

## Legacies of the Tokugawa Regime

- Establishment of the Tokugawa Bakufu
  - Tokugawa Ieyasu (1542-1616)
- Important Policies
  - Position of Emperor
  - Banning of Foreign Trade
  - Bakuhan system
  - The Rise of Cities

1

## Japan Prior to 1600

- Japan had interacted heavily with China
  - Chinese Characters
  - Political Ideology was Confucian
  - Religion was a combination of native animism (Shinto) and Buddhism, which originated in India and entered via China
- Between 1500 and 1600 Japan was immersed in a long sequence of bloody civil wars
  - In 1600, Tokugawa Ieyasu emerged as victorious at the battle of Sekigahara
  - In 1603 the emperor named Tokugawa Ieyasu shogun

2

## Political Issues

- Tokugawa government feared local rebellion
  - Prohibited local population from using guns
  - Wanted to make sure people would stay put and produce
- Divided the Daimyo into two types (approx)
  - **150 fudai** daimyo - hereditary retainers - those that had allied themselves with Tokugawa
  - **100 tozama** daimyo - outside lords- those that had opposed
  - Tozama han were placed between fudai han in outlying areas

3

## Tokugawa Policy

- Shogun ruled in the name of the emperor
  - Emperor continued to remain as a figure head
- Banned all Foreign Contacts from 1639 to 1856
  - No Trade except with Dutch and Chinese
- Established the Bakuhan system
  - Bakufu had control over the daimyo (feudal lords)
    - Daimyo had control over their han (feudal domains)
  - Daimyo were basically administrators of regions that produced more than 10,000 koku (Japanese bushels)
  - Han were relatively small
    - In 1598 Japan produced about 18.5 million koku
    - Shogun controlled about 2 million koku
    - Only one had more than 1 million Koku
    - Only 22 had more than 200,000 koku

4

## Social Structure

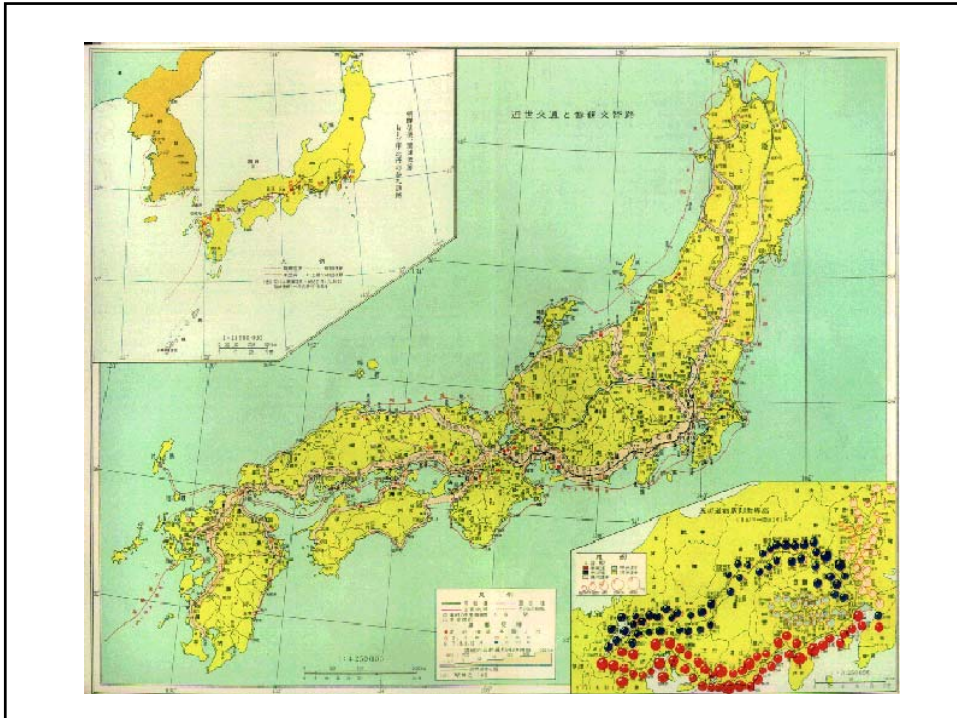
- Adopted a four class social structure based on Confucianism
  - Samurai, farmers, artisans and merchants
  - System similar to Physiocrats in France: “All value comes out of the ground”
- Peasants constituted 80% of the population and were heavily taxed to support Daimyo
  - Peasants were not permitted to leave farms but often did
  - Small Scale farms
  - Little capital
- Little use of machinery until end of nineteenth century
- Merchants were just “movers of goods” and therefore didn’t have real value

5

## Development of Transportation Networks

- Established Sankin Kotai (alternate attendance) system
  - Required daimyo to spend every other year in capital Edo (Tokyo) and leave family behind
  - Caused roads, communication networks, towns to be built along the Tokaido road.
    - Five major roads left Edo
    - Dutch were very impressed, indicating relative development of Japan
    - Postal system became quite advanced
    - Greatly enhanced the wealth of Edo
    - Edo was probably Largest city in world by 18th century with a population of over 1 million
    - Population of Kyoto was over 500,000
    - Osaka had a population of 400,000
      - Relatively clean and well run

6



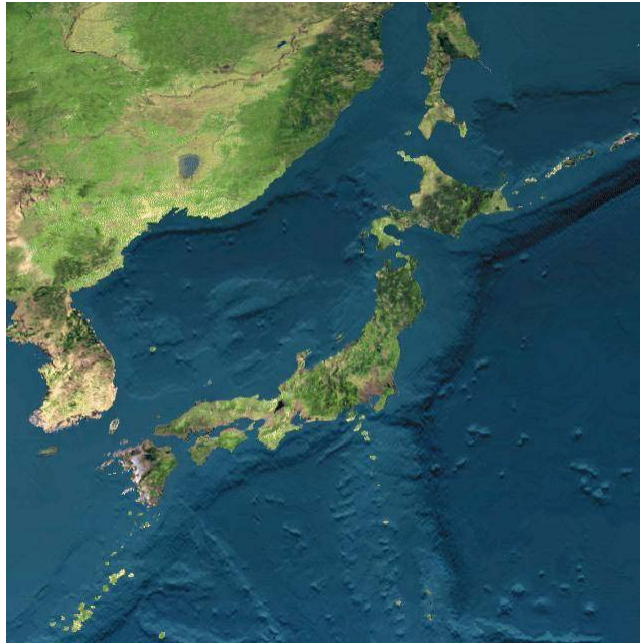
## Urban Policy

- Bakufu issued decree requiring each daimyo to build a castle in his han
  - Samurai had to be kept in the castle town
  - Mechanism of monitoring weaponry
  - Prevented samurai from marauding and stealing from peasants
  - Broke connection between Samurai and land
  - Broke connection between Samurai and warrior past
  - Made Samurai dependant on Daimyo for stipends b/c couldn't collect them directly.
- Contrast with Europe
  - In Europe the aristocracy ruled from countryside as opposed to the urban based system in Japan
  - More urbanization than Europe

## Legacy of the system today

- It is often argued that reation of “castle towns” in Tokugawa period created agglomerations of people
  - These cities were more productive and created inward migration
  - Industries changed but the centers of production did not
  - Had the capital not moved to Edo, Tokyo would have remained a backwater.

9



10



11



12



13



14

## Theory 1: Random Growth

- Random Growth
  - “History is one damn fact after another” – Henry Ford
  - Big cities form when the random events of history conspire to make them a location where many people end up
    - Immigrants arrived in New York and tended to stay here
    - People killed in catastrophic events result in permanent drops in population of the same magnitude.
- Not a Lot of Economics Underlying This
  - Oddly enough, this theory is successful at explaining the rank-size rule (Zipf’s law)
  - The rank-size rule is the fact that in virtually all countries the size of the  $n^{\text{th}}$  largest city is  $1/n$  times the size of the largest
  - Stunningly robust result in most countries.

15

## Theory 2: Locational Fundamentals

- Locational fundamentals posits that there are unchanging characteristics of locations that determine the size of cities
  - For example, proximity to rivers, coasts, harbors, deserts, mountaintop, rainfall, flatland, latitude, etc
  - Each location is the sum of a long sequence of randomly distributed spatial qualities
  - Difference with RG is response to temporary shocks:
    - Random growth: shocks are permanent
    - Locational fundamentals temp shocks have no long run impact

16

## Theory 3: Increasing Returns to Scale

- Productivity of firms is enhanced by surrounding economic activity
  - Achievement of Minimum Efficient Scale (MES)
    - Not enough local demand to achieve MES, so firms are less productive
  - Informational Exchange:
    - The more people one interacts with, the smarter one gets (and hopefully) the smarter they get!
    - But it is harder to interact with people who are farther away
  - Cost Linkage
    - The more varieties of inputs a firm has the better the output
    - But imported inputs are more expensive than local inputs
  - Cities arise because we are more productive when more concentrated

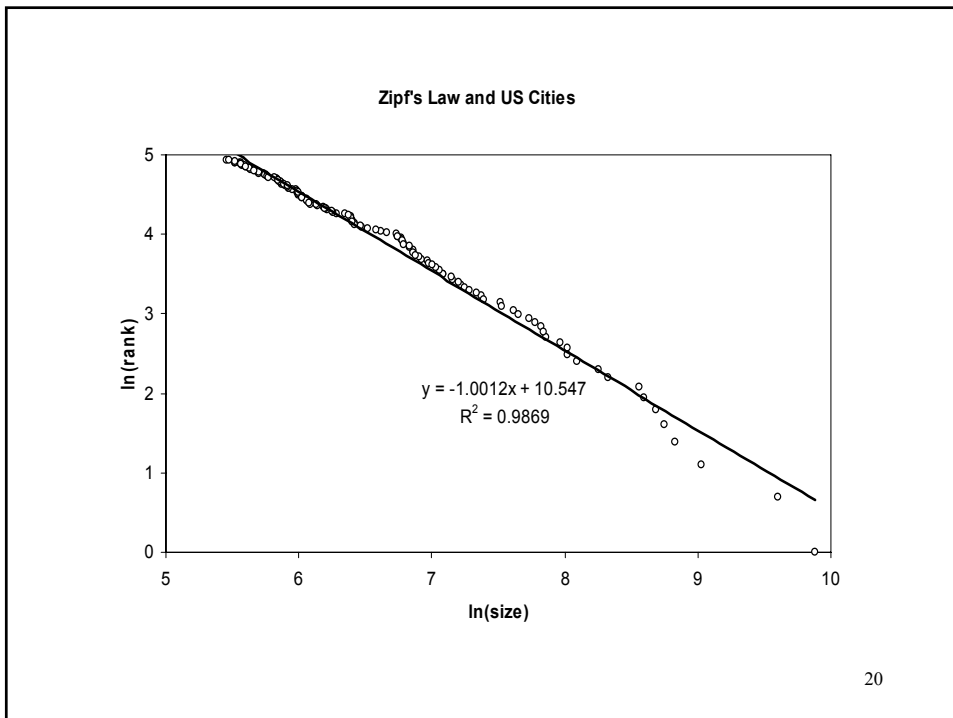
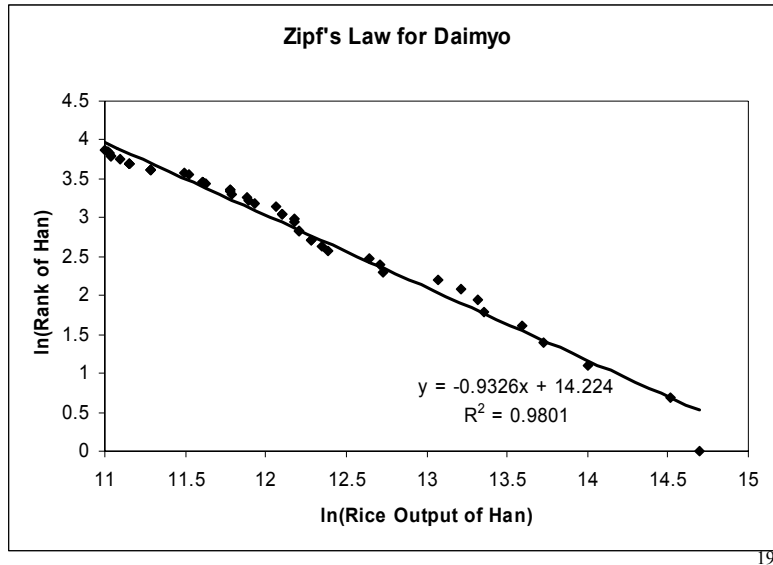
17

## How to Measure Regional Dispersion?

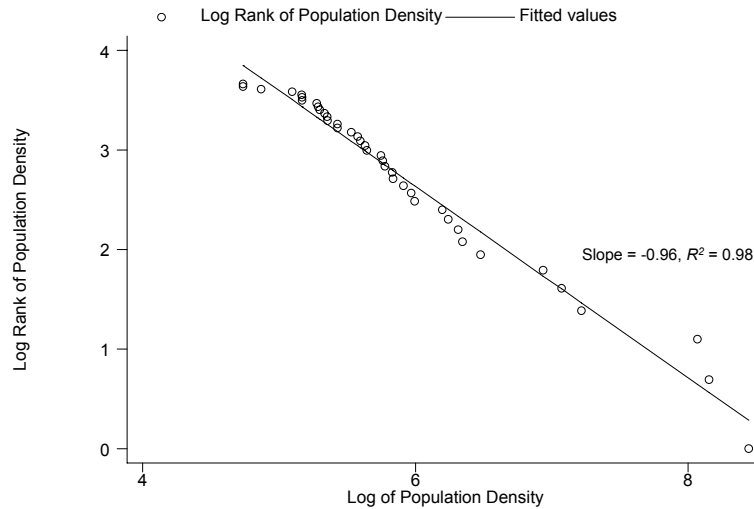
- Concentration Ratio: Share of Population in Largest Regions
- Relative Variance
  - Ratio of Variance of Log Population Density in Year  $t$  Relative to 1998
- Zipf Coefficient
  - Coefficient in Regression of Log of the Rank of a Region on the Log of Its Population Density
    - Note if region  $n$   $1/n$  times the size of region 1 then
      - $\text{Pop}(n) = 1/n * \text{Pop}(1)$  or  $\ln[\text{Pop}(n)] = \ln[\text{Pop}(1)] - \ln(n)$

18

Size Distribution of Feudal Domain Size in Japan (1597) Top 50 Daimyo



## Zipf's Law and Japanese Regions



21

## Evaluating Theories: Historical Regional Population Data

- Data for the Years 725 –1150 Is Based on Censuses Done for Tax Purposes
  - Japanese Tax System Was Lump Sum and Therefore Required Detailed Censuses and Tax Districts Based on Population
- Data for 1600 Is Augmented With Major Land Survey
- From 1721 to 1998 We Do Not Need Tax Data As Actual Population Data Exists

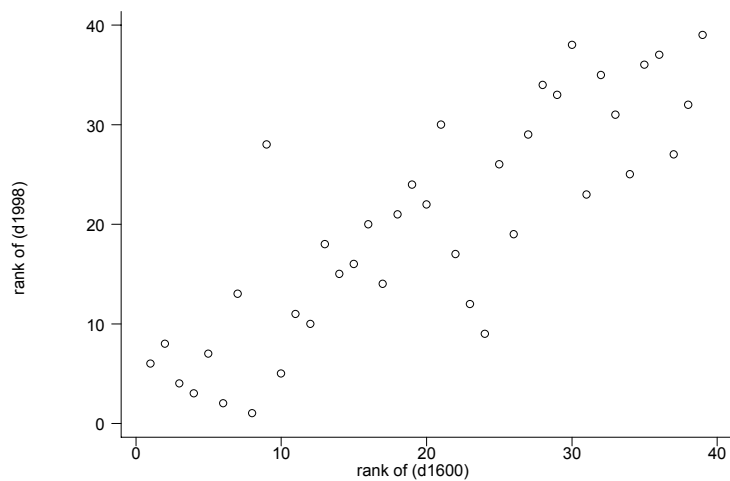
22

## What has happened to regional density? Look at Variation across 36 Regions

Year	Population in Thousands	5 Largest Region Share	Relative Var of log Pop Den	Zipf Coefficient	Raw Correlation with 1998	Rank Correlation with 1998
Jomon	125	0.39	2.46	-0.809	0.53	0.31
Yayoi	595	0.23	0.93	-1.028	0.67	0.50
725	4511	0.20	0.72	-1.207	0.60	0.71
800	5506	0.18	0.75	-1.184	0.57	0.68
900	7442	0.29	0.68	-1.230	0.48	0.65
1150	6836	0.20	0.66	-1.169	0.53	0.73
1600	12266	0.30	0.64	-1.192	0.76	0.83
1721	31290	0.21	0.43	-1.582	0.85	0.84
1798	30531	0.21	0.37	-1.697	0.83	0.81
1872	33748	0.18	0.30	-1.877	0.76	0.78
1920	53032	0.25	0.43	-1.476	0.94	0.93
1998	119486	0.41	1.00	-0.963	1.00	1.00

23

## Persistence of Density



24

## What did we learn?

- High degrees of variation in population density has always been a feature of the world
  - Zipf's law has always held, i.e.  $n^{\text{th}}$  largest region is  $1/n$  times the size of the largest region
    - Suggests the importance of either Random Growth model or Locational Fundamentals Model
  - High degree of persistence in the size of regions over time
    - Suggests that Locational Fundamentals are critical to understanding region size
  - There has been an increase in concentration in last century which coincides with industrialization
    - Increasing returns may play a role in the size of cities