Bank Concentration in the United States, 1800-1976

Caroline Fohlin, Emory University
Matthew Jaremski, Colgate University, NBER

Bank Concentration

- Has become a recent hot topic
  - Bailouts during the Great Recession
  - Emergence of the terms TBTF and SIFI
  - Political debate over the breakup of large banks
- Concerns not isolated to the modern period
  - Concentration of reserves in NYC led to pre-Fed panics
  - Federal Reserve structure was a direct response to concentration
- Nor isolated to panics
  - Concentration could also effect efficiency and growth

How much do we really know about concentration?

- No studies of historical trends
- Theoretical and empirical debates over effects
- Hard to separate concentration from competition

Historical Studies of Bank Structure

- Long-run studies focus on regulations
  - Double liability (Grossman 2001, 2007)
  - Capital requirements (Grossman 2010)
  - Reserve requirements (Carlson 2014)
  - Bank supervision (Mitchener and Jaremski 2015)
- Lack of competition blamed for postbellum interest rate differentials
  - Davis (1965), Sylla (1969), and James (1976)
- NYC clearinghouse only supported TBTF banks
  - Gorton and Tallman (2016)

Theoretical Models of Concentration

- Stability Hypothesis
  - Greater profits and franchise value lead to less risk
    - Allen and Gale (2000, 2003)
  - Easier for regulators to monitor a few banks
  - Larger banks can better diversify their portfolios
- Fragility Hypothesis
  - Higher interest rates encourage risk taking
    - Boyd and De Nicolo (2005)
  - TBTF mechanism encourages more risk
    - Mishkin (1999) and O'Hara and Shaw (1990)
  - Larger banks are more complex and harder to monitor

Empirical Studies of Concentration

- Bank-Level Studies
  - Deregulation: Keeley (1990); Dick (2006), and Jimenez, Lopez, and Saurina (2007)
  - Mergers: Chong (1991), Paroush (1995), Benston, Hunter, and Wall (1995), Craig and Santos (1997), and Hughes and Mester (1998).
  - Bank Size: Calomiris (2000), Calomiris and Mason (2000), and Wheelock and Wilson (2001, 2012)
- Cross-Country Studies
  - Boyd, De Nicolo, and Jalal (2006). Beck, Demirguc-Kunt, and Levine (2006), and Schaeck, Cihak and Wolfe (2006)

Broader Research Project

- Step 1 (This Paper) – Measure concentration over time and look at its determinants
- Step 2 – Analyze the effect of concentration on bank outcomes (e.g., portfolio choice, stability, etc.)

Benefits of Historical Period

- Unit banking restricted bank services to cities
- Large number of banks allows separation of concentration and competition
- Many states experimented with regulations
- Large number of diverse cities operating under same legal system, currency, and culture

This Paper

- Utilizes a comprehensive bank-level database to measure concentration from 1800 through 1976
  - Assets, deposits, and interbank deposits
  - Nation-wide and city-level analysis

Individual Bank Balance Sheet Data

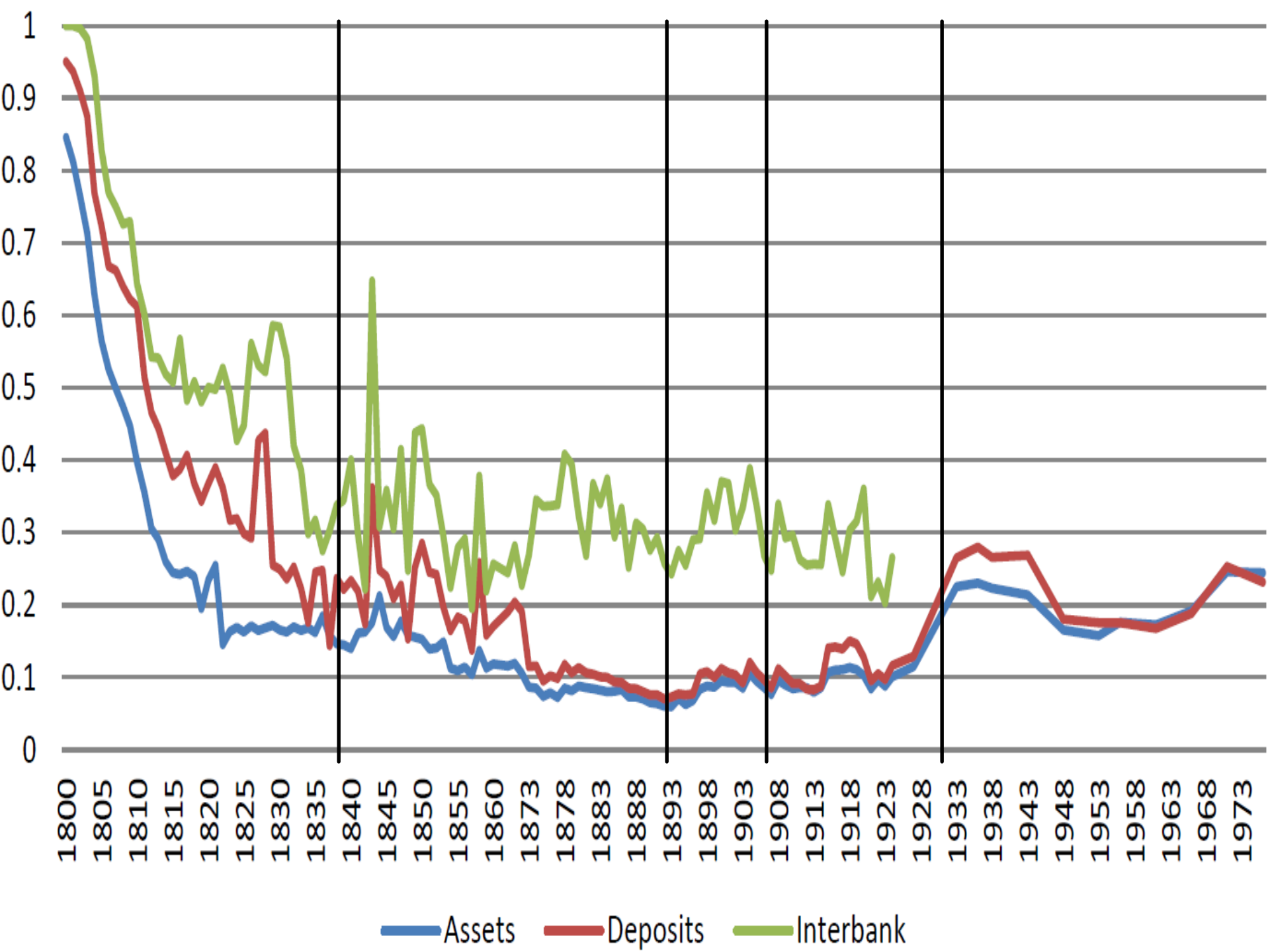
- Before 1861 - Weber (2005, 2008)
- Between 1860 and 1924
  - National Bank Data - Comptroller of the Currency's *Annual Report*
  - State Bank Data – Various State Specific Reports
- After 1924 - Rand McNally Bankers Directory

Construction of Aggregate Ratios

- Need largest banks and aggregate totals
- New York generally had largest banks and published data
- Aggregate totals from:
  - Pre-1834 from Weber (2005, 2008)
  - 1834-1895 from Comptroller of the Currency
  - 1896-1955 from *All Bank Statistics*
  - 1956-1970 from *Banking and Monetary Statistics*
  - Post-1970 from St Louis Federal Reserve

Regimes and Concentration

- Early Period – 1790-1836 – Unique charter from state legislature required
- Free Banking Period – 1837-1862 – General incorporation laws
- National Banking Period – 1863-1914 – National banks competed with state-chartered banks
- Federal Reserve Period – 1914-Present - Existence of central bank and LOLR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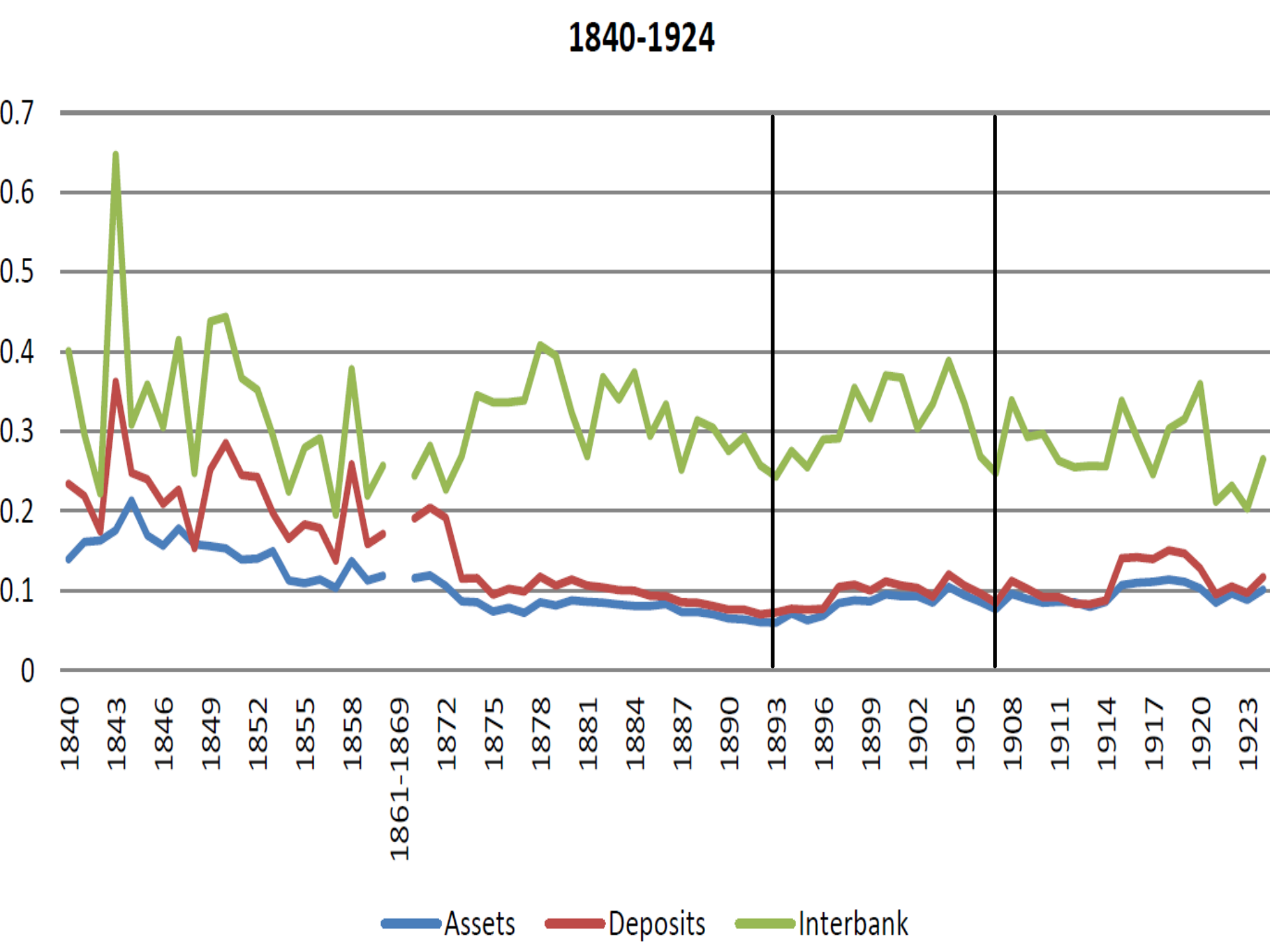
1963
1968
1973
Assets
Deposits
Interbank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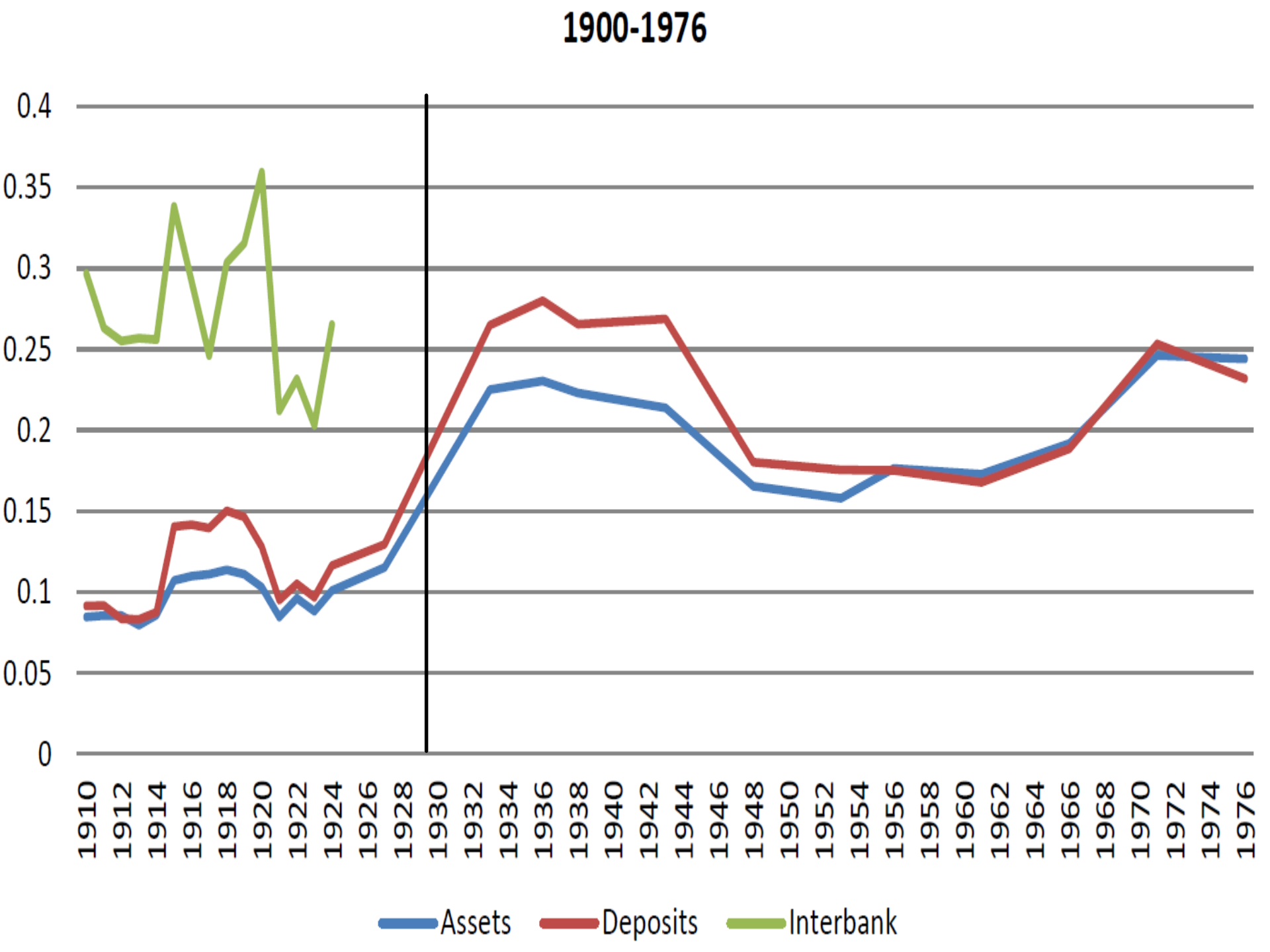
Assets
Deposits
Interbank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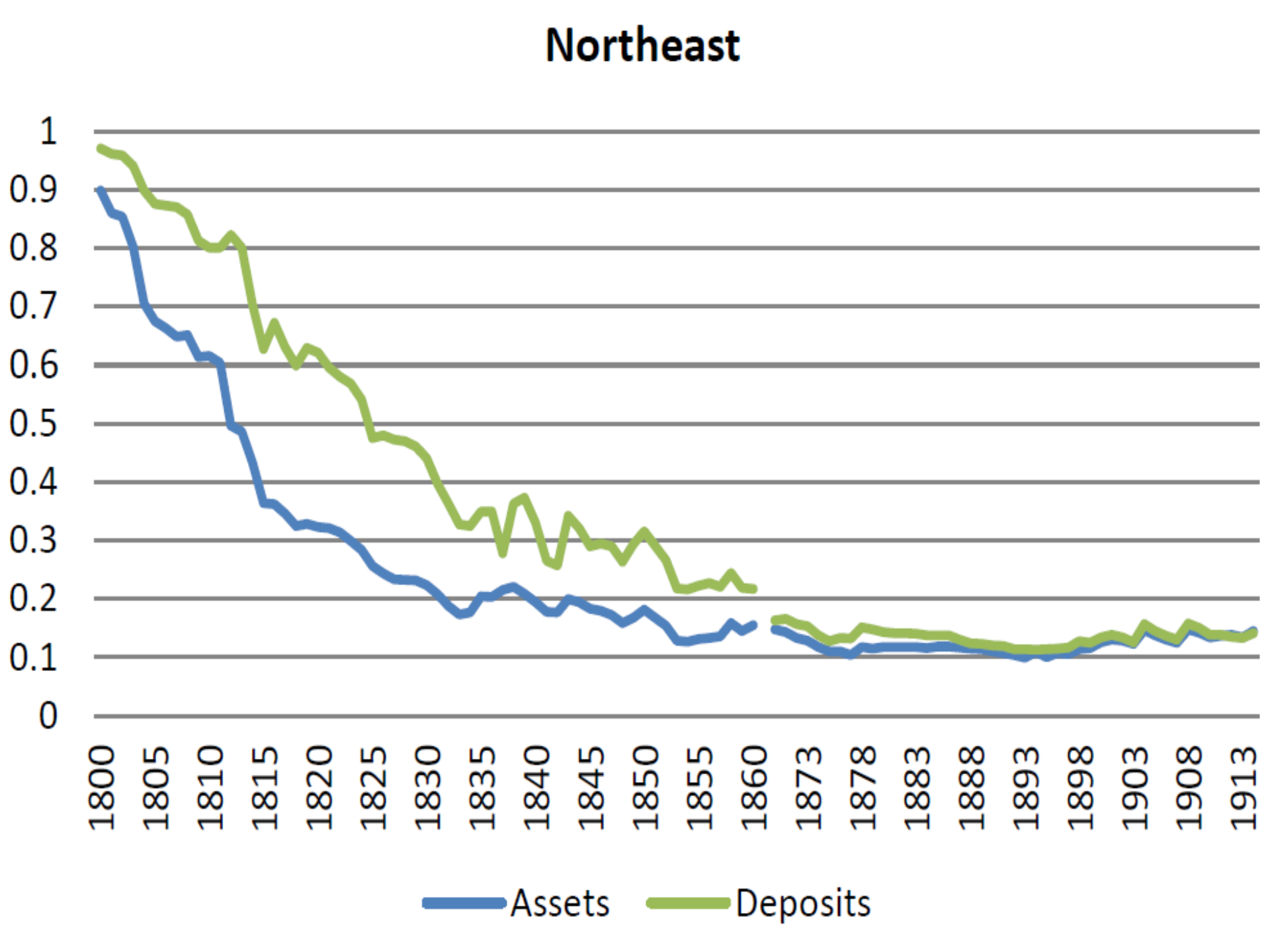
Assets
Deposits
Interbank


Northeast
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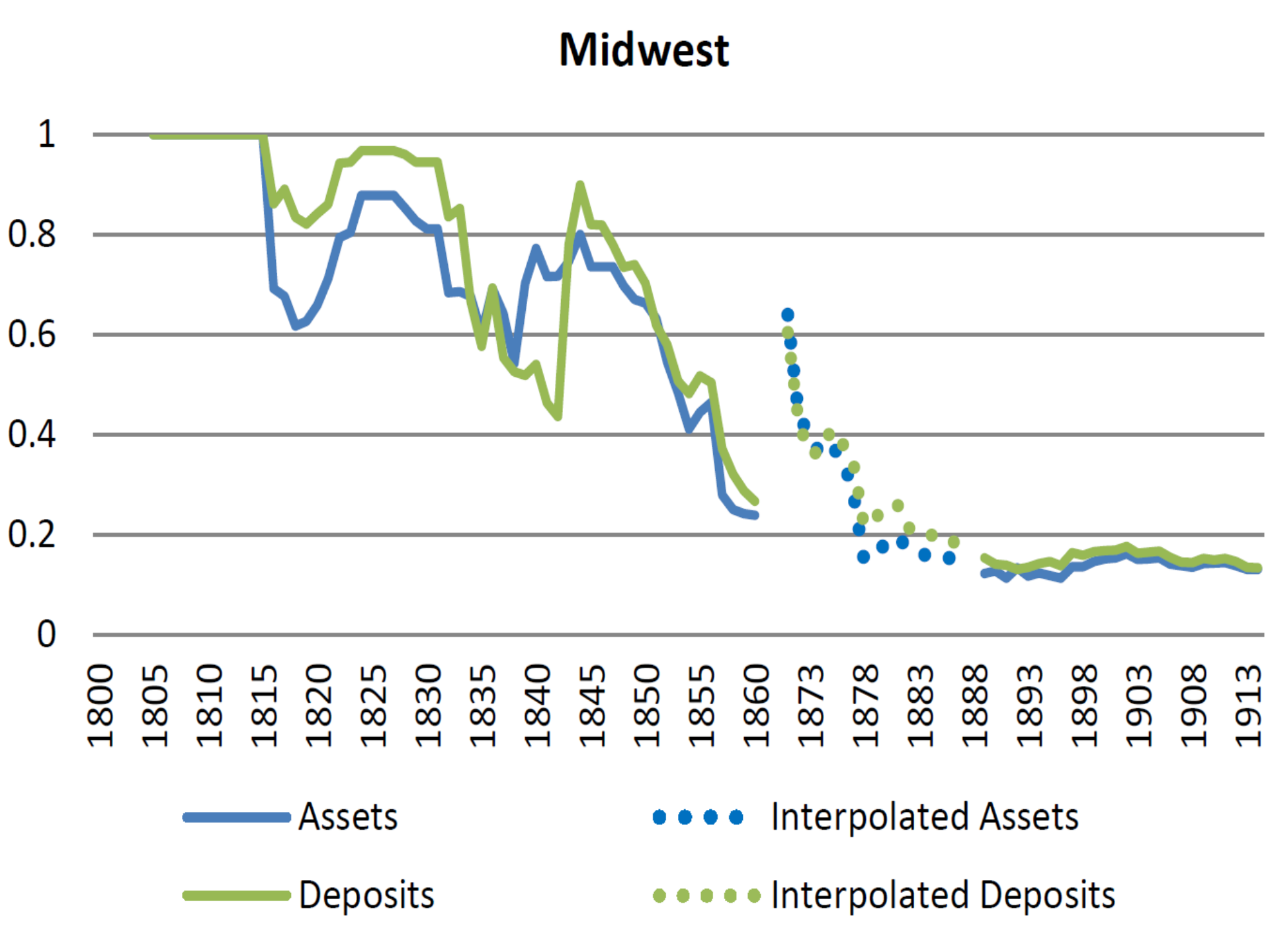
Assets
Deposits


Midwest
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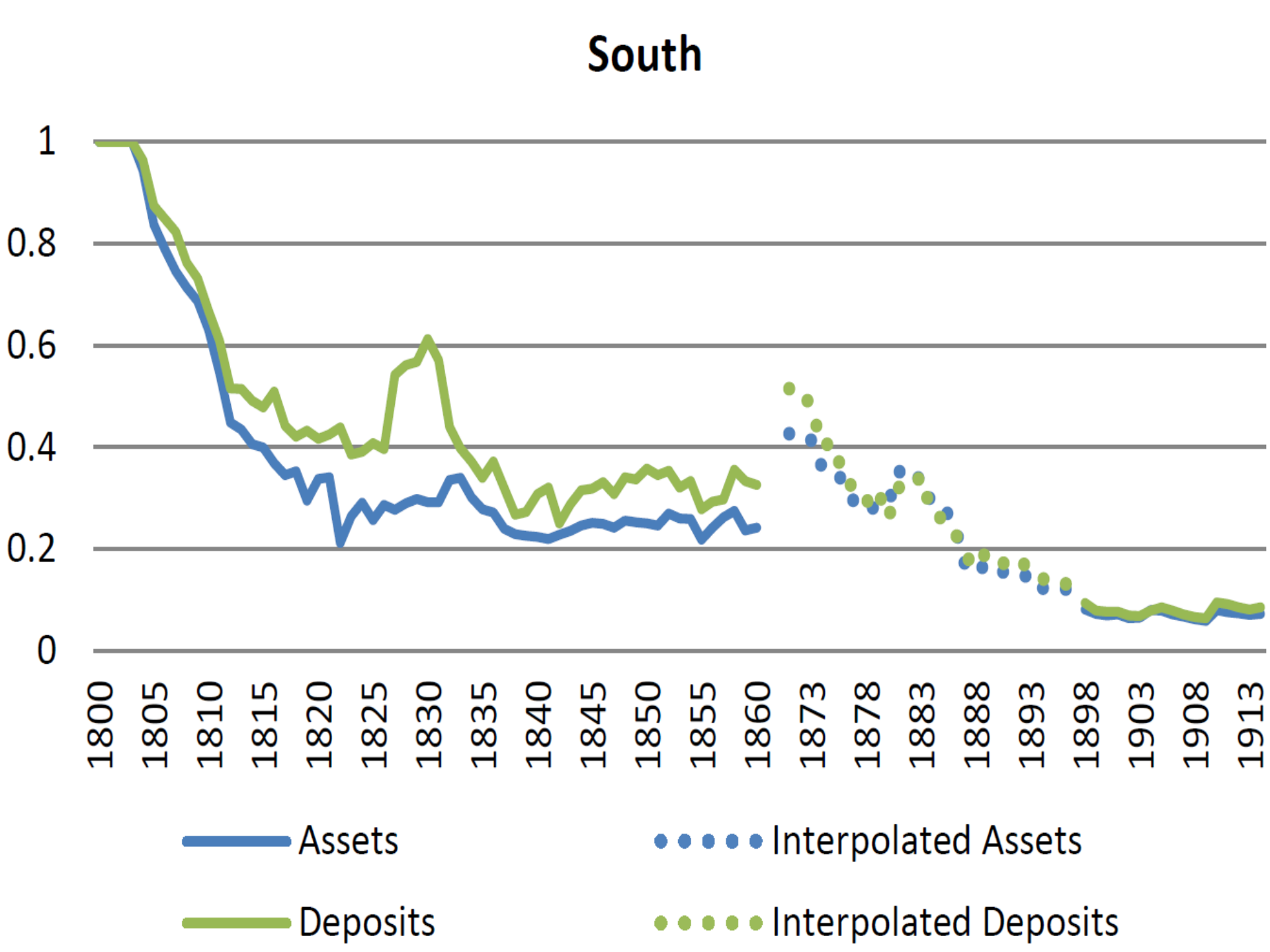
Assets
Interpolated Assets
Deposits
Interpolated Deposits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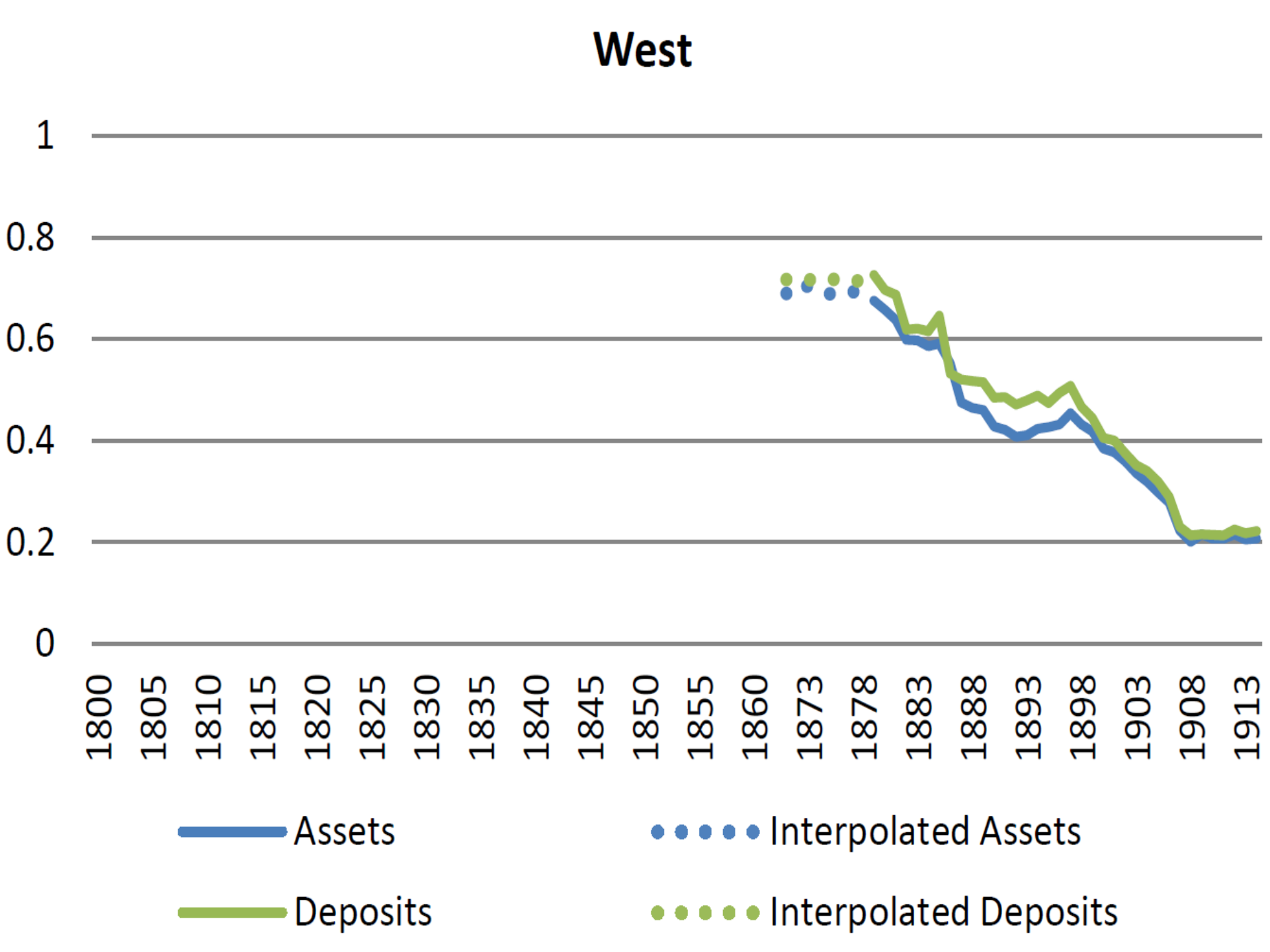
Assets
Interpolated Assets
Deposits
Interpolated Deposits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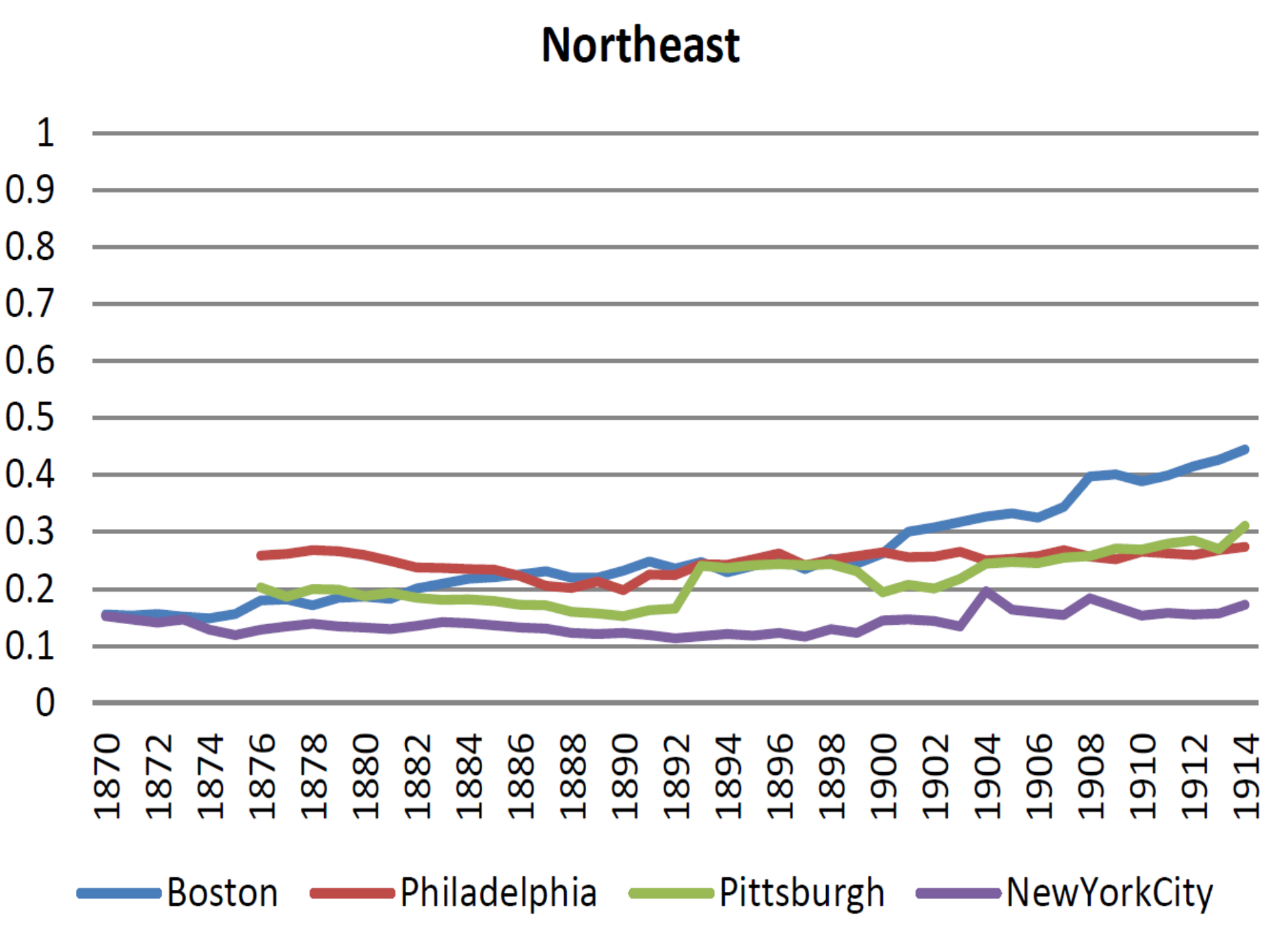
Assets
Interpolated Assets
Deposits
Interpolated Deposits

City-Level Questions

- (1) What did concentration look like across cities?
- (2) Is concentration explained by regulatory factors as well as economic ones?
- (3) Was the decline in concentration due solely to increased numbers of banks rather than increasing competition amongst existing banks?

City-Level Data

- Examine large cities from 1890 through 1914
  - Cities with more than 15,000 people in all years
  - Resulting sample: 170 cities in 20 states


Northeast
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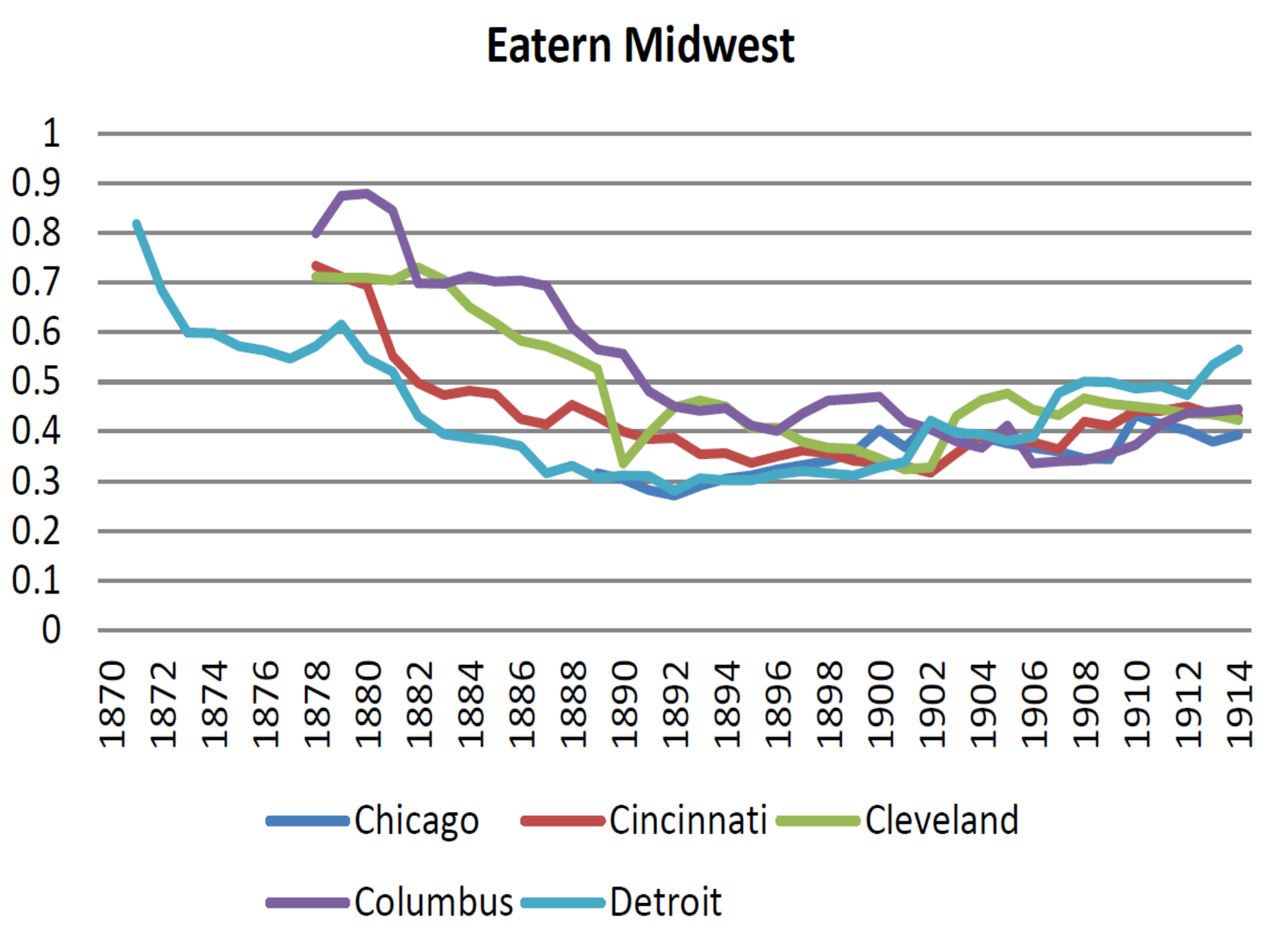
1912
1914
Boston
Philadelphia
Pittsburgh
NewYorkCity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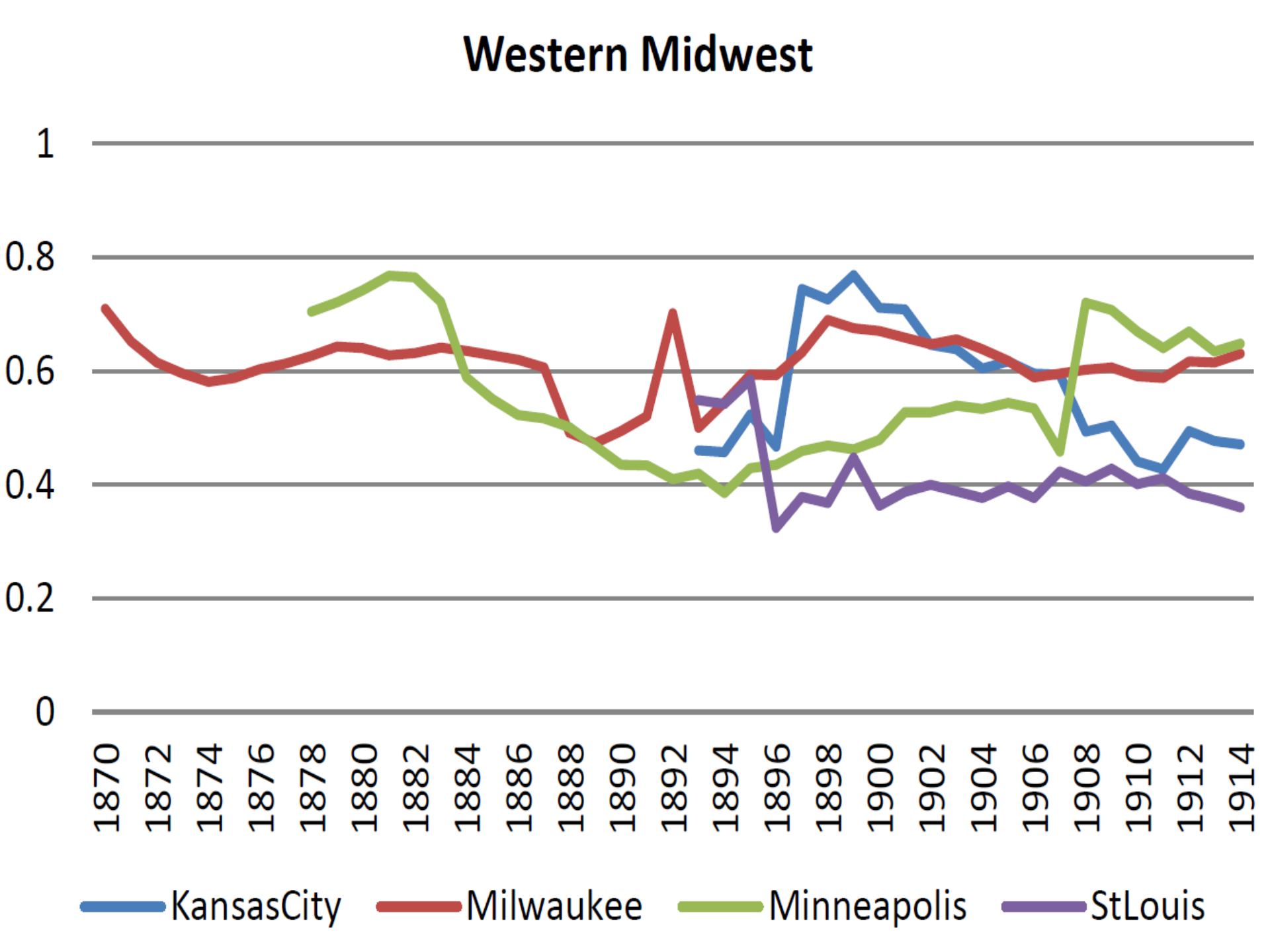
1914
Chicago
Cincinnati
Cleveland
Columbus
Detroit


Western Midwest
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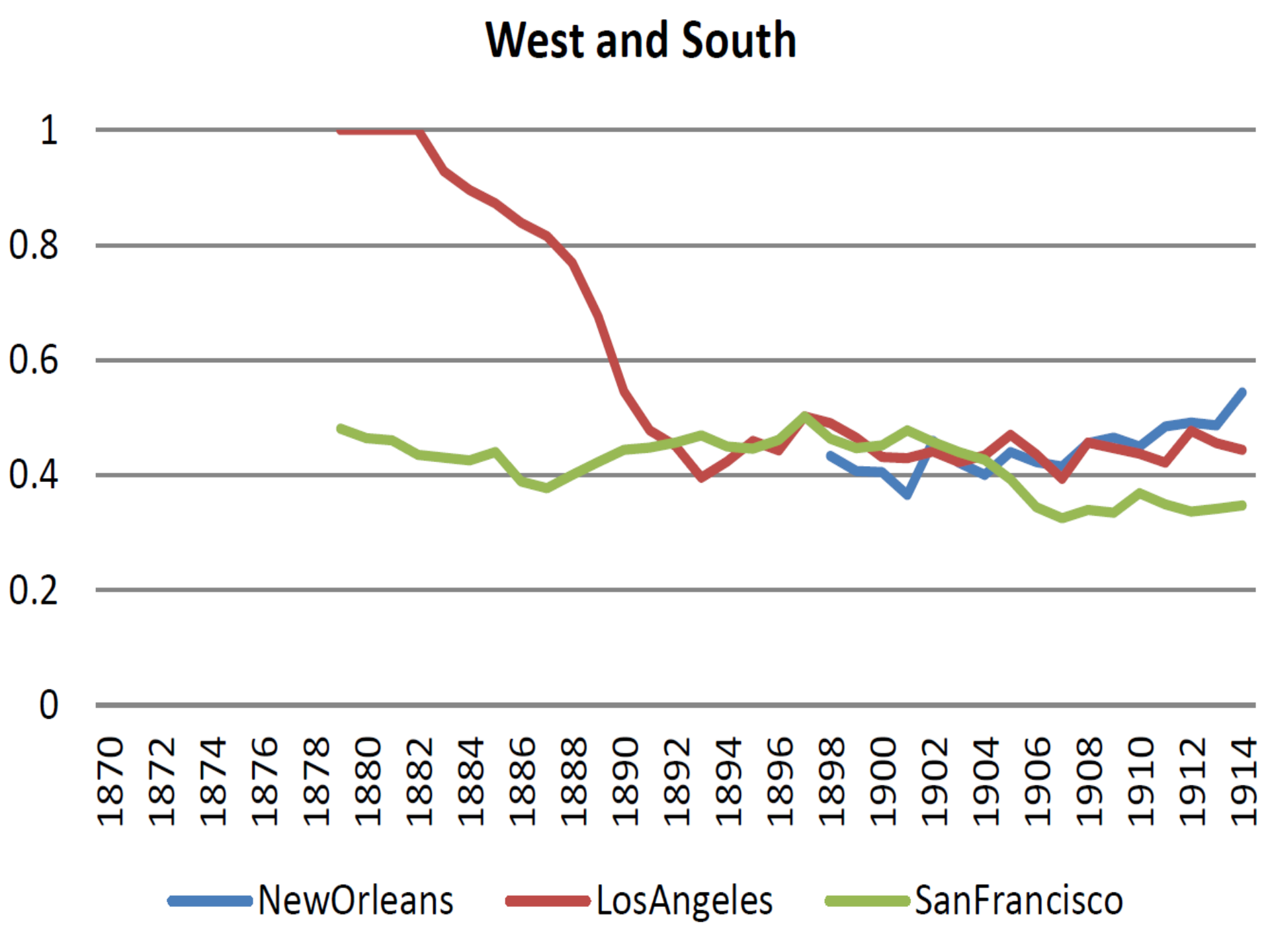
KansasCity
Milwaukee
Minneapolis
StLouis


West and South
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1896
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1900
1902
1904
1906
1908
1910
1912
1914
NewOrleans
LosAngeles
SanFrancisco

Quantile (Median) Regression

$$C_{i,t} = a + \beta_1 X_{i,t} + \beta_2 Regulation_{i,t} + \beta_3 Banks_{i,t} + t_t + Region_i + e_{i,t}$$

- $X_{i,t}$ - Demographic and economic controls
- $Regulation_{i,t}$ - Regulation indicators
- $Banks_{i,t}$ - Ln(Number of Banks) in city
- t_t - Year fixed effects
- $Region_i$ - Region indicators
- $e_{i,t}$ - Error term clustered by county

Factor	Predicted Effect	Tested in Regression Model By:
Size of the Market	-	Ln(Population)
Agricultural Development	-	Ln(Crop Output P.C.)
Manufacturing Development	+	Ln(Mfg. Output P.C.)
Financial Development	-	Whether city had an active clearinghouse
Separate Banking Authority	+	Whether a state had a separate banking authority
Reserve Requirements	-	Whether a state required reserves on deposits
Branching Allowed	+	Whether a state allowed branching of any type
Double Liability	+	Whether a state had double liability in effect
Deposit Insurance	-	Whether a state had deposit insurance
Minimum Capital Requirements	+	Logarithm of lowest capital level in state

	1-Firm Ratio		Herfindahl Index	
Ln(Population)	-0.100***	0.017	-0.083***	0.019
	[0.013]	[0.018]	[0.008]	[0.016]
Ln(Crop Output P.C.)	-0.039**	-0.038***	-0.031***	-0.028***
	[0.018]	[0.012]	[0.011]	[0.009]
Ln(Mfg. Output P.C.)	0.031**	-0.005	0.029**	-0.004
	[0.016]	[0.018]	[0.012]	[0.010]
Clearinghouse In Place	0.045***	0.011	0.050***	0.011
	[0.014]	[0.017]	[0.011]	[0.011]
Has Separate Banking Authority	-0.023	-0.001	-0.028	-0.002
	[0.026]	[0.021]	[0.019]	[0.017]
Reserve Requirement on Deposits	0.016	0.044***	-0.004	0.029**
	[0.017]	[0.017]	[0.012]	[0.013]
Double Liability	0.013	-0.003	0.022	0.001
	[0.022]	[0.022]	[0.017]	[0.019]
Branching Allowed	-0.005	-0.041***	0.014	-0.031*
	[0.014]	[0.015]	[0.016]	[0.016]
Deposit Insurance	-0.011	0.026	0.018	0.008
	[0.031]	[0.041]	[0.025]	[0.020]
Ln(Minimum Capital)	0.004	-0.003	-0.000	-0.002
	[0.006]	[0.006]	[0.004]	[0.005]
Ln(Number of Banks)		-0.202***		-0.184***
		[0.024]		[0.029]

	Ln(# of Banks)	Ln(Total Assets)	Ln(Assets in Top Bank)
Ln(Population)	0.590*** [0.037]	0.611*** [0.066]	0.682*** [0.098]
Ln(Crop Output P.C.)	0.087* [0.049]	0.087 [0.056]	0.078 [0.077]
Ln(Mfg. Output P.C.)	-0.093* [0.050]	0.013 [0.051]	0.091 [0.084]
Clearinghouse In Place	-0.134*** [0.043]	-0.033 [0.060]	-0.033 [0.086]
Has Separate Banking Authority	0.113 [0.073]	-0.062 [0.114]	-0.144 [0.120]
Reserve Requirement on Deposits	0.133*** [0.050]	0.120** [0.059]	0.283*** [0.084]
Double Liability	-0.117 [0.082]	-0.121 [0.083]	-0.059 [0.135]
Branching Allowed	-0.196*** [0.076]	-0.049 [0.073]	-0.240** [0.105]
Deposit Insurance	0.161** [0.066]	-0.463*** [0.153]	-0.159 [1.155]
Ln(Minimum Capital)	-0.025 [0.020]	0.066*** [0.024]	0.087** [0.041]
Ln(Number of Banks)		0.957*** [0.094]	0.292*** [0.106]

	1-Firm Ratio		Herfindahl Index	
Ln(Population)	-0.056**	0.008	-0.056**	0.001
	[0.024]	[0.019]	[0.024]	[0.019]
Ln(Crop Output P.C.)	-0.016	0.012	-0.022**	0.002
	[0.015]	[0.013]	[0.010]	[0.009]
Ln(Mfg. Output P.C.)	-0.029*	-0.006	-0.021*	-0.006
	[0.016]	[0.015]	[0.012]	[0.007]
Clearinghouse In Place	0.012	0.004	0.015**	0.002
	[0.008]	[0.007]	[0.006]	[0.005]
Has Separate Banking Authority	-0.016	-0.011	-0.019	-0.003
	[0.023]	[0.018]	[0.023]	[0.010]
Reserve Requirement on Deposits	0.006	0.016**	0.002	0.009*
	[0.008]	[0.008]	[0.005]	[0.005]
Double Liability	0.027	0.030	0.027	0.021
	[0.019]	[0.028]	[0.018]	[0.030]
Branching Allowed	-0.000	-0.006	0.000	-0.006
	[0.009]	[0.009]	[0.008]	[0.005]
Deposit Insurance	-0.052**	-0.031***	-0.053***	-0.023***
	[0.025]	[0.011]	[0.020]	[0.009]
Ln(Minimum Capital)	-0.002	-0.001	-0.001	-0.001
	[0.002]	[0.002]	[0.001]	[0.001]
Ln(Number of Banks)		-0.141***		-0.143***
		[0.019]		[0.015]

Conclusions

- Higher concentration than expected, given large number of unit banks
- Interbank deposits remain concentrated after Fed
- City-level differences relate more to economic growth
  - Decline worked through number of banks rather than reductions of the largest banks
  - Regulation might work amongst banks especially when controlling for location fixed effects

Coming soon….

- Expansion of data through modern period
  - Aggregate-level pattern
  - City-level pattern for major cities
- Expansion of analysis
  - Addition of usury rates
  - Differential effect on locations with relatively more national banks
- Analysis of the effects of concentration on bank outcomes