank you!

