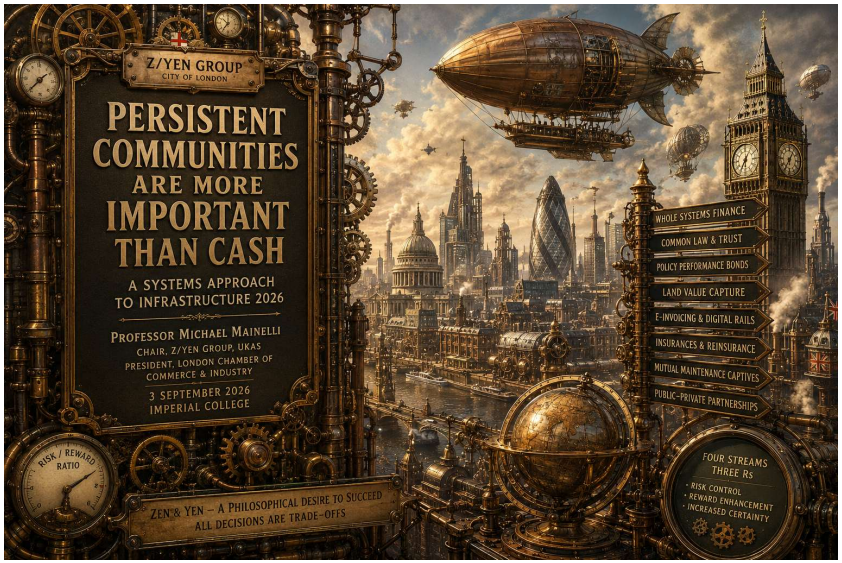
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"Persistent Communities Are More Important Than Cash"

A Systems Approach To Infrastructure 2026

Professor Michael Mainelli
Chair, Z/Yen Group; Chair, United Kingdom Accreditation Service;
President, London Chamber of Commerce & Industry
3 September 2026, Imperial College
www.zyen.com
michael_mainelli@zyen.com

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Z/Yen Group

City of London's leading commercial think-tank that spots, solves, and acts

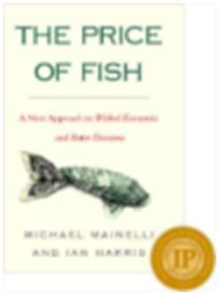
Zen & Yen – "a philosophical desire to succeed" – a risk/reward ratio recognising that all decisions are trade-offs

- Services – projects, strategy, expertise on demand, coaching, research, analytics, modern systems
- Sectors – technology, finance, government, voluntary, professional services, outsourcing
- Research – scientific, information technology, markets, financial and commercial centres
- Commercial centre development - Global Financial Centres, Smart Centres, and Global Green Finance indices











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"All We Need Is £$€¥"
Persistent Communities Are More Important Than Cash

Too many infrastructure projects see lack of cash as their go-to excuse for poor quality, late, or reduced scope results. In part, they may be correct.

Money is a technology that communities use to trade debts across space and time. A 'whole systems' approach to infrastructure brings together a community of people prepared to be indebted to one another in order to achieve a goal.

In this session, Professor Mainelli will move out from this more rigorous definition of money to explore wider techniques that are changing how projects can 'fund' themselves now and over time. Such approaches include land value tax, land value capture, common law jurisdictions, tax office e-invoicing, brownfield land reinsurance, mutual maintenance insurance captives, public-private partnerships, and performance bonds for policy, construction, demand, operation, maintenance risks. Examples abound from London to Chile, Uruguay, Japan, Thailand, Singapore, and Hong Kong.

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Agenda

- Introductions
- City of London
- Communities and money
- Z/Yen analytical framework – 4 streams, 3 Rs
- Techniques to probe:
  - common law jurisdictions
  - policy performance bonds
  - land value capture
  - tax office e-invoicing
  - Insurances - brownfield land, mutual maintenance cyber
- Principles and Q&A



"Get a detailed grip on the big picture."
Chao Kli Ning

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World's Oldest Democratic Workers' & Residents' Cooperative 'Incorporated By Prescription Since Time Immemorial'









- Continuous government since 7th century, inspiration for Parliament
- 716 acres (now 779 acres), 128 acres owned
- Unique constitution and electoral system, non party–political



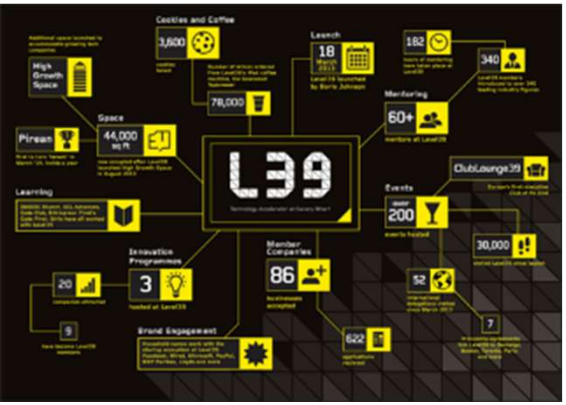


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Selected ‘Long’ Achievements



- Renminbi trading – 1997 - 2024
- Cyber and anti-fraud – 2011- present
- Crossrail – 2007 - present
- Open data initiative – 2011 - present
- Sharia finance – current
- Carbon markets – 1998 – Green City, present



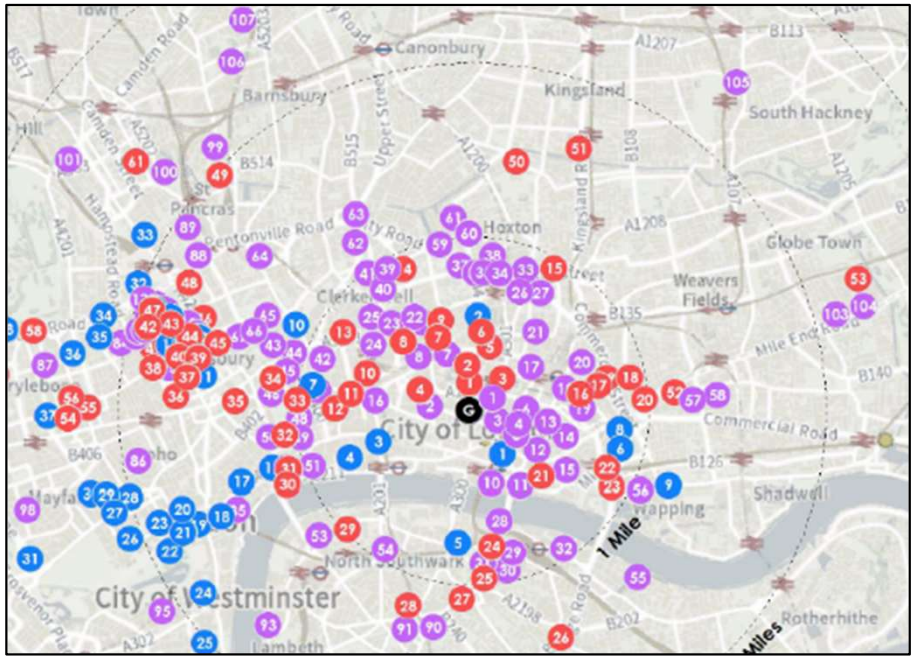
ELIZABETH LINE

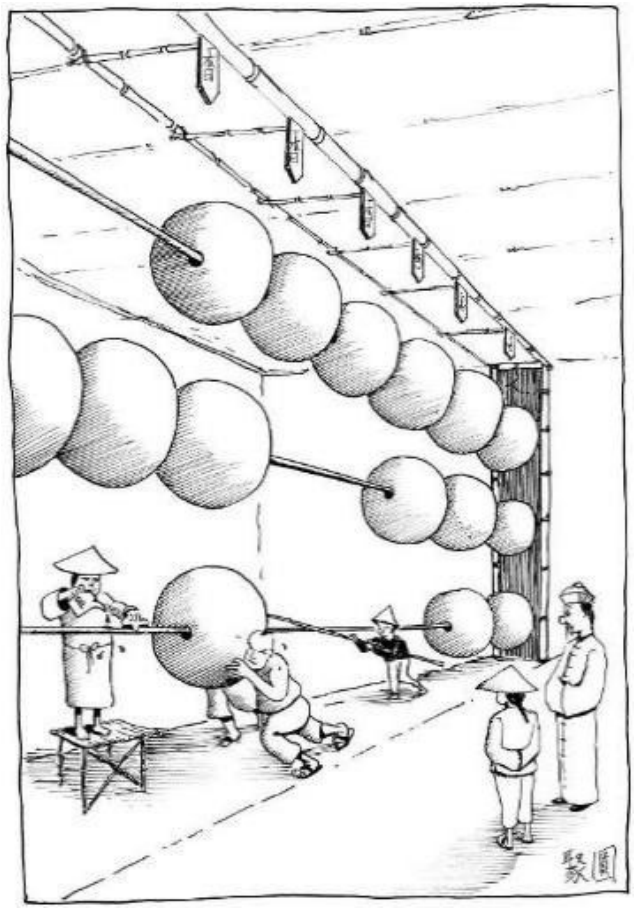


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Knowledge Miles

City of London surrounded by 40 learned societies, 70 higher education institutions, 130 research institutes, and over 24,000 businesses, with more than 300 languages spoken:
Built on the rule of law…
with an enabling regulatory environment…
access to incredible talent and skills…
and unparalleled global connections.





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

© Z/Yen Group, 2026

Fourteen Centuries Of Strategy Lessons For A Mayor

- Defence
- Rule of Law
- Open trade
- Access to skills & talent









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A Vision For Commercial Centres

- **Inclusive**, with the business services and regulatory environment fair and open to all-comers, and with support for those wishing to start businesses in the marketplace.
- **Smart**, able to understand and manage increasingly complex technological approaches to finance to open up new markets and offer improved services.
- **Innovative and client/customer-centric**, providing a regulatory and legal environment that allows for sustained innovation, balancing regulatory cost and protection – 'Know' not "'No' Your Customer"
- **Digital**, with the majority of services for workers & residents provided via platforms, apps, etc.
- **Green**, with incentives that prioritise the sustainable economy, reduce carbon emissions, and promote green solutions.
- **Centres offering a good quality of life**, attracting high-performing people.
- **Resilient & Robust**, cities as 'utilities' that must be 'always on'.





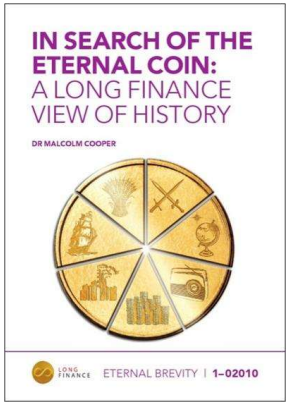
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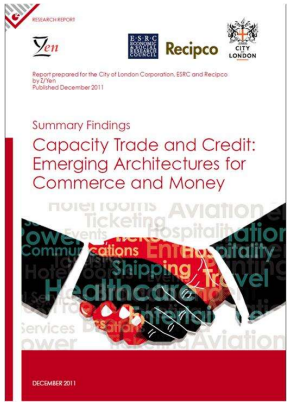
What's A Community?

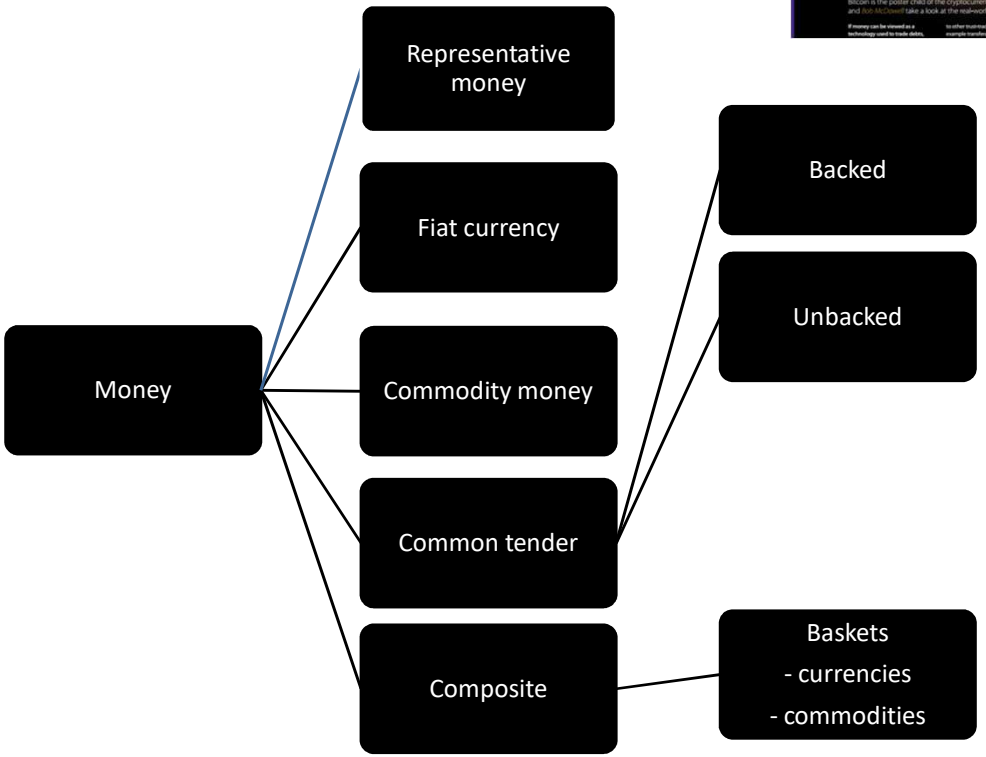
"Money is a technology communities use to trade debts across space and time."







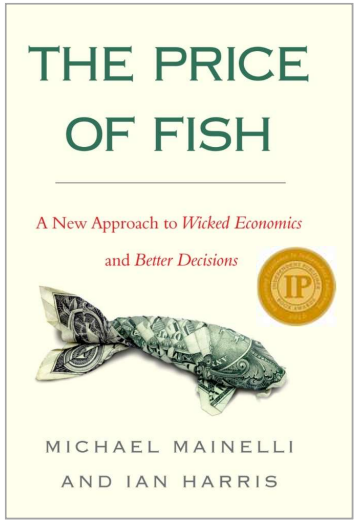




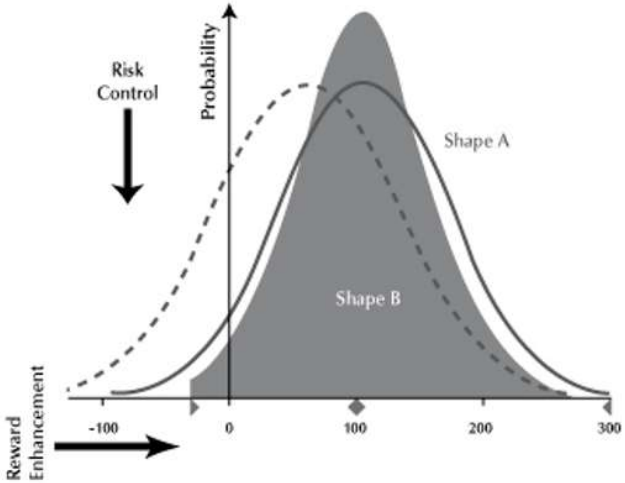
"Tokens of indebtedness - social desires frozen at a point in time – tokens depend on the future persistence of the community and its values."

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Four Streams







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Three Rs of Better Bets



Reduce risk
Raise reward
Reinforce certainty

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Reduce Risk



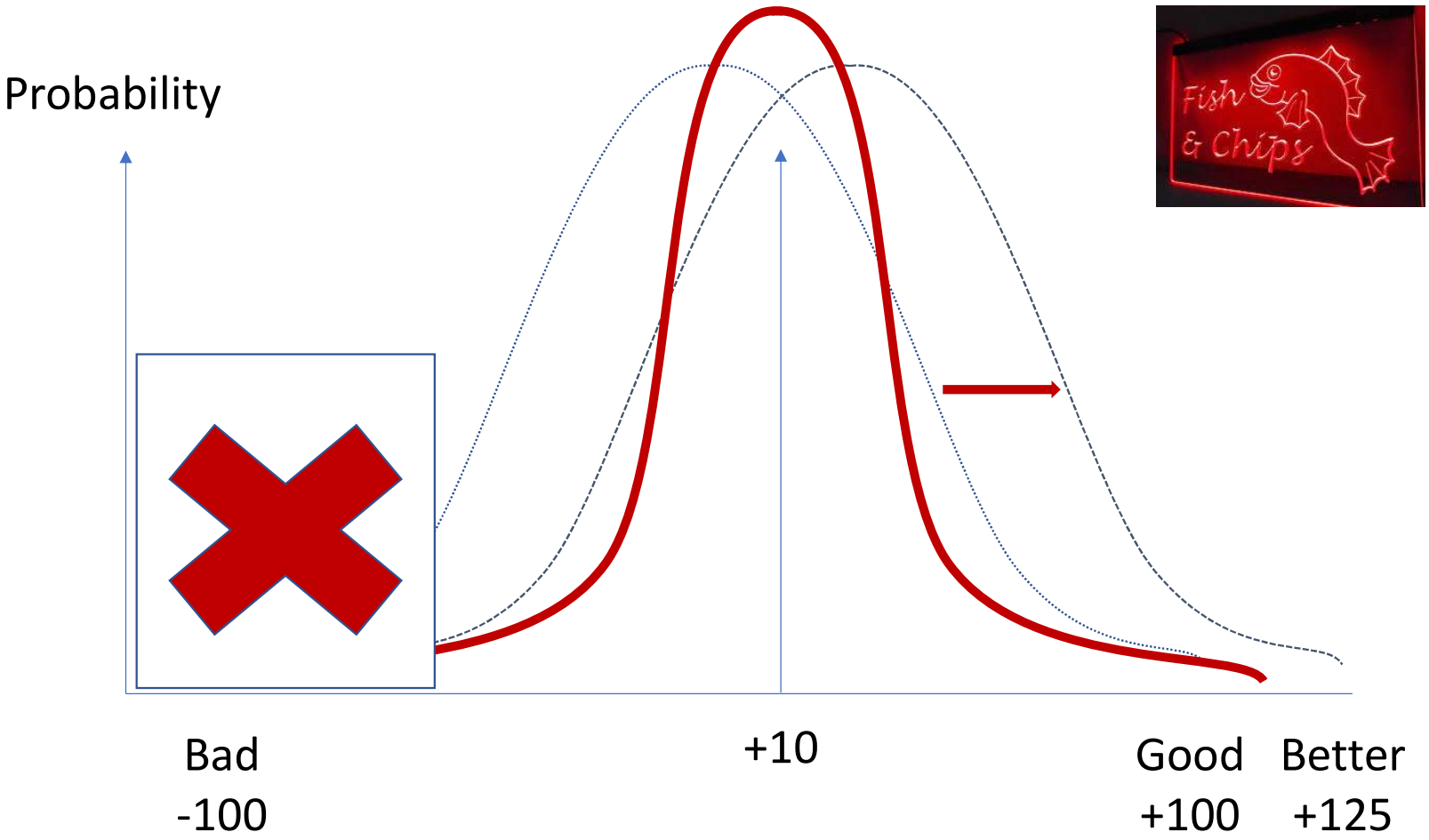
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Raise Reward



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Reinforce Certainty



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Societal Gains – Bring The Future To The Present

The Economist August 18th 2001

A novel use for options theory

Fishy maths

Putting a price on sustainable fishing

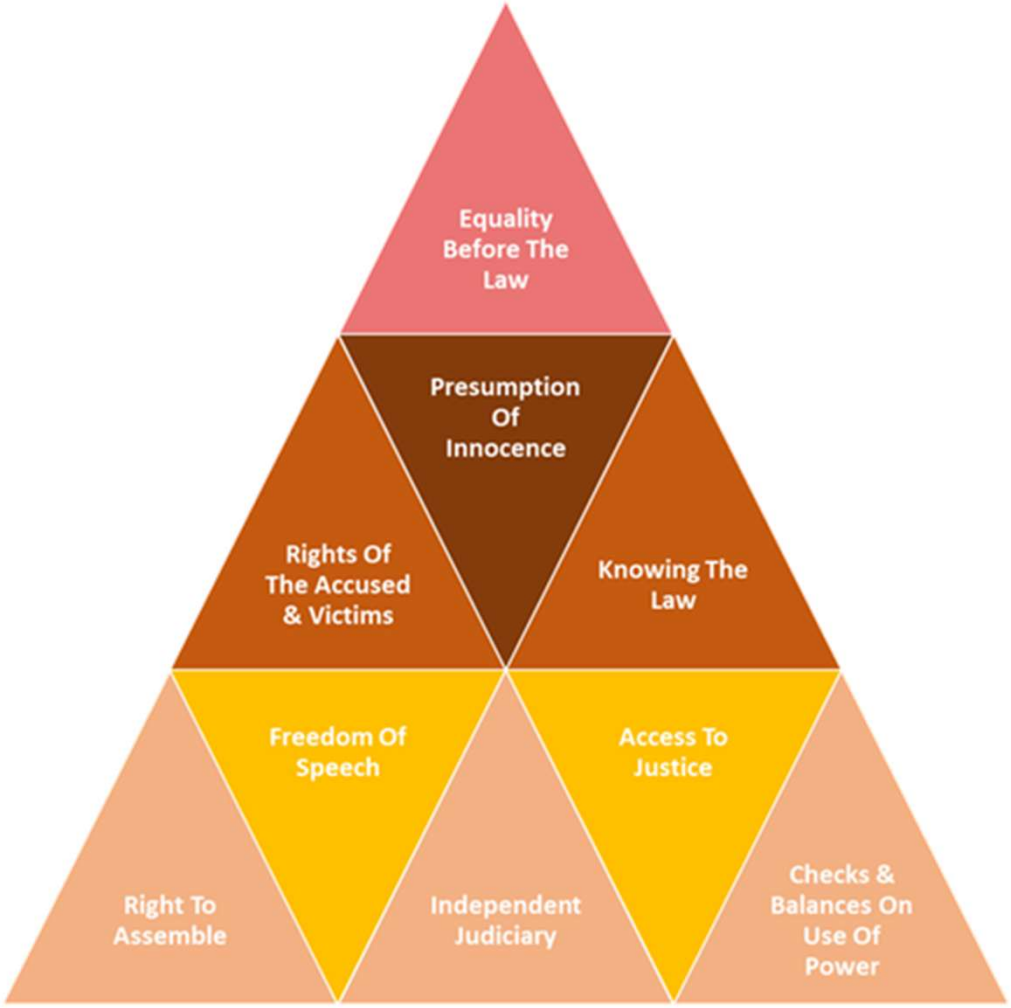
IF THEY were grateful types, Alaska salmon fishermen would feel their future was a little more secure, thanks to an equation first developed in 1973 for pricing financial options. The Marine Stewardship Council (MSC), a not-for-profit agency that campaigns for sustainable fishing, has given the Alaska salmon industry its stamp of approval, as it has the fishing of New Zealand hoki, Western Australia rock lobster, Burry Inlet cockles (in Wales) and Thames Blackwater herring. MSC certification ensures a certain standard of fishery and environmental manage-

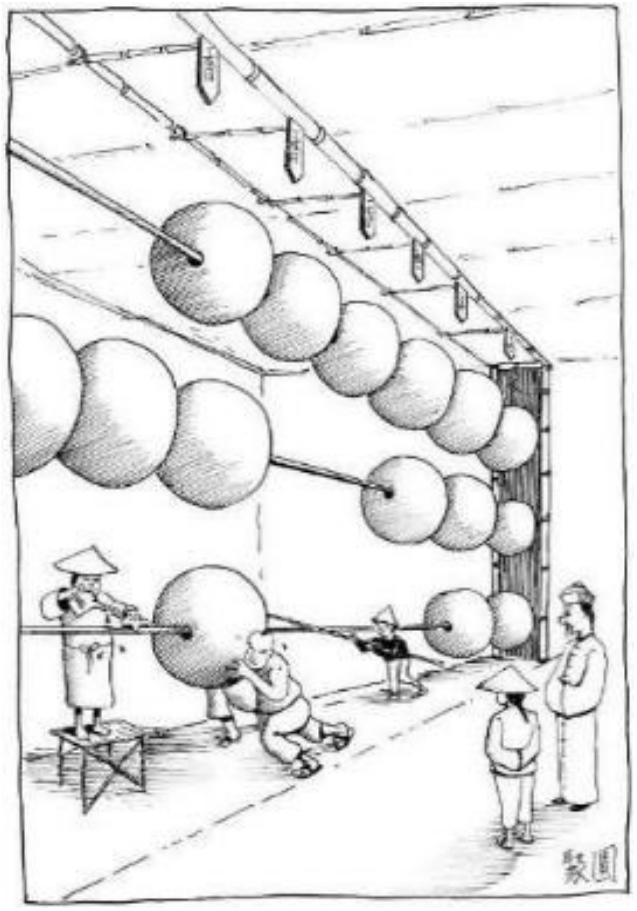


Black-Scholes ahoy

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Rule of Law





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

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Common Law

Jurisdiction	Host Country Legal System	Primary Regulator	Core Strengths
DIFC (Dubai)	Civil / Sharia Law	DFSA	Deeper, long-established banking and institutional ecosystem.
ADGM (Abu Dhabi)	Civil / Sharia Law	FSRA	Highly efficient for SPVs, tech startups, and digital assets.
AIFC (Astana)	Civil Law	AFSA	Direct gateway to Central Asian capital markets and Belt & Road projects.
QFC (Doha)	Civil / Sharia Law	QFC Regulatory Authority	Flexible physical placement rules within Qatar.
Vietnam	Civil Law		New
Oman	Civil / Sharia		New

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Policy 'Bond-Cuffs'

Policy performance bonds - (aka 'ESG linked', 'sustainability linked', 'performance incentive')

Education:
2017 - Khazanah

Sustainability:
2018 – Danone, Wilmar
2019 - Louis Dreyfus, Nokia, Enel, Bunge, MásMóvil, COFCO
2020 – WSP, Schneider Electric
2021 – TRIG (UK), Bank of China

Sustainability market:
2020 - $11bn
2021 - $110bn



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Summary - Policy Performance Bonds



- Policy Performance Bonds (PPBs) or Sustainability-Linked Bonds (SLBs) are issued with specific sustainability performance targets (SPTs), which contain key performance indicators (KPIs), for example: “A 10% reduction in scope 1 and 2 emissions by 2032”.

- If the SPT is missed the bond is subject to a ‘step-up’ clause, meaning the bond interest increases.

- This type of financial instrument provides a hedge against the issuer not delivering on commitments or targets - if the low-carbon future fails to arrive, due to changes in policy (such as subsidies or tax breaks) the government bears some of the direct costs by having to pay higher interest rates on government debt.

- Policy performance bonds can be issued against a range of social or environmental issues which are policy dependent, including education, deforestation, and housing.

- Major advantage of PPBs/SLBs is that they are tied to **outcomes** rather than **application** – this means that an organisation or country can use a wide range of means to achieve outcome – such as education and training, the recruitment of specialist staff, or grants and subsidies.

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Cool Chile

- March 2022 - the Republic of Chile priced the first-ever Sovereign Sustainability-Linked Bond (SSLB).

- This $2 billion 20 year SSLB has generated a strong appetite from more than 230 investors, more than four times oversubscribed.

- The sustainability performance targets were pretty stringent
  - an absolute reduction in greenhouse gas emissions (from 112.3mt/pa in 2018 to 95mt/pa) by 2030
  - an increase in renewable energy generation (from 43% to 60% renewables by 2032)

- Because the SSLB is not tied to a specific project, Chile is free to use any means it can to achieve them



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Even Cooler Uruguay



October 2022

$1.5 bn issue, subscription $3.96 bn

In connection with the Bonds, Uruguay has determined two sustainability performance targets ("SPTs") for each KPI.

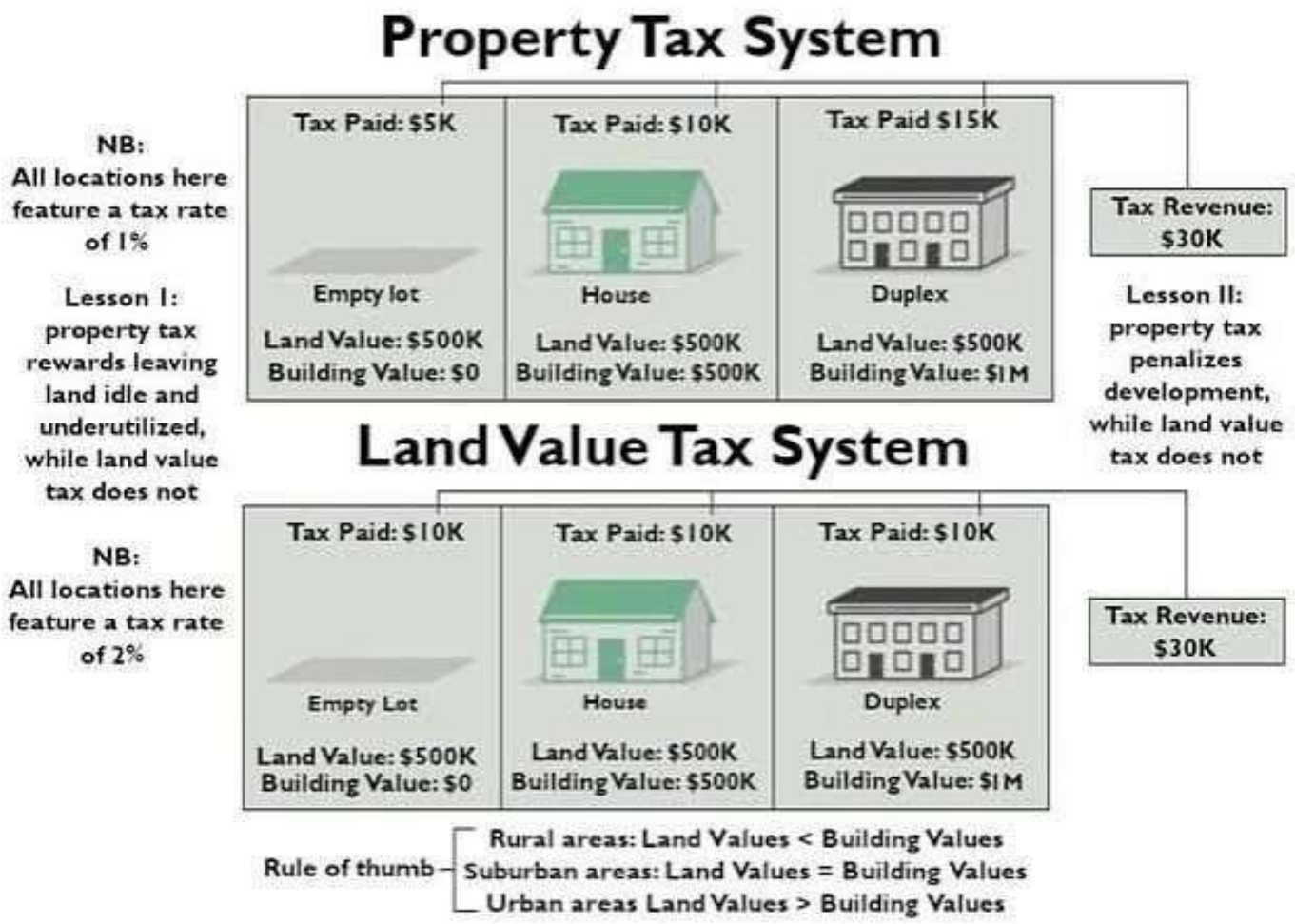
- The SPTs for KPI-1 are:
  - achieving a reduction of at least 50% in Aggregate Gross GHG Emissions (as defined herein), expressed in CO2eq per real GDP unit, by 2025 (the "Observation Year") compared to 1990("SPT-1.1"), and
  - achieving a reduction of more than 52% in Aggregate Gross GHG Emissions, expressed in CO2eq per real GDP unit by the Observation Year compared to 1990 ("SPT-1.2").
- The SPTs for KPI-2 are:
  - maintaining at least 100% of the Native Forest Area (as defined herein) covering Uruguay's territory by the Observation Year compared to 2012 ("SPT-2.1"), and
  - achieving an increase of more than 3% in the Native Forest Area (i.e., the Native Forest Area covering Uruguay's territory should be more than 103%) by the Observation Year compared to 2012 ("SPT-2.2").

USE OF PROCEEDS

The net proceeds to Uruguay from the sale of the Bonds will be approximately US$1,475,871,000, after deduction of the underwriting discount and of certain expenses payable by Uruguay estimated at US$1,950,000 in the aggregate. Uruguay is offering the Bonds concurrently with the Offer to Purchase Old Bonds. Uruguay intends to use the net proceeds of the sale of the Bonds for general purposes of the government, including investments to advance environmental goals, among other investments, and the refinancing, repurchase or retiring of domestic and external indebtedness, such as any of the Old Bonds validly tendered and accepted in the Offer to Purchase.

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Land Value Capture



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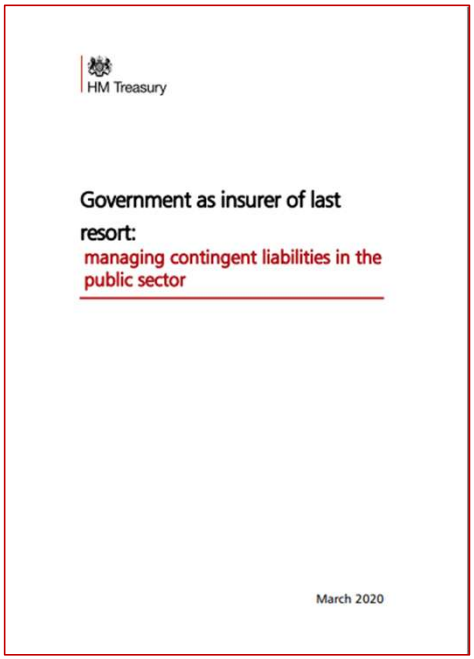
Tax Office eInvoicing



- eInvoicing automates invoice-to-payment
- Tax Office eInvoicing (TOeInvoicing) sends data to tax authorities – Directive 2014/55/EU, EN 16931
- Aims: boost compliance, reduce fraud, increase transparency with real-time data
- Global trend:
  - 100+ countries
  - EU aims for full e-invoicing by 2030
- Business benefits beyond fraud prevention:
  - better macroeconomic insight from granular payment data
  - improved SME financing via authoritative invoice registers, invoice securitisation, enforcement of late payment rules - improve national cashflow management
- HMRC unclear on TOeInvoicing plans amid Making Tax Digital programme

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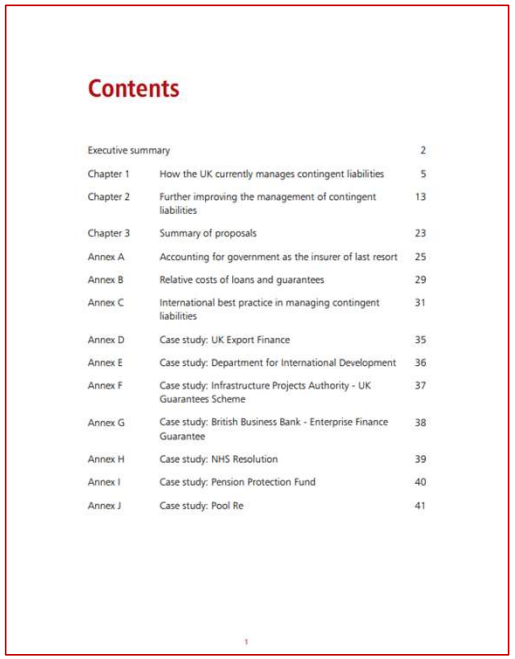
Pledging The Balance Sheet - Insurances



HM Treasury

Government as insurer of last resort:
managing contingent liabilities in the public sector

March 2020



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1

- Terrorism
- Flood
- Cyber-catastrophe
- Brownfield land
- Pandemic stockpiles
- Ukrainian corruption
- …



"Get a detailed grip on the big picture."
Chao Kli Ning

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Principles - Elinor Ostrom – Self-regulation, Carrots & Sticks

OSTROM'S 8 PRINCIPLES FOR MANAGING A COMMONS

(1)



STRONG GROUP IDENTITY AND UNDERSTANDING OF PURPOSE

(2)



FAIR DISTRIBUTION OF COSTS AND BENEFITS

(3)



FAIR AND INCLUSIVE DECISION MAKING

(4)



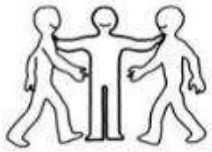
MONITORING AGREED UPON BEHAVIORS

(5)



GRADUATED SANCTIONS FOR MISBEHAVIORS

(6)



FAST AND FAIR CONFLICT RESOLUTION

(7)



AUTHORITY TO SELF-GOVERN

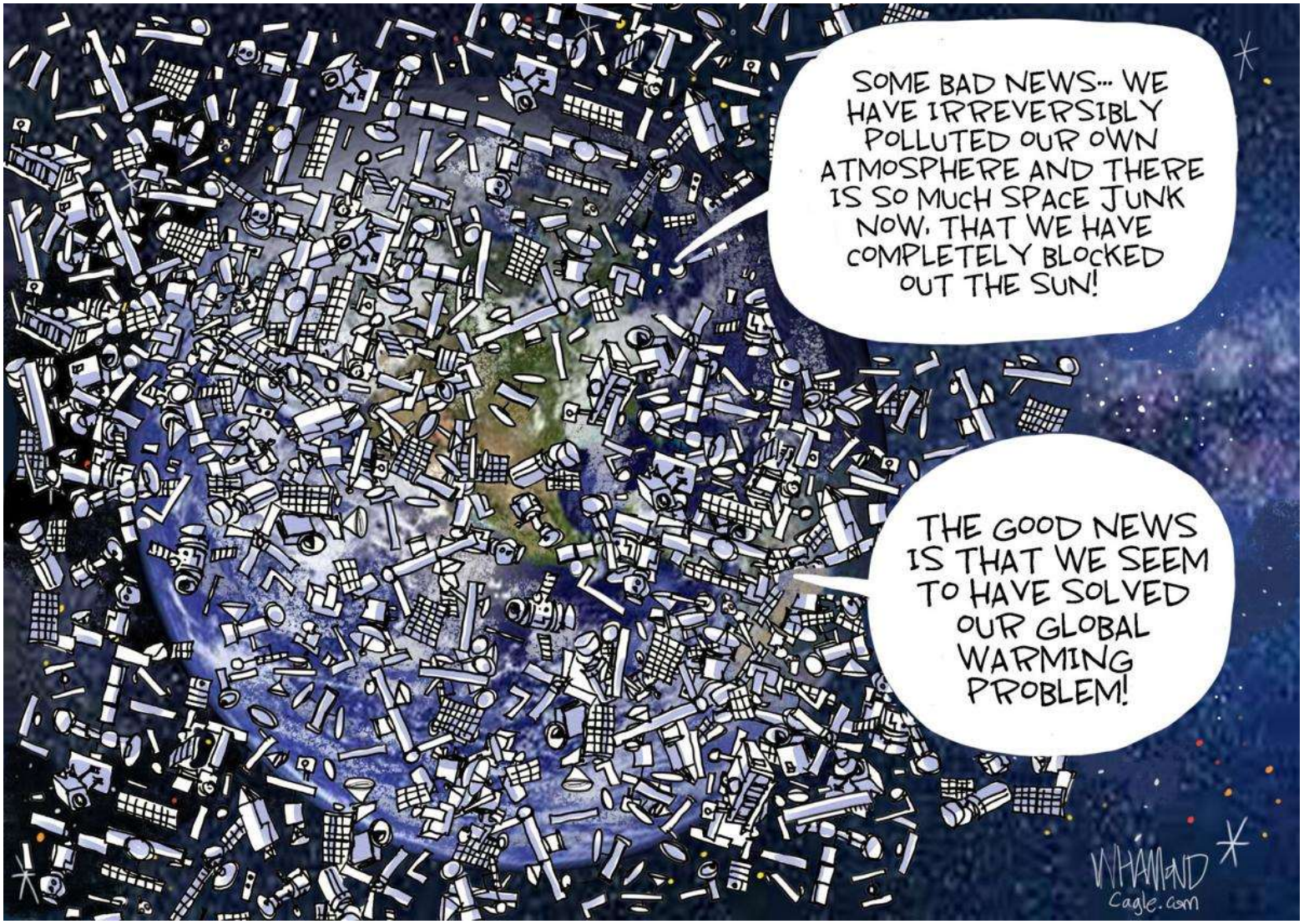
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APPROPRIATE RELATIONS WITH OTHER GROUPS

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A Final Frontier Problem For Similar Solutions?



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One Fundamental Strategy For Success



"Treat All Comers Fairly"

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When Would We Know Our Commerce Is Working?

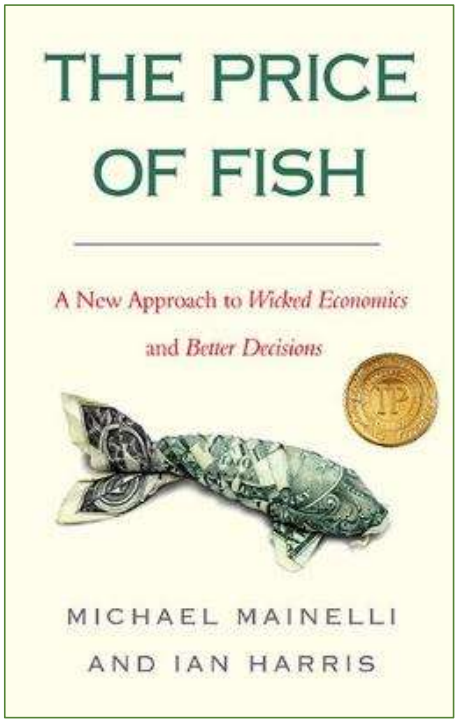


"Get a big picture grip on the details."
Chao Kli Ning

When we're equitable - space?
When we're sustainable - time?
When we're happy?

Thank you!

"If you have trust, I shall give you trust;
If you have no trust, I shall take it away."



LONG FINANCE

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Comments, Questions & Answers(?)

