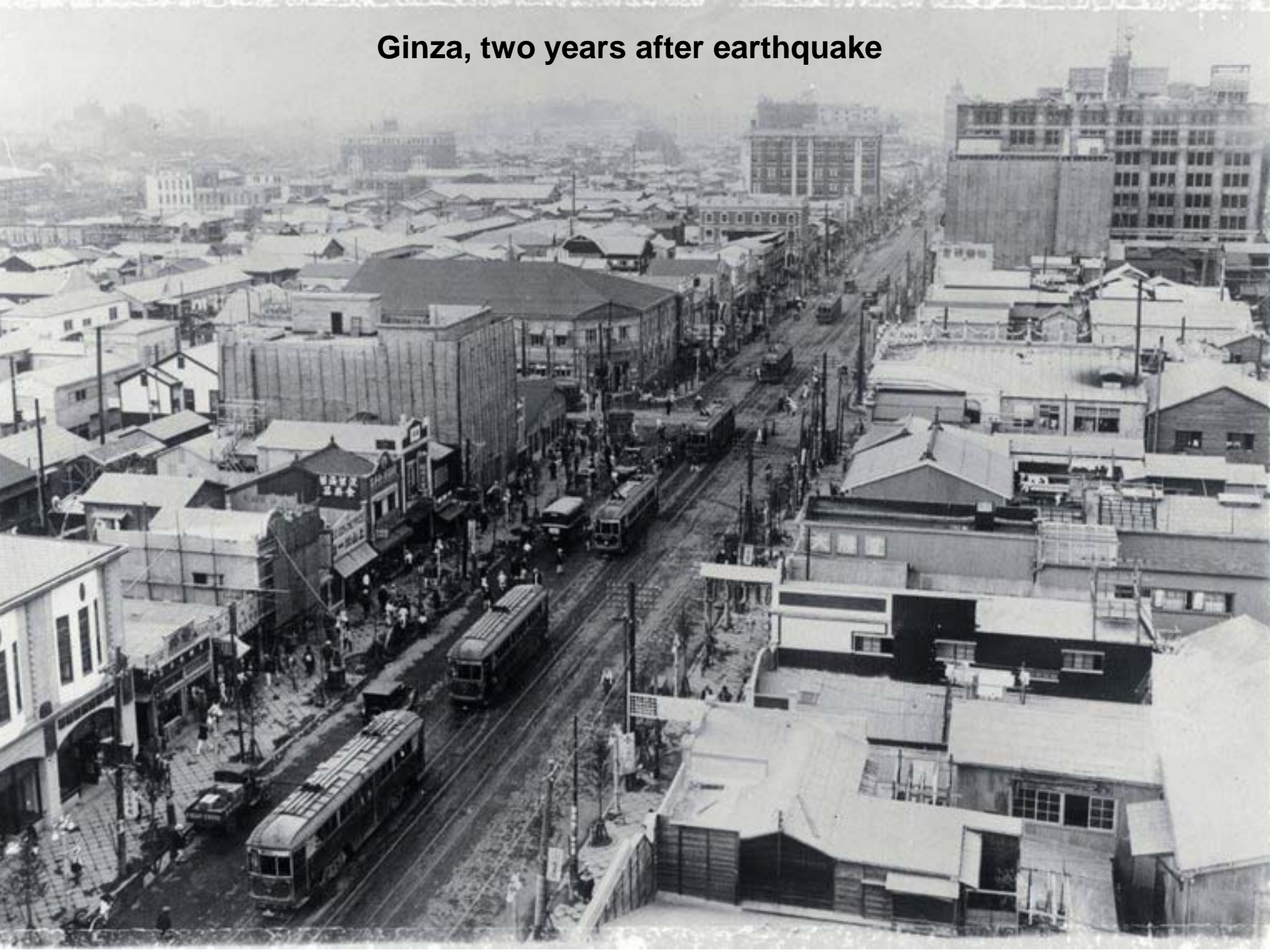


Arthur Alexander
Georgetown University
aja4@georgetown.edu
301-652-4574

Ginza, Kanto Earthquake, Sept 1923



Ginza, two years after earthquake



Disaster Comparisons

	Kanto	Kobe	Tohoku
Date	□ Sept 1923	Jan 1995	Mar 2011
Magnitude	7.8	7.2	9.0
Deaths	142,000	6,055	22,000
Damage, % of GDP	37	2	2-4

Note: Current damage estimates from World Bank

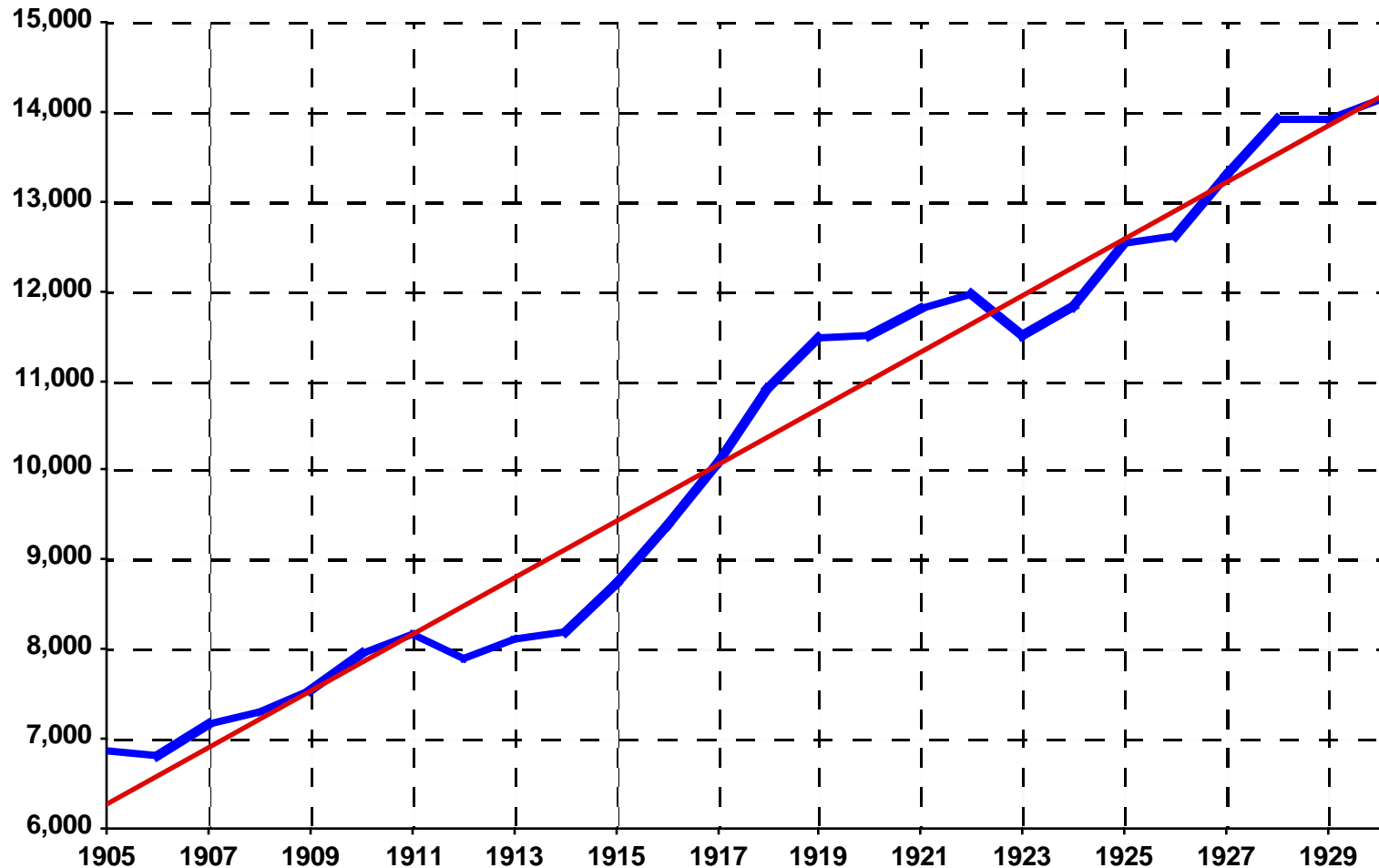
Kobe-Tohoku Comparisons

	Kobe Hyogo Pref.	Tohoku Miyagi Pref.
GDP (% of national total)	3.7	1.6
Population (% of national total)	4.3	1.8
Population over 64 (% of prefecture total)	19.8	26.9
Agriculture, fisheries (% of prefecture total)	1.7	2.4
Manufacturing (% of prefecture total)	4.3	1.1
Containerized shipping (000 TEU)	2,200	105
Damage, % of capital stock	0.9	0.75-1.5
Damage, trill. ¥	10	10-20

Note: Capital stock is nonfinancial, produced assets

GDP, Kanto Earthquake

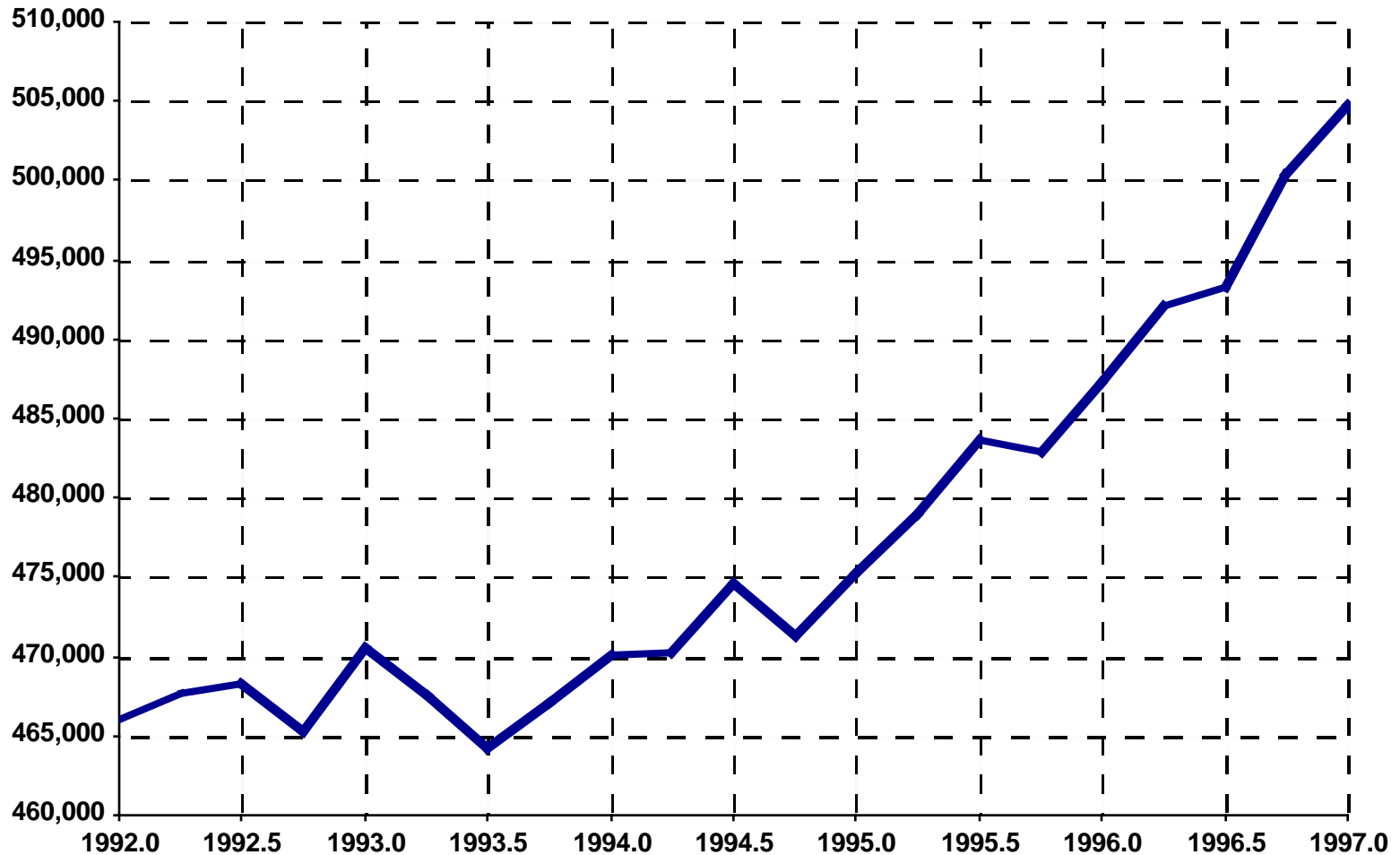
Spot the Quake, Sept. 1, 1923?



Source: Historical Statistics of Japan;
million 1934-46 yen

Real GDP, Japan

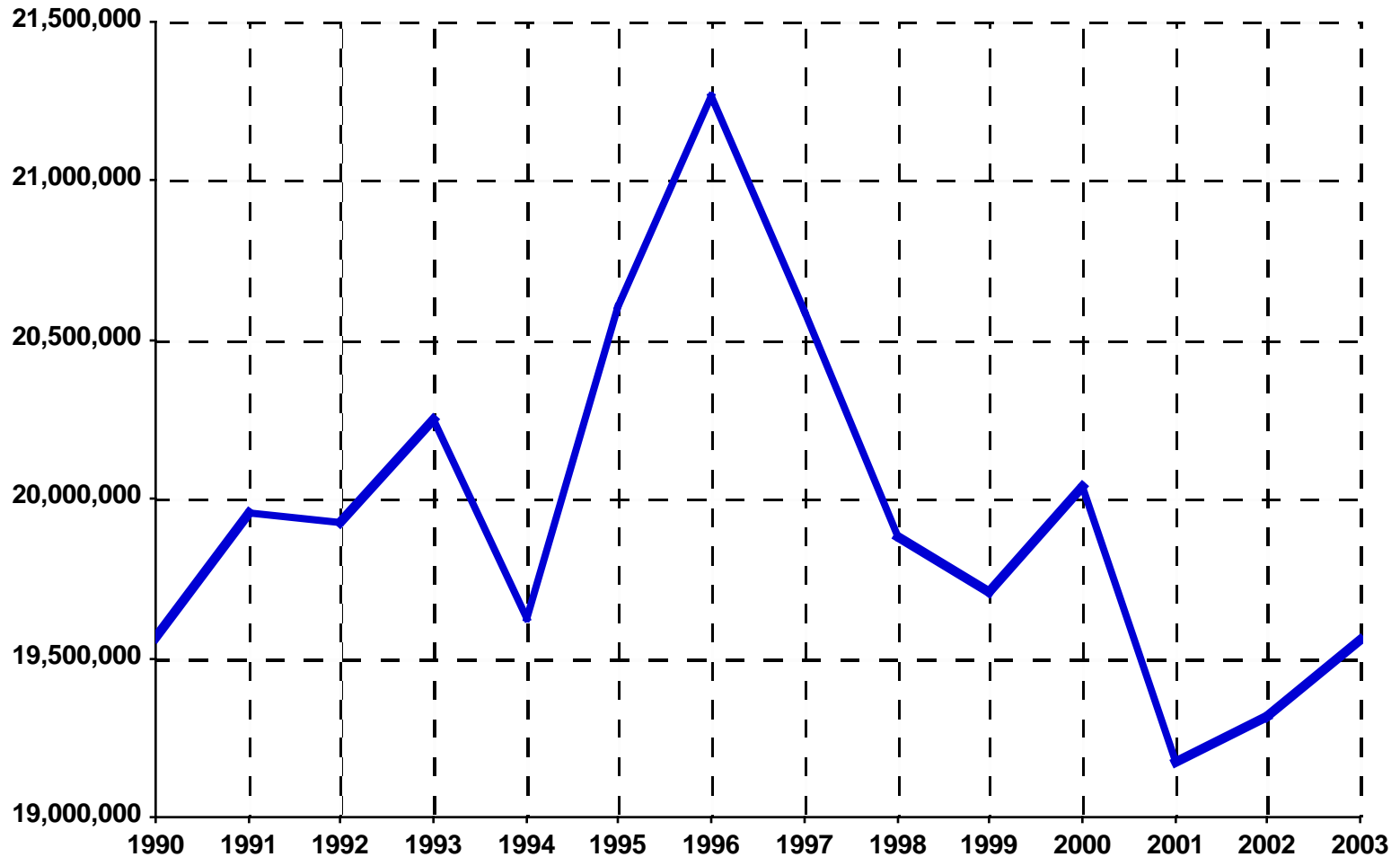
Spot the Quake, Jan 16, 1995?



Source: Economic and Social Research Institute, Cabinet Office (quarterly data, billion ¥)

Real GDP, Hyogo Prefecture

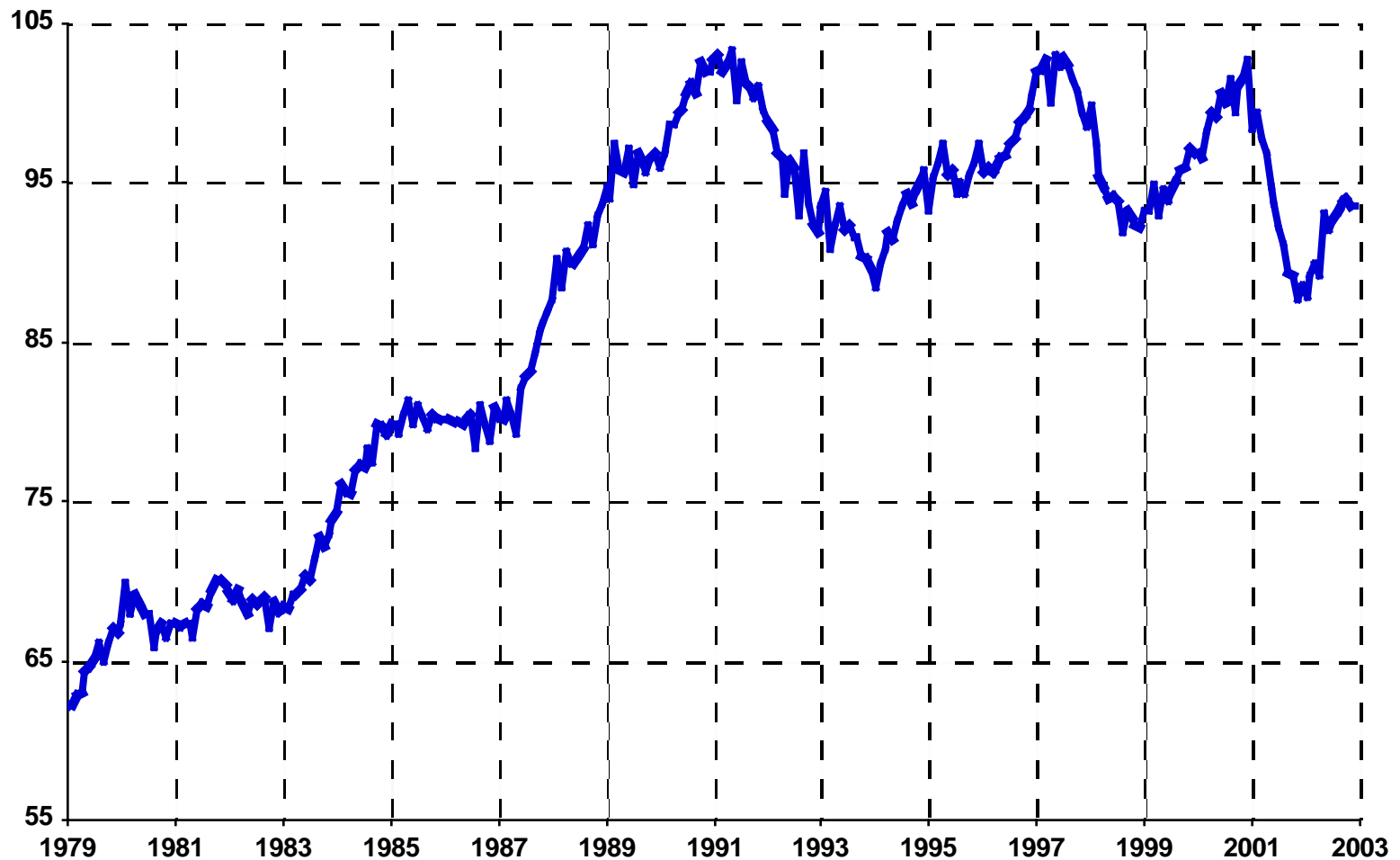
Spot the Quake, Jan 16, 1995?



Source: Economic and Social Research Institute, Cabinet Office (annual data, billion ¥)

Manufacturing, Japan

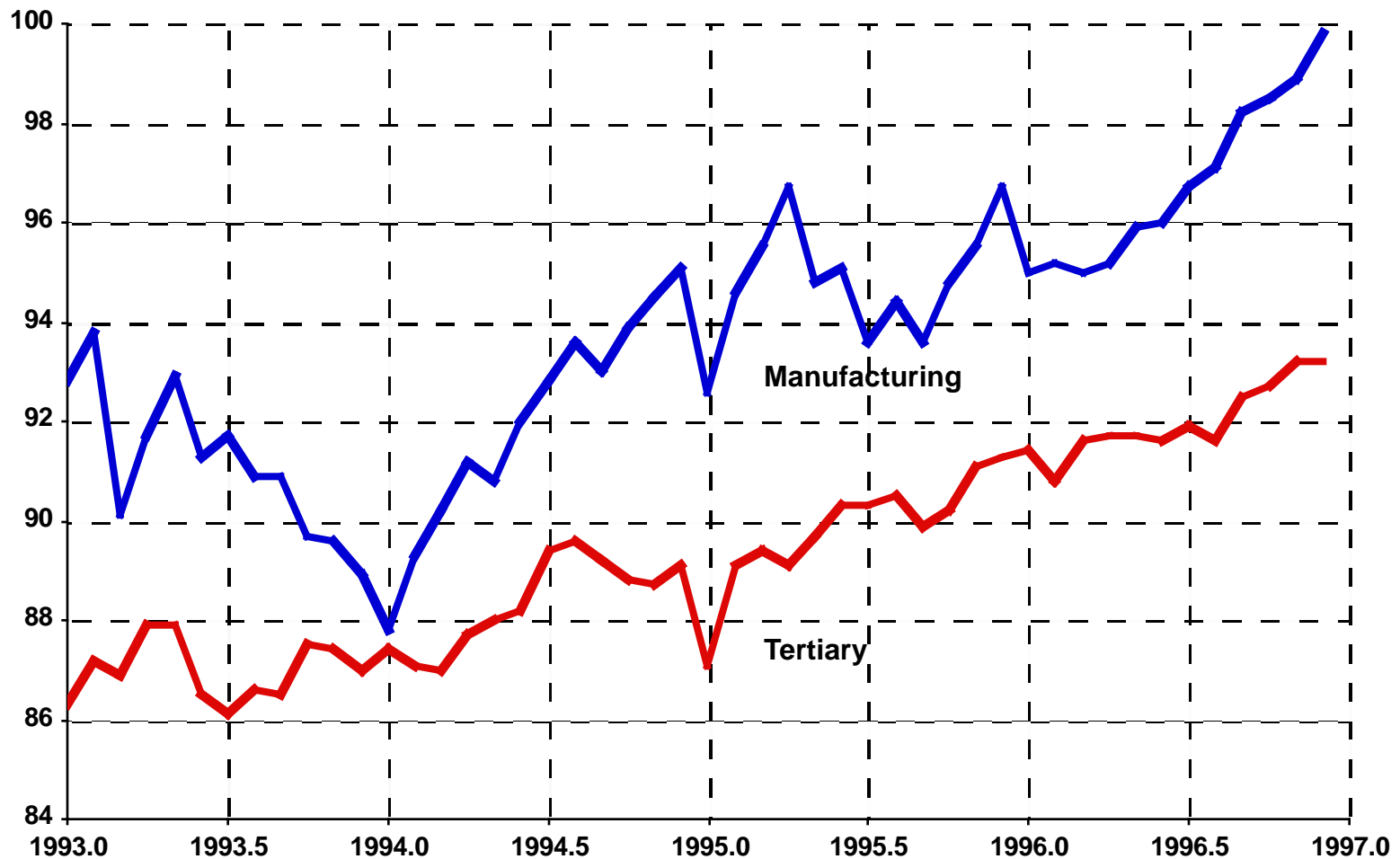
Spot the Quake, Jan 16, 1995?



Source: Ministry of Economy, Trade and Industry monthly data, (index, 2000=100)

Manufacturing, Tertiary Sectors

Spot the Quake? There it is, Jan 1995



Source: Ministry of Economy, Trade and Industry monthly data, (index, 2000=100)

Lost Output

	Kobe	Tohoku
	Jan 16, 1995	Mar 11, 2011
Manufacturing, monthly rate	3%	6%
Manufacturing, annual rate	0.25%	0.50%
Tertiary, monthly rate	2%	4%
Tertiary, annual rate	.17%	.33%
GDP, annual rate	0.2%	0.4%

Note: Assumes Tohoku event twice the production loss of Kobe

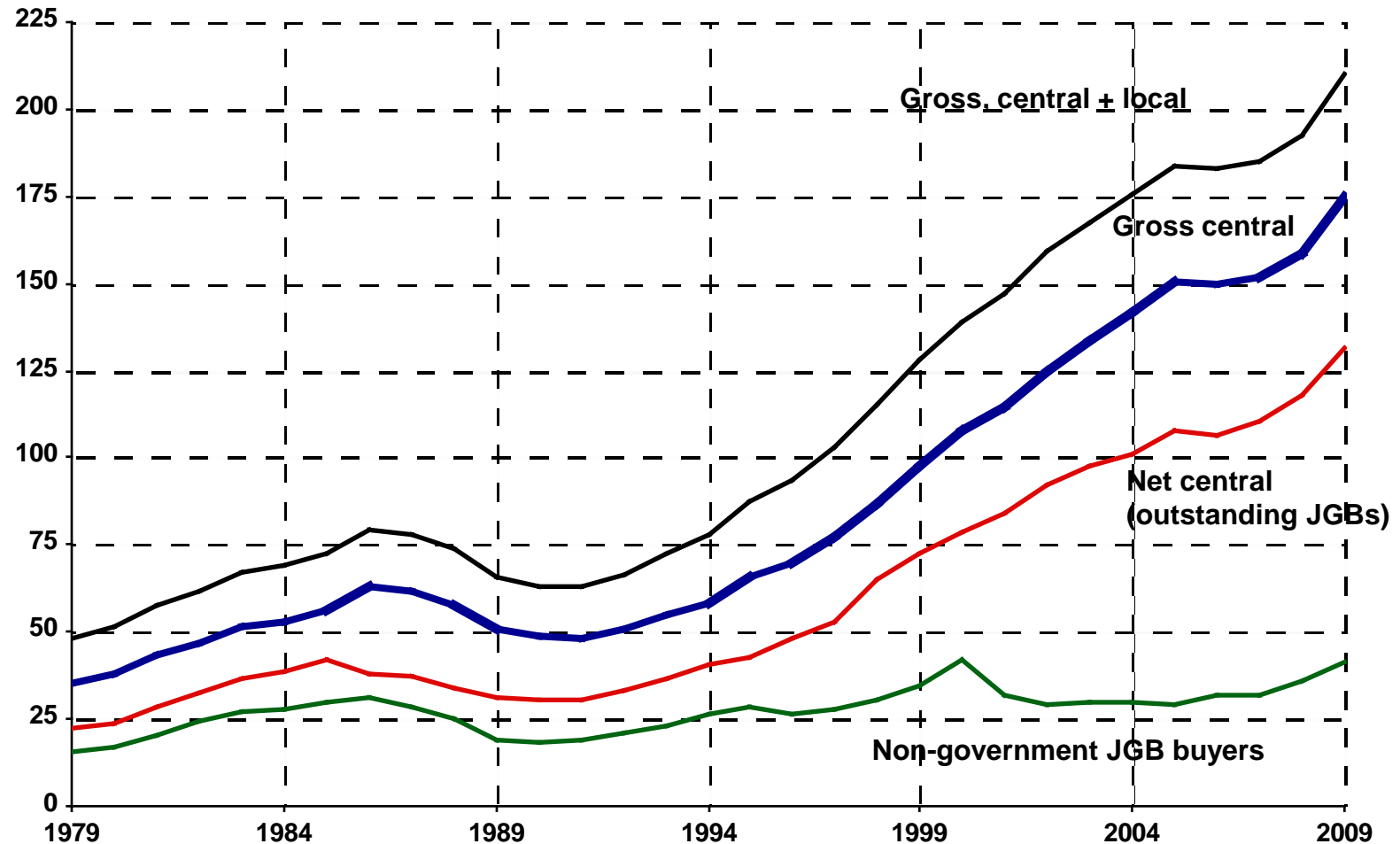
Why Not Greater Losses?

- **Japan is big: area, economy**
 - **Destruction in only a small part of country**
- **Japan is rich**
 - **Has the resources to cope**
- **Competent public and private institutions, individuals**
- **Possesses redundancies, resilience, robustness**

Can Government Afford Reconstruction?

- **Total damage 2%-4% of outstanding JGBs**
 - **Government efforts will be much less**
- **Privately held JGBs under 50% of GDP, not 200%**
- **No problem selling debt**
- **Special “temporary” tax hikes?**
- **Supplementary budgets in the works**

Gross and Net Debt of Central and Local Governments (% of GDP)



Source: BOJ, Flow of Funds

Central Government Bond Holders

(June 2009, % of total)

Public Sector Holders

Bank of Japan	9.7
Postal savings and insurance	29.4
Social security funds	14.9
Other government holders	1.5
Total public sector holders	55.5

Private Sector Holders

Banks	13.5
Other financial intermediaries	6.7
Pension funds	4.9
Households	6.5
Foreign	7.6
Other	5.3