

DIALOGUE  
WITH  
THE FED

*Beyond Today's Financial Headlines*

# China's Industrial Revolution: Past, Present, and Future

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CENTRAL TO AMERICA'S ECONOMY™

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Nov. 2, 2015

# Disclaimer

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# Tonight's outline

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- ❑ Some facts about China's rise
- ❑ Explanations (Details can be found in my forthcoming book: *The Making of an Economic Superpower: Unlocking China's Secret of Rapid Industrialization*)
- ❑ What's next?
- ❑ How can the U.S. respond to and benefit from China's rise?
- ❑ Q&A

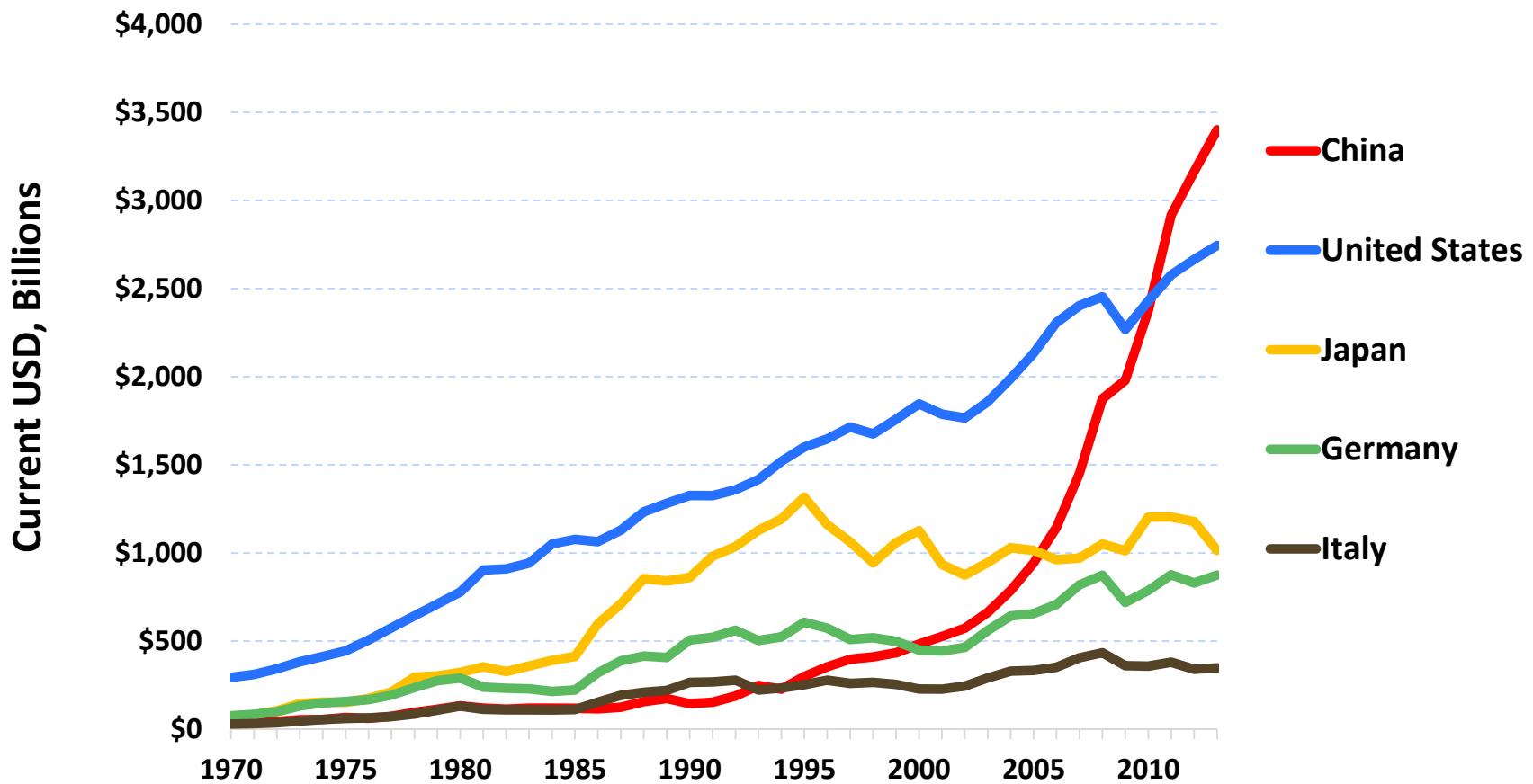
# Some facts about China's rise

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- ❑ 35 years ago, per capita income was one-third of that of sub-Saharan Africa.
  
- ❑ Today, China is the world's largest manufacturing powerhouse:
  - ❑ Crude steel = 800% of U.S. level and 50% of global supply
  - ❑ Cement = 60% of world's production capacity
  - ❑ Vehicles = more than 25% of global supply
  - ❑ Industrial patent applications = 150% of U.S. applications
  
- ❑ Also the world's largest producer of ships, high-speed trains, robots, tunnels, bridges, highways, chemical fibers, machine tools, computers, cellphones, etc.

# Manufacturing output

## Top 5 Countries (1970-2013)



Source: United Nations

## How did China achieve this in 35 years?

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“I can easily write a thick book in a week to criticize China. However, the fact that China’s miracle growth has been lasting for so long despite so many hostile social-political conditions is truly amazing and unprecedented. ... China must have done something so profoundly right. ... What is it? This is the real challenge.”

**Economist Steven Cheung**

quoted in *The Making of an Economic Superpower*

# What is it?

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- ❑ Short answer: China has rediscovered the “*secret recipe*” of the original **Industrial Revolution**, which started in the U.K. more than 200 years ago.
- ❑ **Q1:** What is the secret recipe?
- ❑ **Q2:** Why did China not find it before? And why have many other nations still not found it?
- ❑ **Q3:** Can China finish its course? If so, when? And what are the challenges ahead?

# Q1: What is the secret recipe?

## The Power of the Industrial Revolution (source: Gregory Clark)

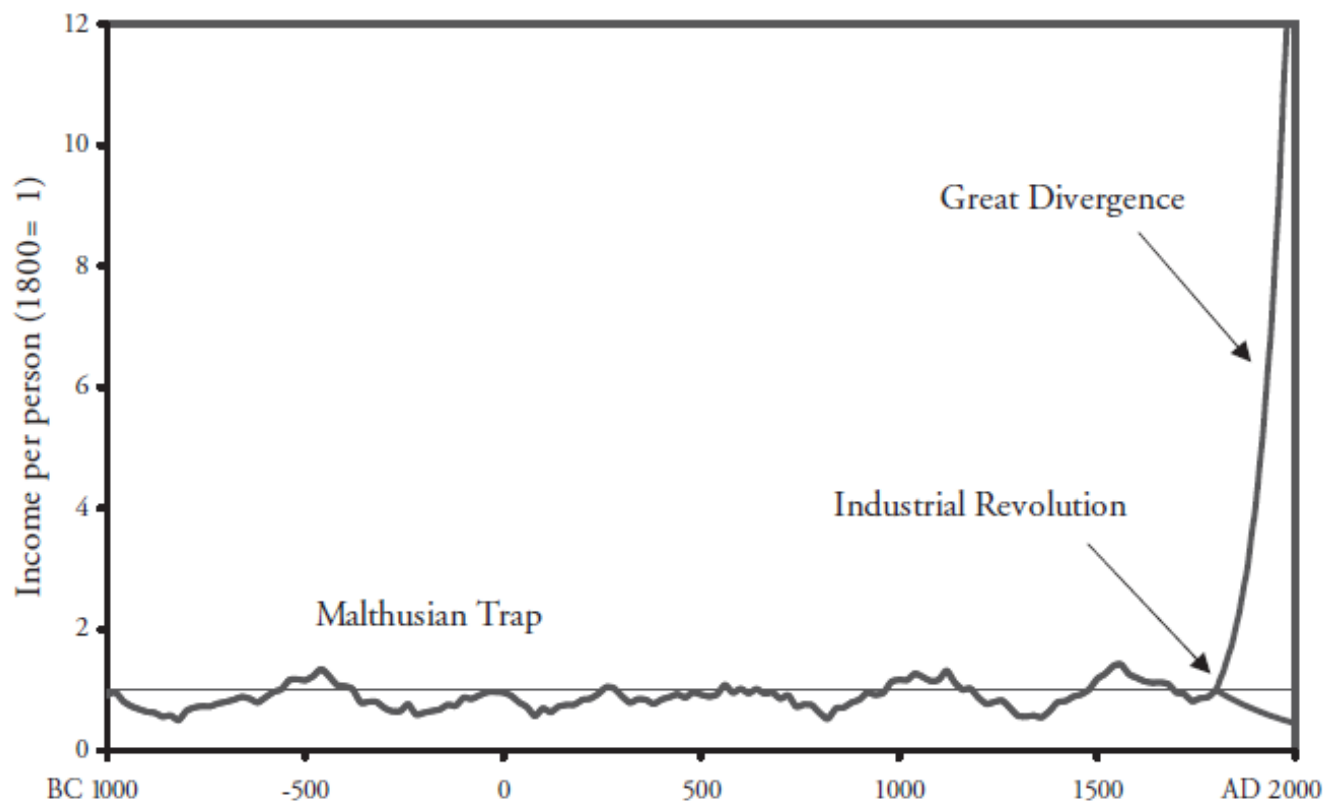


Figure 1.1 World economic history in one picture. Incomes rose sharply in many countries after 1800 but declined in others.



# Only a few nations succeeded in emulating the Industrial Revolution (1760-1880)

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- ❑ North and Western Europe (1820-1960)
- ❑ United States (1820-1940)
- ❑ Japan (1870-1970)
- ❑ Asian Tigers (1950-2000)

Less than 10% of the world's population of more than 7 billion is fully industrialized.

# Why only a few nations succeeded?

Institutional theory says political institutions are the key

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- ❑ Inclusive institutions (democracy) → restrictions on the elite class → free market, free trade, private property rights, the rule of law → wealth accumulation, innovation and growth
- ❑ Extractive institutions (dictatorship) → no freedom of choice, no private property rights, no rule of law → no incentives to work hard, accumulate capital, or innovate → poverty

The solution for ending poverty is **democracy** ...or is it?

# Difficult to square the facts

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- ❑ Democracies with pervasive economic stagnation and continuous political turmoil include Afghanistan, Egypt, Iraq, Libya, Pakistan, Thailand, Tunisia, Ukraine, etc.
- ❑ Extractive institutions that have been economically strong include Germany (1850-WWII) and Soviet Russia (1860-WWII).
- ❑ The theory also can't explain:
  - ❑ New Russia's dismal failure in economic reform under shock therapy
  - ❑ Japan's rapid industrialization during Meiji Restoration
  - ❑ South Korea's economic takeoff in the 1960s-1980s
  - ❑ Singapore's post-independence economic miracle
  - ❑ Under identical political institutions, property rights, and the rule of law — pockets of both extreme poverty and extreme wealth, and of violent crime and obedience to law in many U.S. cities
  - ❑ Poverty in southern Italy vs. wealth in northern Italy

# China's three failed attempts at industrialization

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- ❑ In early 1860s, after China was defeated by the British in the Second Opium War.
- ❑ After the 1911 Xin-Hai Revolution, during the era of the Republic of China.
- ❑ After 1949, under communism.

## Q2: Why did China fail in previous attempts?

- ❑ Lack of free market and private property rights?
- ❑ Lack of democracy?
- ❑ Lack of natural resources?

# What has China done differently this time?

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Fourth attempt took a very humble, gradualist, experimental approach:

- ❑ Maintain political stability **at all costs** — no more *revolutions*
- ❑ Focus on the grassroots: bottom-up reforms starting in agriculture instead of the financial sector
- ❑ Promote rural industries despite their primitive technologies
- ❑ Use manufactured goods (instead of only natural resources) to exchange for machinery

# What has China done differently this time?

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- ❑ Enormous government support in infrastructure buildup
- ❑ Dual-track system with mixed ownership instead of wholesale privatization
- ❑ Move up the industrial ladder from
  - light to heavy industries
  - labor to capital-intensive production
  - manufacturing to financial capitalism
  - a high-saving state to a consumeristic welfare state

# China's rise mimics the historical sequence of the **Industrial Revolution**

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1. Proto-industrialization: rural industries for long-distance trade
2. First Industrial Revolution: labor-intensive mass production for mass market
3. Industrial trinity boom: energy + locomotive power + infrastructure to facilitate mass distribution
4. Second Industrial Revolution: mass producing the means of mass production, including mature financial capitalism
5. Welfare state: service economy, social safety net, democracy, human rights, end of death penalty, etc.



# United Kingdom's path

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- ❑ 1600-1750: proto-industrialization in rural areas, organized and financed by rich merchants
- ❑ 1750-1830: First Industrial Revolution in textile industries, relying on wood-framed and water-powered textile machines for mass production
- ❑ 1830-1850: mass infrastructure buildup in industrial trinity: energy (coal), transportation (railroad), and locomotive (steam engine)
- ❑ 1850-1920: Second Industrial Revolution: mass production of the **means** of mass production, such as iron, steel, chemicals, and machinery
- ❑ 1928: welfare state and universal suffrage

# U.S. path

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- ❑ Before 1820: rural industries mushroomed in the countryside
- ❑ 1820-1860: First Industrial Revolution – mass production of textiles, based on imported or “stolen” British technologies
- ❑ 1830-1870: boom in industrial trinity, such as the 1828-1873 railroad mania
- ❑ 1870-1940: Second Industrial Revolution, featuring mass production of steel, automobiles, telecommunications, chemicals, and mechanized agriculture in 1940
- ❑ Entered welfare state after WWII: civil rights movement in 1960s, universal suffrage in 1965, Violence Against Women Act signed in 1994, same sex-marriage legalized in 2015

# Japan's path

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- ❑ The Edo period (1603-1868): commercial agriculture, rural artisan manufacturing flourished amid **political stability**
- ❑ 1868-1890 (early Meiji): full-fledged proto-industrialization
- ❑ 1890-1920 (late Meiji): First Industrial Revolution, based on mass production of textiles, relying on imported machinery and exports of labor-intensive textile products
- ❑ 1900-1930: boom in industrial trinity (e.g., railroads)
- ❑ 1920-1941: kick-started Second Industrial Revolution but unfinished
- ❑ 1945-1980: continued Second Industrial Revolution, democratic reform under U.S. occupation, entered welfare state

# China compressed three phases into three decades:

## Phase 1 (1978-1988): proto-industrialization in rural areas

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- ❑ Number of village firms increased > **12-fold** (from 1.5 million to 18.9 million)
- ❑ Village industrial gross output increased > **13.5-fold** (14% of GDP to 46% of GDP)
- ❑ Village peasant-workers increased to nearly **100 million**
- ❑ Farmers' aggregate wage income increased **12-fold**
- ❑ Shortage economy ended; food security problem solved

## Phase 2 (1988-1998): First Industrial Revolution

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- ❑ Mass production of labor-intensive light consumer goods, relying first on imported machinery
- ❑ E.g., became world's largest producer and exporter of textiles in 1995, the world's largest producer and importer of cotton
- ❑ Also the world's largest producer and exporter of furniture and toys
- ❑ Village firm workers reached 30% of China's entire rural labor force (not including the migrant workers)
- ❑ Village industrial output grew 28% per year between 1978 and 2000, doubling every three years for 22 years (66-fold increase)

## Phase 3 (1998-?): Second Industrial Revolution

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- Big surge in the consumption and production of coal, steel, cement, etc.
- 2.6 million miles of public roads, including more than 70,000 miles express highways (46% more than U.S.)
- 28 provinces (out of 30) now covered by high-speed trains (> 10,000 miles, 50% more than the total for the rest of the world)

# The triumph of “marketism”? **Yes** and **No**.

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- **“Yes”** for obvious reasons. Markets impose:
  1. economic incentives to compete
  2. discipline on management and technology adoption
  3. Darwinian “creative destruction” to eliminate losers
- **“No”** for overlooked reasons. It’s extremely costly:
  1. for independent, anarchic, uneducated peasants to form cooperatives unless social trust and markets exist
  2. to create mass market to support the division of labor and mass production
  3. especially to create market regulatory institutions to prevent cheating and fraud

# How to create well-regulated big markets

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- ❑ Early European powers relied on mercantilist state government and powerful merchants to create monopolistic global markets, of course, through colonialism, imperialism, and slave trade.
- ❑ Generations of British monarchs and merchants (e.g., the British East India Co.) helped create for England the world's largest textile market, cotton supply chains, and trading networks that kick-started the First Industrial Revolution.
- ❑ Today, developing nations may no longer have that “privilege” and the time to nurture such a powerful merchant class. Hence, state government must play a bigger role in market creation.



# How to create big markets

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- ❑ Adam Smith (1776): The division of labor is limited by the extent of the market.
- ❑ *“The ‘free’ market is not free. It is a fundamental public good that is extremely costly to create. The ongoing industrial revolution in China has been driven not by technology adoption, per se, but instead by continuous market creation led by a capable mercantilist government.”*
- ❑ The famous English manufacturer Matthew Boulton (1728-1809) wrote to his business partner James Watt (1736-1819), *“It is not worth my while to manufacture your engine for three counties only, but I find it very well worth my while to make it for all the world.”*

## Answers to **Q1 & Q2**

(What is the secret recipe? Why did China not find it before?)

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### *New Stage Theory*

A modern industrial market takes several key stages to create. Hence, development is a ***sequential process of market creation***. No matter how late a nation starts its development, it must repeat earlier stages to succeed.

❑ Learning mathematics: Human race discovered math knowledge sequentially: numbers, arithmetic, algebra, calculus, etc. Today's children must repeat this evolutionary process to learn math.

## Answers to Q1 & Q2

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- ❑ In contrast, modern economic theories teach poor countries to *leap forward*, to start industrialization by:
  - building advanced capital-intensive industries
  - setting up modern financial systems
  - erecting modern political institutions
- ❑ Indeed, **why** bother to mimic early 18th century British textile workshops when one can emulate a modern automobile assembly line? **Why** bother to repeat the old-fashioned 19<sup>th</sup>-century American mercantilism when one can replicate the modern Wall Street capitalism? **Why** bother to live through monarchy when one can enjoy democracy?
- ❑ But such top-down approaches violate the historical sequence of the **Industrial Revolution**

## Q3: What's next?

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- ❑ By **2021**, eliminate poverty (720 million out, 70 million remain)
- ❑ By 2025-30, finish Second Industrial Revolution (mass-producing all means of mass production; rural urbanization; agricultural modernization)
- ❑ Build mature financial capitalism: (i) internationalization of the RMB currency (2017-2020), (ii) net capital exporter (2015), (iii) a global financial center (2025)
- ❑ Build new *global* transportation system (e.g., the “*New Silk Road*”).
- ❑ By **2049**, become full-fledged welfare state and a high-income country

## But there are still major problems to fix

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□ China's rapid development also compressed centuries of Western development problems into a mere 35 years, including:

- rampant corruption and organized crime
- unprecedented pollution and environmental destruction
- rising divorce and suicide rates
- widespread business fraud and scandals
- markets full of "lemons" and low-quality goods
- pervasive asset bubbles
- rising income inequality and class discrimination
- frequent industrial accidents, etc.

## And there are other challenges

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- ❑ Build social safety net
- ❑ Finish social/economic reforms in healthcare and education sectors
- ❑ Finish rural urbanization and agricultural modernization
- ❑ Establish modern financial infrastructure and regulatory institutions as in U.K. and U.S.
- ❑ Establish a modern legal system as in Hong Kong and Singapore

## Q4: How can U.S. benefit from China's rise?

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- ❑ China's rise → cheap consumer goods, benefiting even the poorest people and their children in the U.S.
- ❑ Huge market for U.S. producers, e.g., total U.S. exports to China since 1983 increased by **50-fold**, yet the U.S. domestic inflation rate remained exceptionally low for decades.
- ❑ Boeing sees demand in China for 6,330 airplanes valued at nearly **\$1 trillion**; great opportunity for financial investment (stocks and equities), insurance companies, etc.
- ❑ U.S. infrastructure is in bad shape (ports, roads, bridges, rails, subways, etc.). Estimated investment needed by 2020 = **\$3.6 trillion** with a **funding gap of \$1.6 trillion**. But China (AIIB) can help.

## Q4: How can U.S. benefit from China's rise?

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- ❑ Ever since the 15<sup>th</sup> century, the spirit of capitalism has been “shake hands and do business” regardless of ideology, religion, culture and national boundary.
- ❑ For a half-century after World War II, the U.S. pursued one of history's most successful nation-building **win-win strategies**: It nurtured the rebuilding of Europe and Japan and the development of other poor countries and bonded them economically.
- ❑ China today seems to be carrying the U.S. banner forward: China is pursuing win-win **economics-focused** development strategies through global business engagement and international infrastructure buildup.
- ❑ But how much each individual nation can benefit from China's rise depends entirely on its own worldview and development strategies.



# Conclusion

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- ❑ Economic development, like learning math, goes through *sequential* stages. Skipping key stages creates disorder.
- ❑ The key challenge is not the lack of technology or funds, *per se*, to set up a few modern factories, but rather to create the mass market and distribution system to render such industries profitable and internationally competitive.
- ❑ Ownership is not the key. The key is market competition and management through “creative destruction.”
- ❑ Democracy cannot function without industrialization. Yet industrialization is impossible without a strong state. The state provides political stability, social order, social trust, infrastructure, and the rule of the game (regulations).

# Thank you!

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□ Q & A

To learn more about my research on China, visit my web page at <https://research.stlouisfed.org/econ/wen>.