

A serene landscape featuring a wooden dock on the left with a small boat moored at it. The dock has a roofed structure. The water is calm and reflects the sky. In the background, there are green fields and a clear blue sky. The entire scene is overlaid with a semi-transparent blue filter.

THE ROLE OF FINANCE IN ADVANCING HUMAN PROGRESS



THE FOLLOWING SLIDES FOCUS ON
THE IMPACT OF FINANCE FROM THREE
PERSPECTIVES:

- IMPROVING EFFICIENCY
- ACCESSING CAPITAL
- MANAGING RISK

HOW FINANCE MADE CIVILIZATION POSSIBLE

Underappreciation of Finance

➤ Inventions widely acknowledged to have impacted mankind's progress:

- Plough
- Wheel
- Printing Press with movable type
- Steam Engine
- Vaccines
- Transistor

➤ Missing from almost any list:

- Finance

HOW FINANCE MADE CIVILIZATION POSSIBLE

Improving Efficiency – Origins of Finance

The Code of Hammurabi – Mesopotamia – ca. 2100 B.C.

- The Code – Among other things, the Code established a standard monetary unit, equal to 180 grains of barley or a fixed weight of precious metal (silver).
- Significance – Established the first known set of “laws” for facilitating trade.



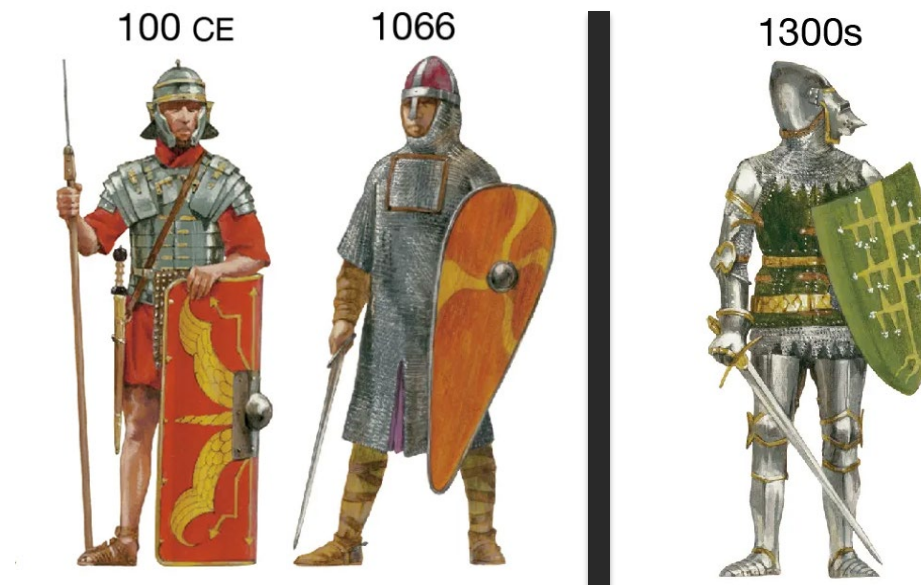
HOW FINANCE MADE CIVILIZATION POSSIBLE

Accessing Capital – Through Debt Markets

The rise of nation-states in Europe – Florence, Italy – 1300's

- Before the 1300's, most soldiers' compensation consisted of whatever valuables they could strip from dead enemies or villages they occupied or transited.
- Florence was the first city-state to issue bonds for the purpose of financing its army. Bond issuances grew larger and more frequent as city-states grew into nation-states.
- Significance – Established a process for **raising substantial amounts of capital** to be used in the present and repaid in the future.

Note the difference in armor before debt financing and after:



HOW FINANCE MADE CIVILIZATION POSSIBLE

Managing Risk – Through Diversification

The birthplace of modern banking – House of Medici – Florence, Italy – 1397

- The House of Medici banking operation grew enough to achieve diversification:
 - By *type of engagement* – Trade financing, commodity financing, money changing, etc.
 - By *geography* – At its peak, branches existed in Milan, Venice, Rome, London, Geneva, Lyon, Avignon, Barcelona, and Bruges.
 - By *business structure* - Each branch was a separate partnership under a central holding company.

- Significance – **Diversification reduced risk, enabling lower borrowing rates.**



HOW FINANCE MADE CIVILIZATION POSSIBLE

Accessing Capital – Through Joint Stock Ownership

The earliest “publicly traded” company – The Dutch East India Company – 1602

- The circumstances:
 - Europeans craved spices for food preservation and flavor – grown in SE Asia
 - Travel to Southeast Asia was very dangerous – too risky for a single entity

- The Dutch East India Company was the first formal “joint stock company” where:
 - Shares were sold to non-managing members
 - Liability of individual shareholders was limited
 - Shares were sold only to others, not back to the company

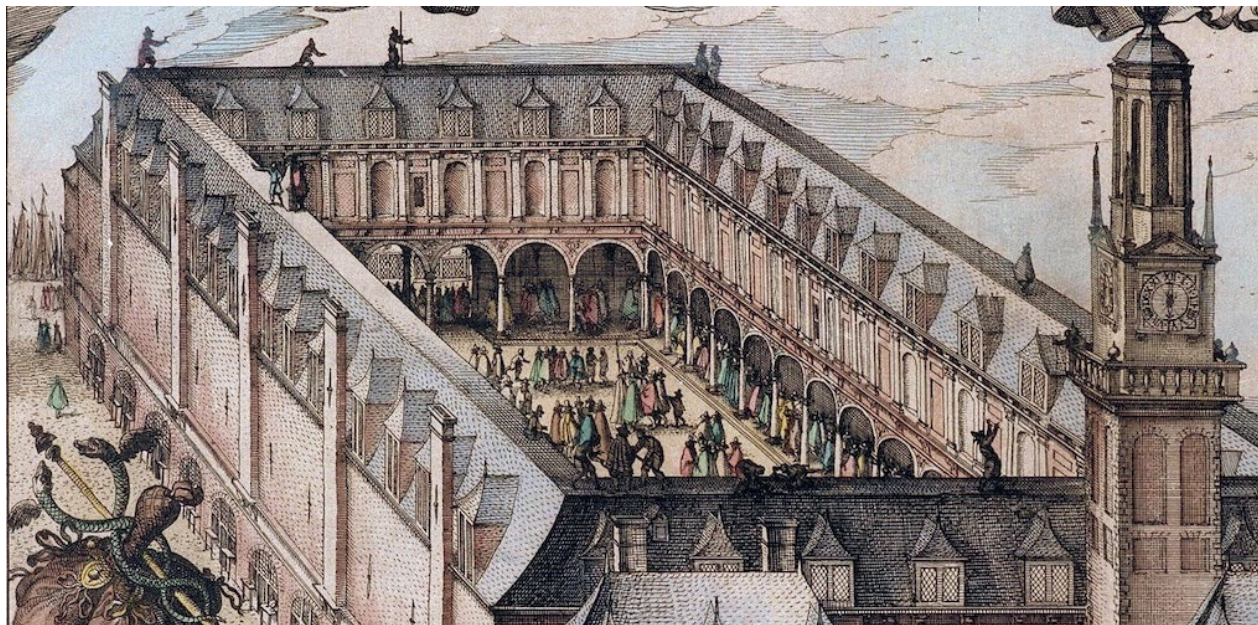
- Significance – Created a way to **pool capital** for large-scale ventures and enabled **non-employees to participate in a company’s success**.

HOW FINANCE MADE CIVILIZATION POSSIBLE

Accessing Capital – Through Markets

The first stock exchange – Amsterdam Stock Exchange – 1602

- Created to trade shares in the Dutch East India Company.
- Significance:
 - Created **liquidity** by allowing investors to easily buy and sell shares.
 - Served as a **price discovery** mechanism.



HOW FINANCE MADE CIVILIZATION POSSIBLE

Accessing Capital – Through Venture Capital

The first venture capital/private equity investment companies – American Research and Development Corporation (ARDC) and J.H. Whitney & Company - 1946

- ARDC raised capital to invest in new businesses run by former soldiers returning from World War II.
- Significance – Provided **highly risky** start-up companies **access to capital**.

All 6 originally funded by Venture Capital.

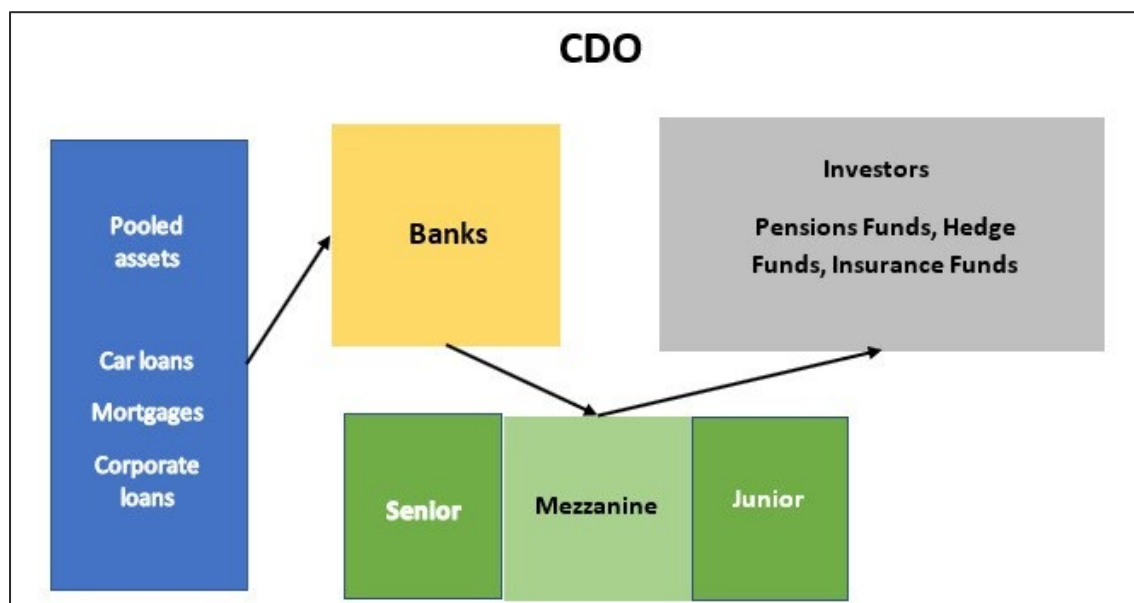
	Name	US - Most Valuable Companies	Market Cap
1	 Microsoft MSFT		\$3.123 T
2	 Apple AAPL		\$2.616 T
3	 NVIDIA NVDA		\$2.174 T
4	 Alphabet (Google) GOOG		\$1.892 T
5	 Amazon AMZN		\$1.886 T
6	 Meta Platforms (Facebook) META		\$1.318 T

HOW FINANCE MADE CIVILIZATION POSSIBLE

Managing Risk – Through Debt Securitization

The modern era of securitization – 1970s

- Loans/credit such as residential mortgages, commercial loans, or credit card debt, are pooled together. The pools are then divided into discrete tranches based on different levels of credit risk.
- The tranches are then “securitized” and sold to investors as *Collateralized Debt Obligations* (CDOs).
- Significance – Securitization of debt has greatly **improved liquidity** and thus ability to **manage risk, facilitating the expansion of credit.**



HOW FINANCE MADE CIVILIZATION POSSIBLE

Improving Efficiency – Major Technical Developments

- Hindu–Arabic numeral system – Fibonacci – b.1170 – Introduced the West to today’s numeral system.

0	1	2	3	4	5	6	7	8	9		
Roman numeral (values that can be subtracted are shown in red)					I	V	X	L	C	D	M
Hindu-Arabic numeral					1	5	10	50	100	500	1000

I can be subtracted only from V and X.

X can be subtracted only from L and C.

C can be subtracted only from D and M.

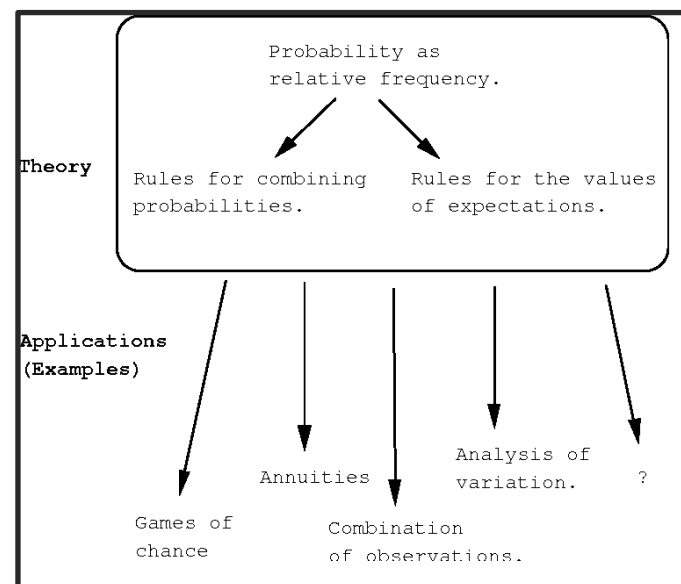
- Double-entry accounting – Luca Pacioli – b.1447 – Authored a textbook that included this bookkeeping system.



HOW FINANCE MADE CIVILIZATION POSSIBLE

Improving Efficiency – Major Technical Developments

- Quantification of Risk – Jacob Bernoulli – b.1655 – Connected the games of chance to real-world problems using probability.
- Electronic Spreadsheet – Dan Bricklin and Bob Frankston – 1979 - Ease in arranging, calculating and sorting data effectively and efficiently and running analysis using different sets of assumptions.
- Significance – Finance as we know it would not exist without technical innovations like these.

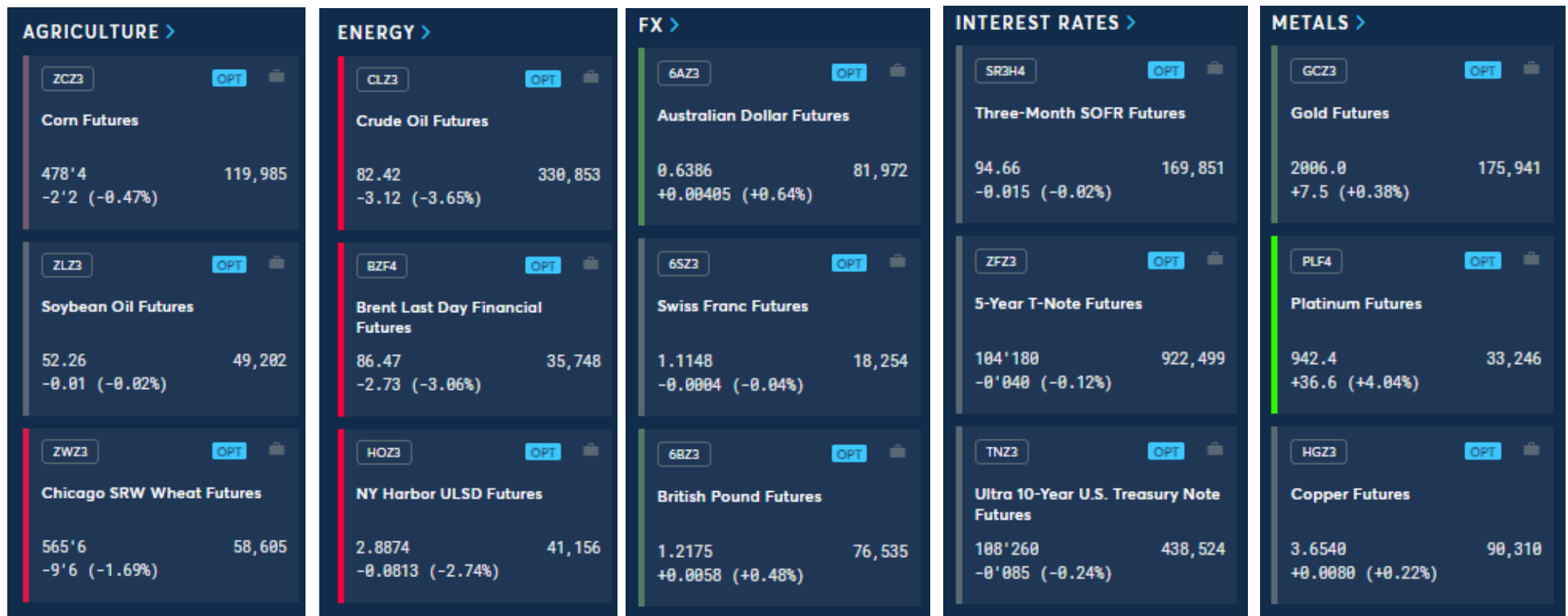


C11 (L) TOTAL				C1
				25
	A	B	C	D
1	ITEM	NO.	UNIT	COST
	MUCK RAKE	4	12.95	556.80
	BUZZ CUT	1	101.25	101.25
	TOE TONER	2	40.00	124.00
	EYE SNUFF	2	4.95	9.90
			SUBTOTAL	13155.50
			9.75% TAX	1282.66
			TOTAL	14438.16

MORE RECENT DEVELOPMENTS IN FINANCE

Managing Risk – Through the Availability and Accessibility of Derivatives

- The largest derivatives marketplace, the Chicago Mercantile Exchange (CME), is valued at \$75 bn.
- Significance – A wide variety of economic variables can be hedged through accessible exchanges.



MORE RECENT DEVELOPMENTS IN FINANCE

Managing Risk – Feasibility Through Lower Costs

- Technological advances have dramatically lowered the cost of products that can be used to manage business risks.
- Significance – Substantially **lower costs democratize finance**.

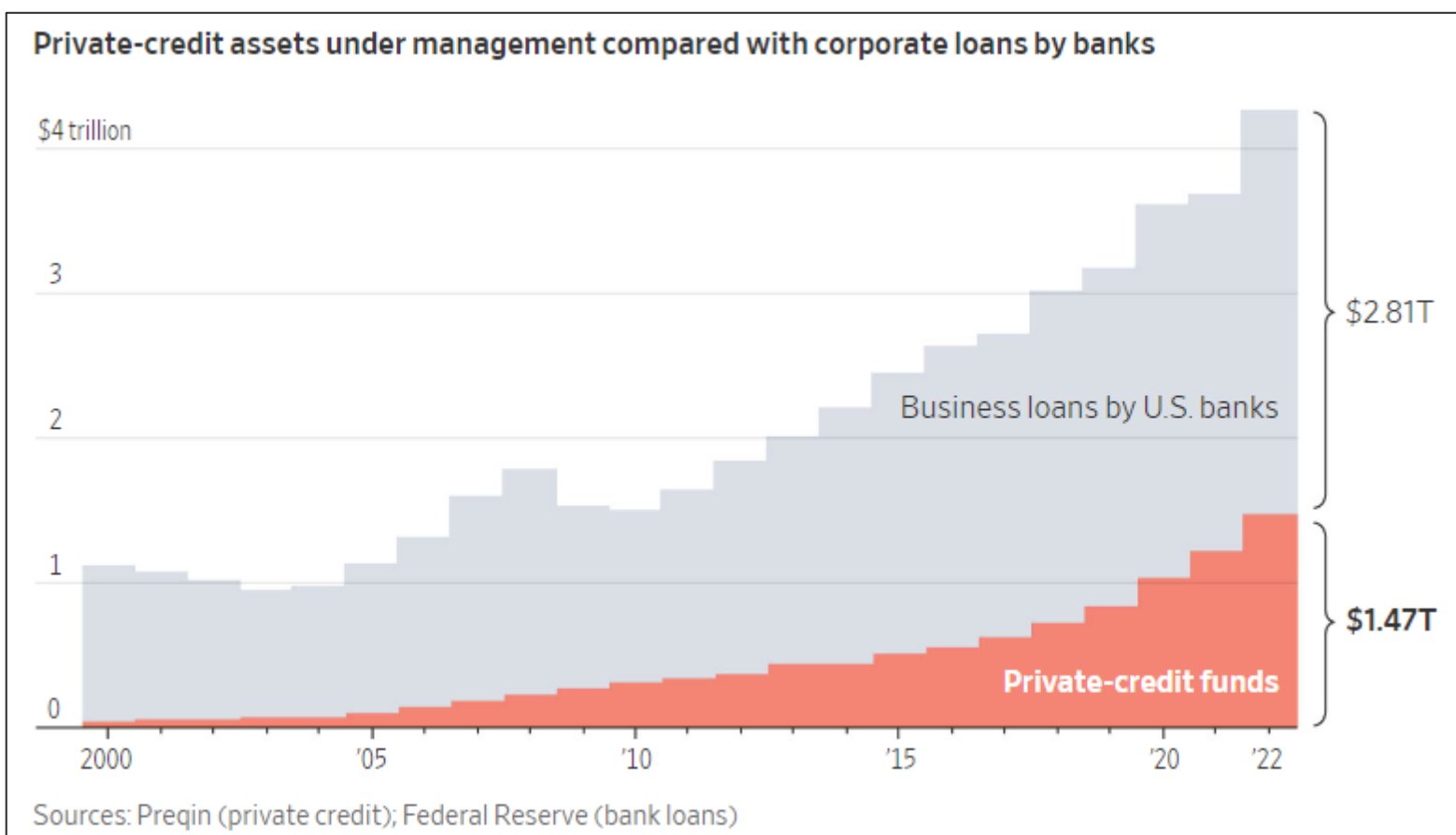
Cost of Trading Options
(Average Bid-Ask Spreads by Year)

	In-the-Money Calls
2000	5.57%
2005	4.06%
2010	2.11%
2015	2.38%
2020	1.23%

MORE RECENT DEVELOPMENTS IN FINANCE

Accessing Capital – Financing Provided by Nontraditional Sources

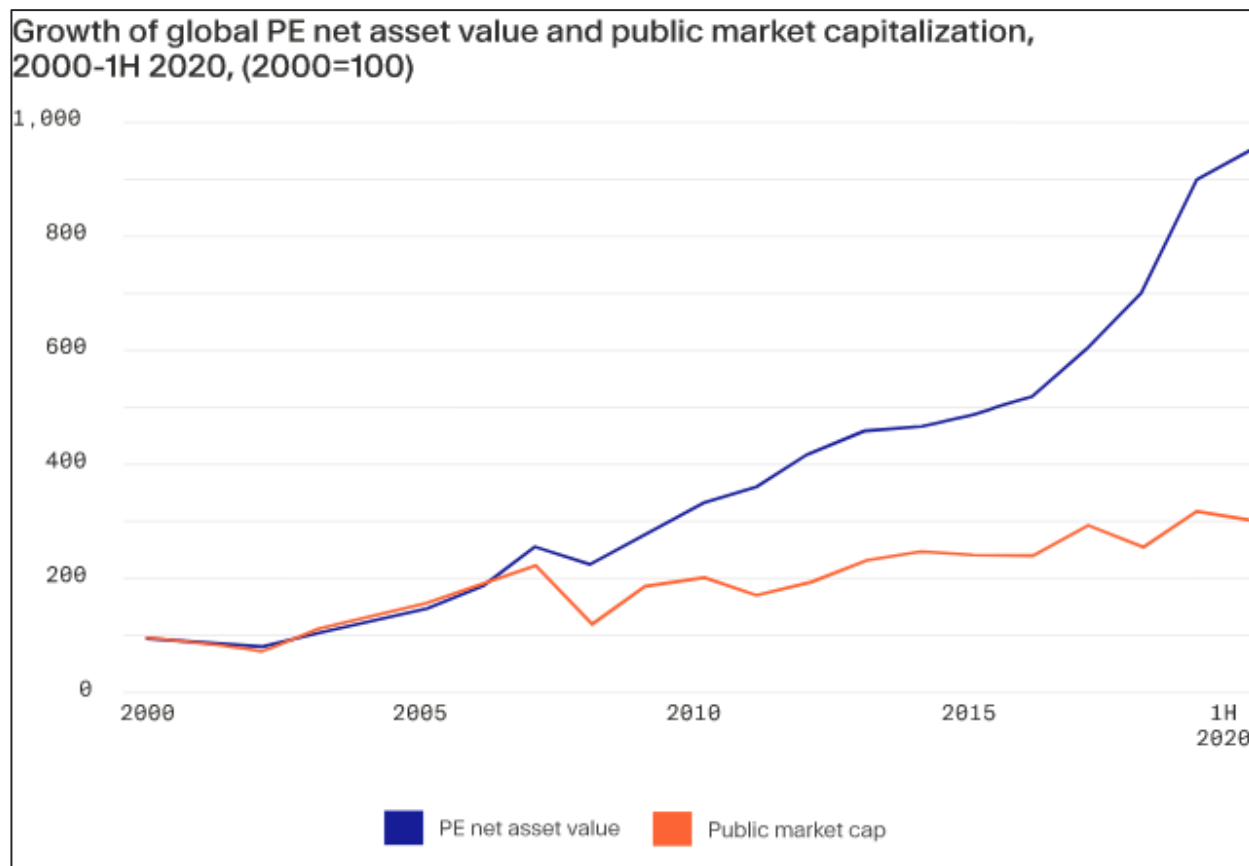
- Private credit has proliferated in the 21st century and is now a major force in finance.
- Significance – **More providers** of credit **increases access to capital**.



MORE RECENT DEVELOPMENTS IN FINANCE

Accessing Capital – Financing Provided by Nontraditional Sources

- Private equity has also proliferated in the 21st century and is now a major force in finance.
- Significance – **More providers of credit increases access to capital.**



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