

Deep Recessions, Fast Recoveries, and Financial Crises: Evidence from the American Record

Michael D. Bordo
Rutgers University and NBER

Joseph G. Haubrich
Federal Reserve Bank of Cleveland

(Fed disclaimer)

The views expressed herein are those of the authors and are not necessarily those of the Federal Reserve Bank of Cleveland or of the Board of Governors of the Federal Reserve System

"gross misinterpretations of the facts"
--Kenneth Rogoff and Carmen Reinhart

"willfully, nakedly, distorting the record"
--Paul Krugman



Introduction

- The recovery from the last recession has now been proceeding for 15 quarters
- Many argue that this recovery is unusually sluggish and that this reflects the severity of the financial crisis of 2007-2008. Roubini 2009. Reinhart and Rogoff 2009
- Yet this goes against the record of US business cycles in the past century and a half
“A large contraction tends to be followed by a large business expansion” Milton Friedman 1969

Introduction

- Also Zarnowitz (1992) showed that recessions pre-WWII accompanied by banking panics tended to be more severe than average recessions and tended to be followed by rapid recoveries
- We revisited the issue whether business cycles with financial crises are different
- We examine the US experience since 1880. Our methodology is to look closely at the US historical experience across several monetary regimes
- We avoid comparability problems with other countries which often have very different stochastic structures of output

Introduction

- We find that the conventional wisdom that deep contractions breed strong recoveries is particularly true when there is a financial crisis
- We also find that the recent recession is different from the historical average seen in a shallow recovery after a deep recession
- We find some evidence that measures of financial stress have some impact on the strength of recoveries
- We also find that a significant fraction of the shortfall of the present recovery from the experience of recoveries after deep recessions is due to the collapse of the housing market

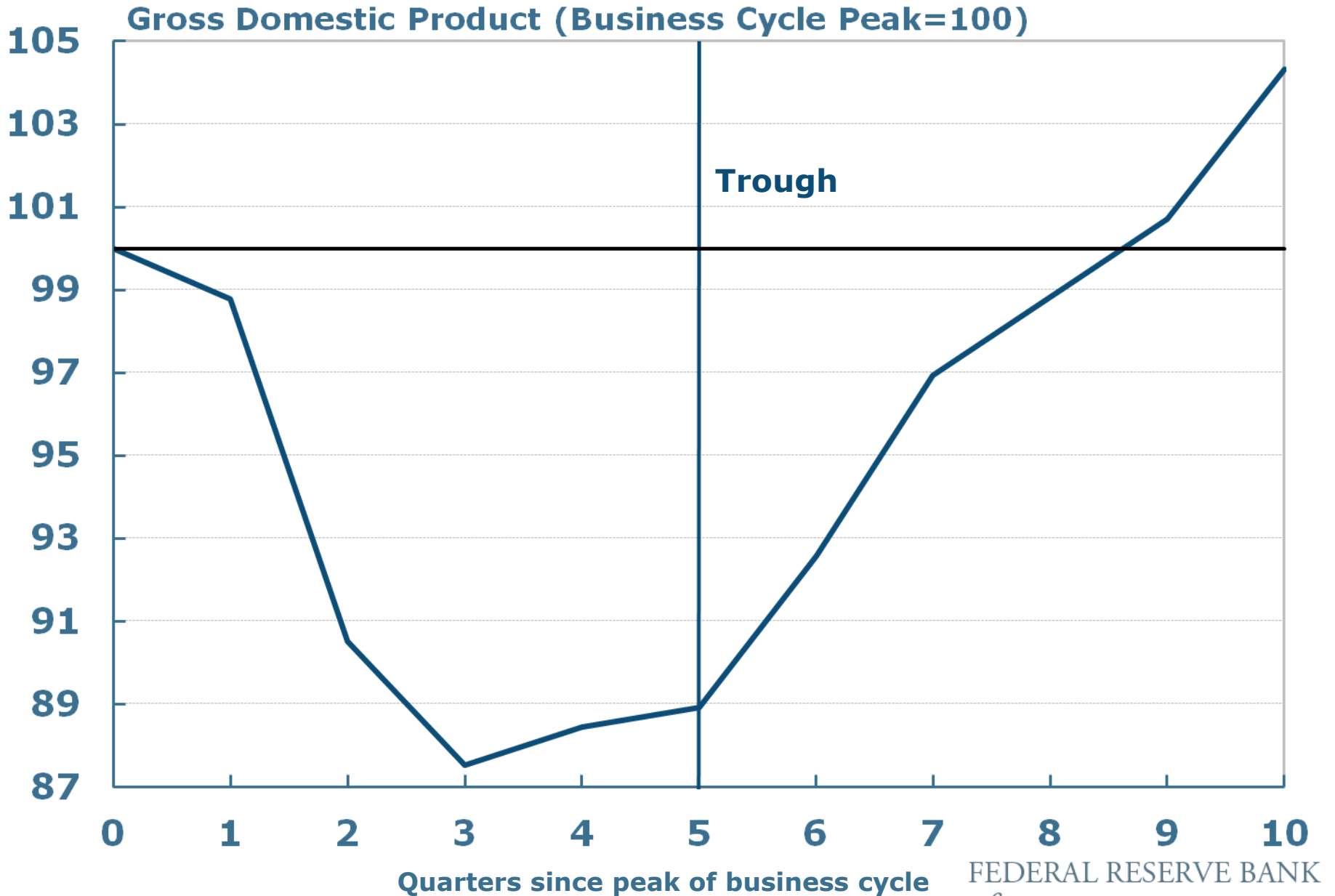
Narrative

- We present descriptive evidence and historical narratives on US business cycle recoveries from 1880 to the present
- To ascertain the extent to which recoveries bounce back from recessions, we compared the quarterly path of GDP from the preceding peak to the trough of each business cycle with the quarterly path of GDP from the trough for the same number of quarters that occurred in the downturn
- We did this for 27 cycles from 1880 to the present

Pre Federal Reserve

- The key driving forces in the pre WWI business cycles were foreign shocks, e.g. Bank of England tightening, harvests failures abroad
- And domestic shocks: railroad investment and banking instability
- We show the two major cycles which also had banking panics: 1893-94 and 1907-1908
- Notice that the recoveries are as fast as the recessions

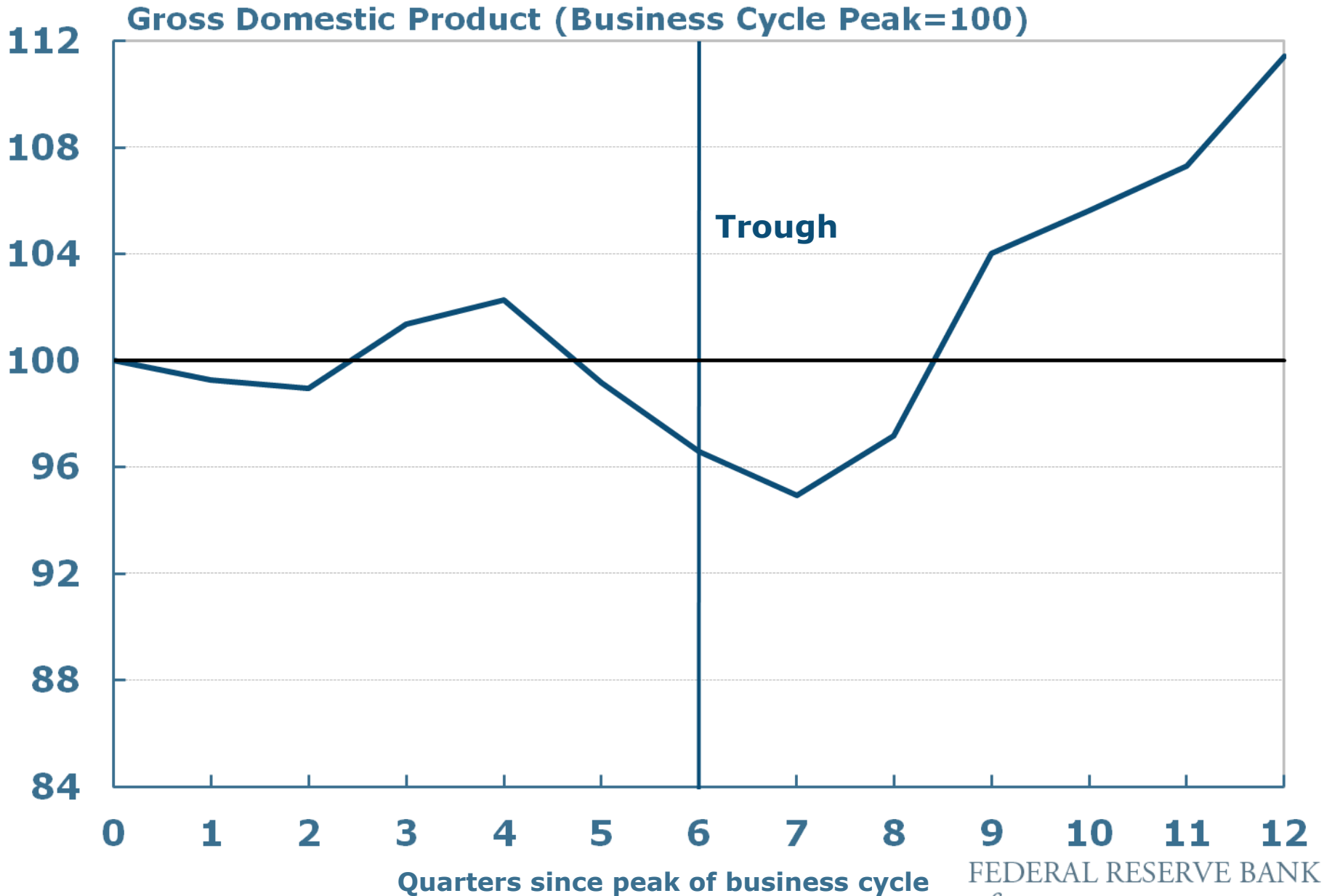
Business Cycle Peak: January 1893



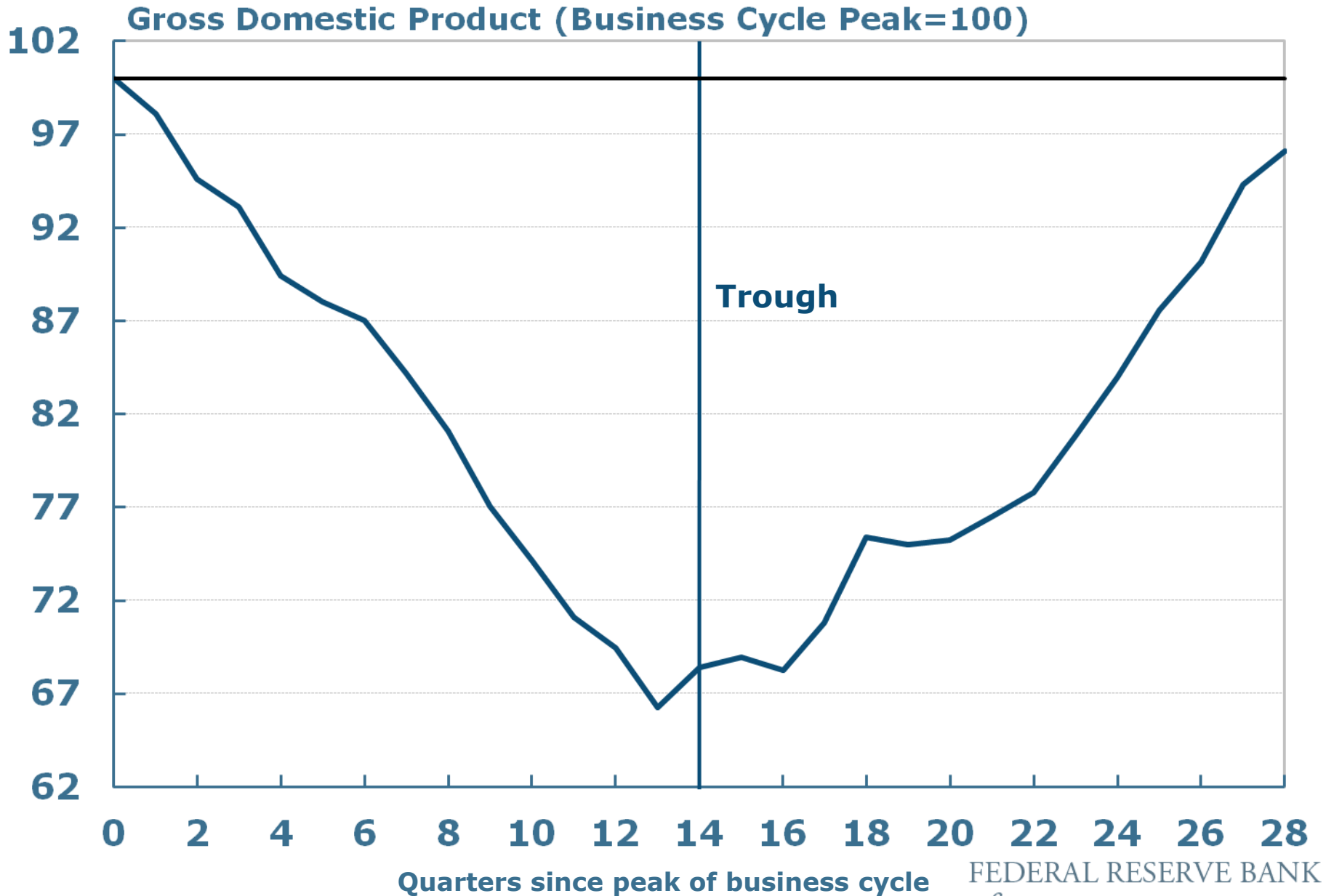
The Interwar Period

- The Federal Reserve was established in 1914 to solve the problem of the absence of a LLR in the national banking era
- In the Fed's first 25 years there were 3 very severe business cycle downturns, one with 4 severe banking panics and several minor cycles
- In addition to exogenous shocks such as wars, Fed policy actions were key in precipitating and mitigating cycles

Business Cycle Peak: January 1920



Business Cycle Peak: August 1929



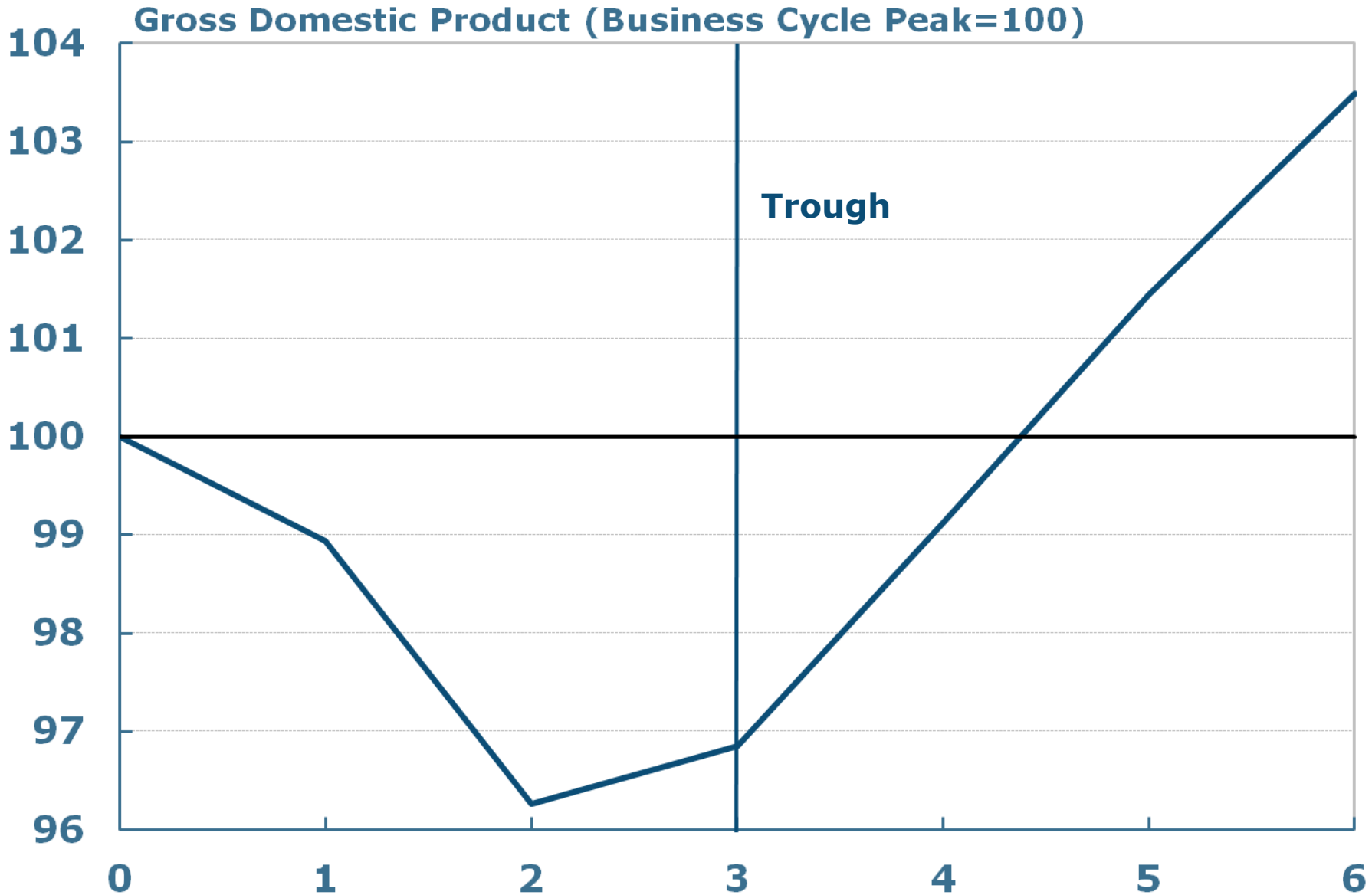
The Interwar Period

- The recovery after 20-21 was very rapid
- The recovery after 1933 was also very rapid (33%), but not quite sufficient to completely reverse the preceding downturn, which had 4 banking panics and a stock market crash
- Recovery may have been impeded by New Deal cartelization policies (Cole and Ohanian 2004)
- The recovery after 1937-1938 was also rapid

Post World War II

- In the post World War II era, with only two exceptions, recoveries were at least as rapid as the downturn
- The key exceptions to this pattern were the recovery 1991 I -2001 I and the recent recovery since 2009 II
- The recent recession was the only one with a banking crisis, stock market crash and housing bust
- We show 4 recoveries: 2 severe recessions with rapid recoveries (1957-58, 1973-75), the jobless recovery after the 1990 recession and the recent experience

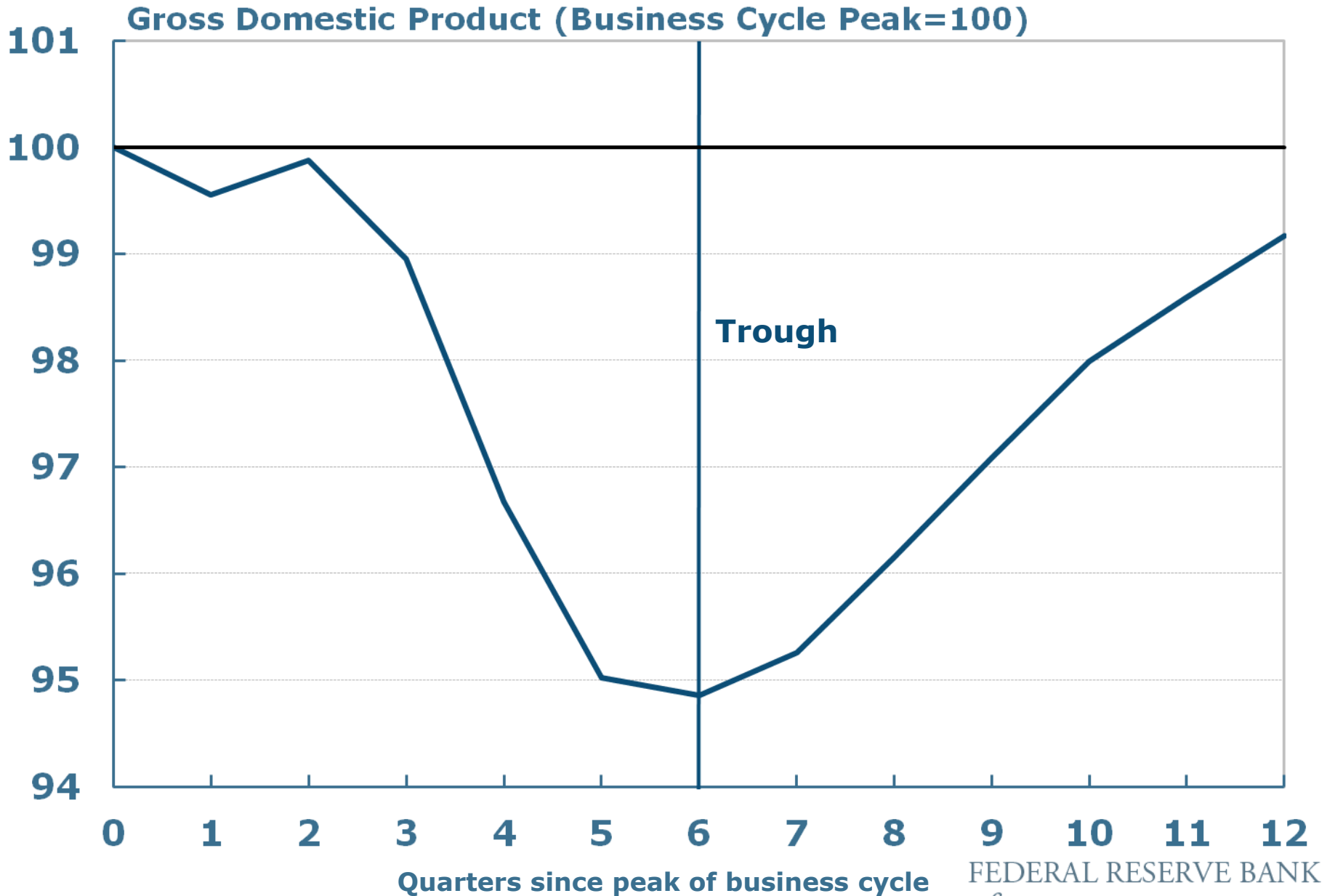
Business Cycle Peak: August 1957



Quarters since peak of business cycle

FEDERAL RESERVE BANK
of CLEVELAND

Business Cycle Peak: December 2007



Empirics

Data

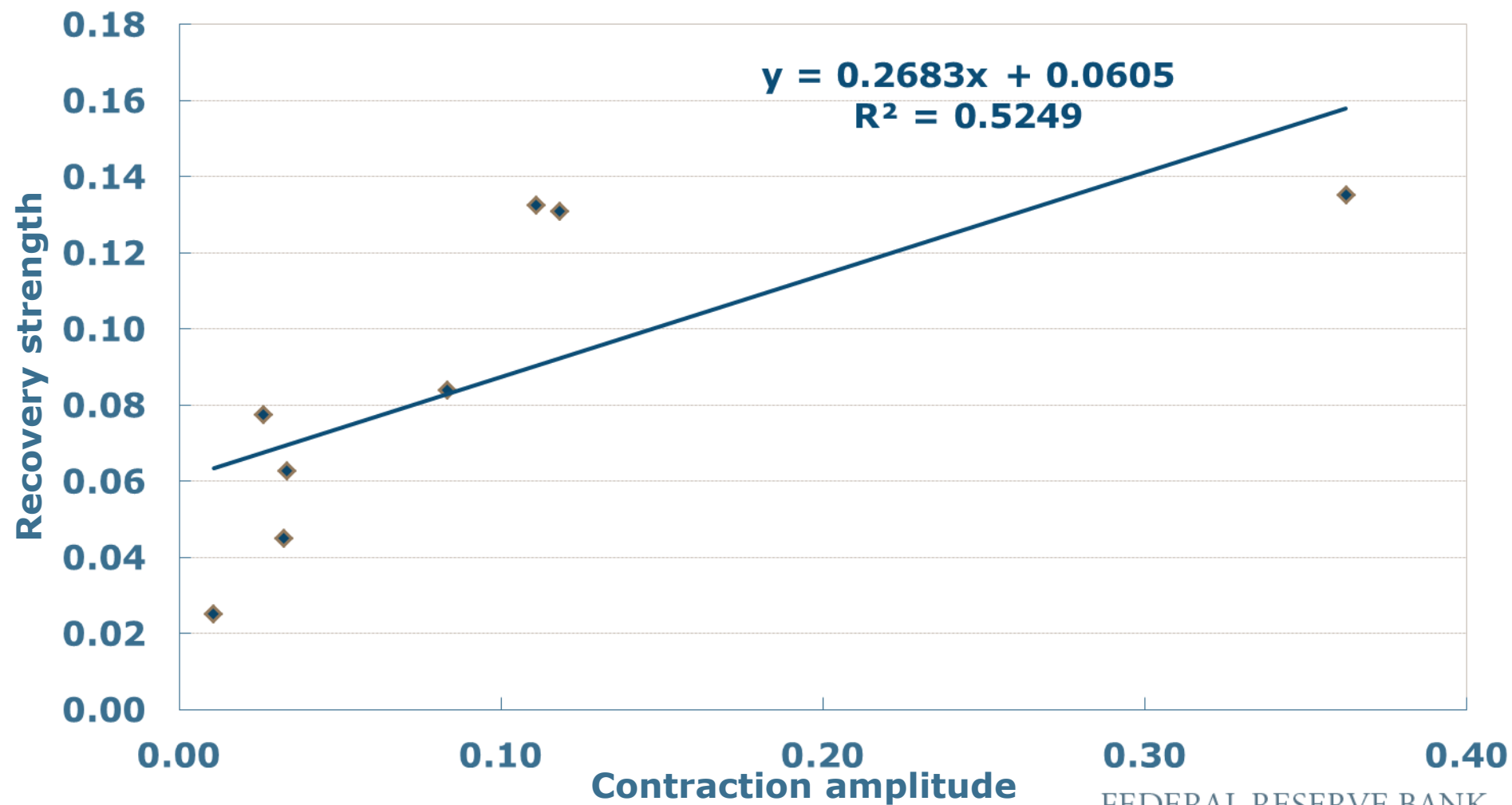
- Similar to Bordo and Haubrich (2010). Quarterly
- NBER recessions
- Financial crises:
 - Pre-WWII Bordo and Eichengreen (2002) +1914
 - Post WWII Lopez-Salido and Nelson(2010)
- Contraction measured as percentage drop from the peak of quarterly RGNP
- Recoveries measured as:
 - 4 quarters after trough
 - Duration of contraction after trough

Do financial crises affect the bounce-back?

- Figure 3 strongly suggests a difference between the recoveries in crisis and non-crisis cycles
- In crises, strong recoveries follow deep recessions
- But outside crises they do not

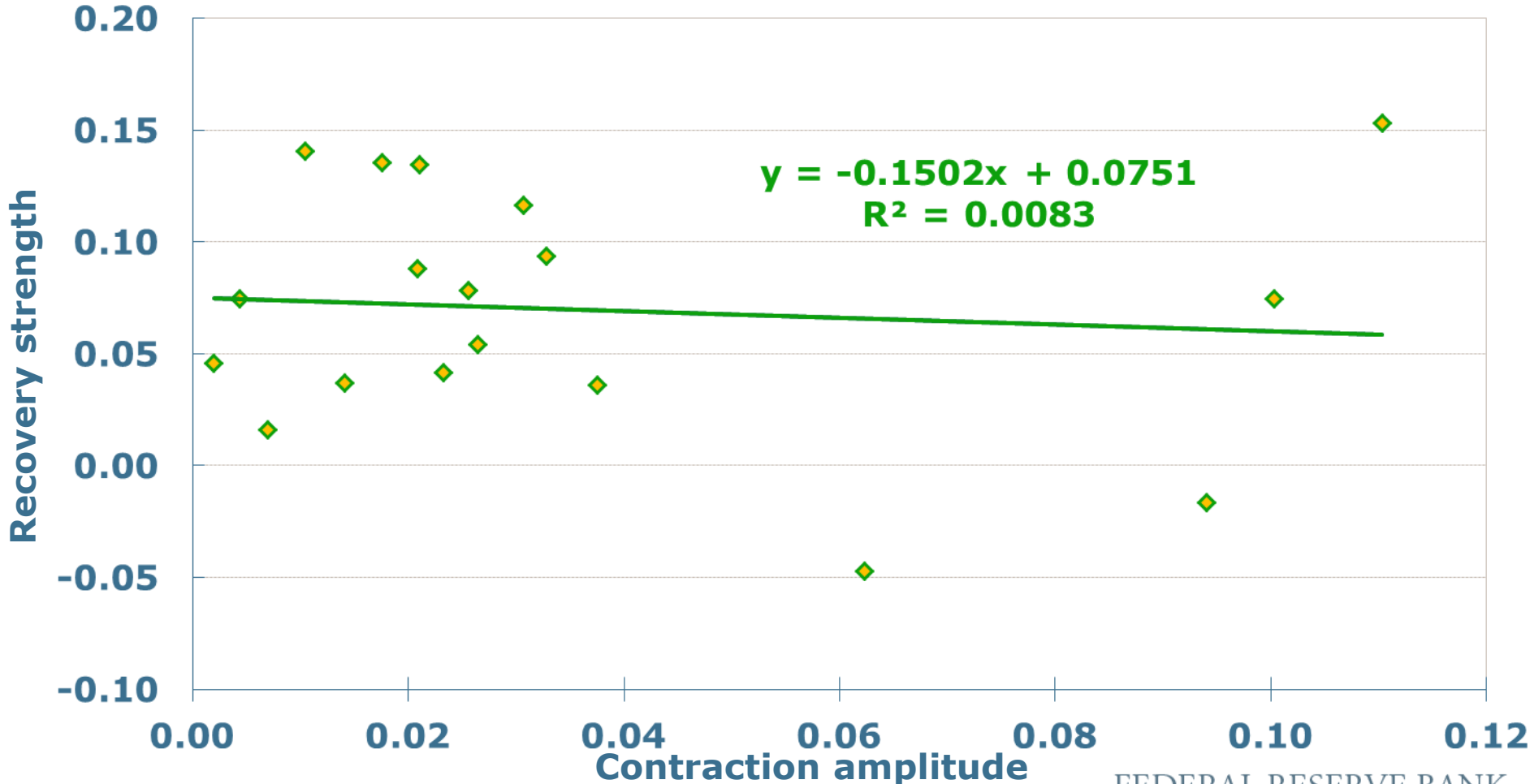
Deep recessions have steep recoveries: crisis cycles

Recovery Against Contraction, 4 Quarters: Crisis Cycles

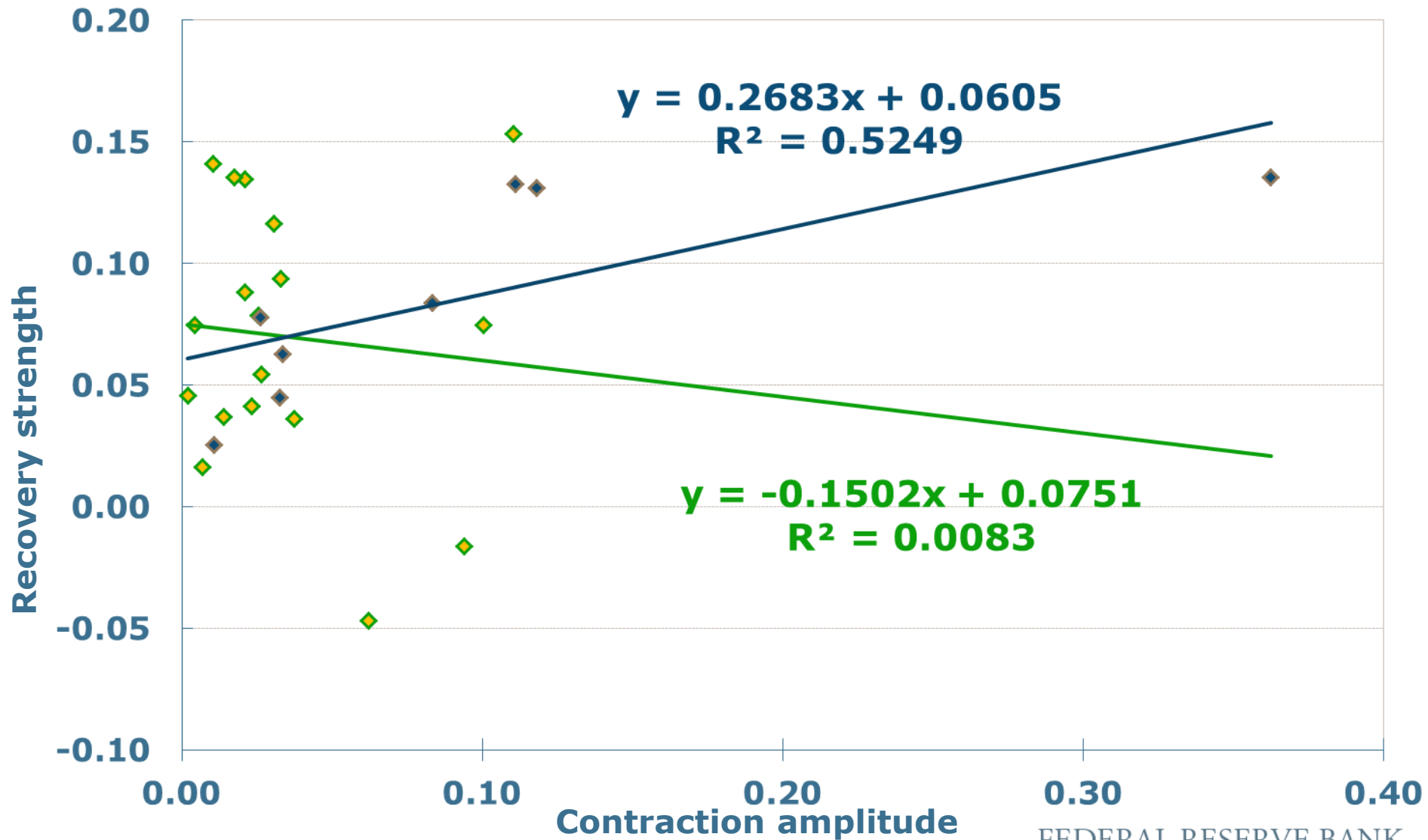


Without a crises, deep recessions do not have steep recoveries!

Recovery Against Contraction, 4 Quarters: Noncrisis Cycles



Combine the two charts for 4Q measurement



Testing for differences

- we run a set of regressions

$$\% \Delta Y_{T+k} = \alpha_1 + \alpha_2 D_F + \beta_1 [\% \Delta Y_{P-T}] + \beta_2 D_F [\% \Delta Y_{P-T}]$$

- As a baseline we also run

$$\% \Delta Y_{T+k} = \alpha_1 + \beta_1 [\% \Delta Y_{P-T}]$$

- A Chow test determines the significance of excluding the dummy and interaction term.

Results from Table 3

- Not much evidence that recoveries following financial crises are much different as seen in Chow test

Results from Table 4

- For samples other than post WWII: mild recessions have slower than average recoveries
- The deeper the recession, the stronger the recovery
- A one percent deeper recession with a crisis will lead to greater than an extra one and a half percent of growth in the quarters following the trough.
- The post WWII sample shows no significant difference between crisis and non-crises recoveries
- This may reflect the fact that crises were less severe

Is it the depth of the financial Crisis?

- No
- Tried spreads
- Quantity of bank loans
- R&R severity measure

The effect of Housing

- Housing has been important in many cycles and there is considerable evidence that household investment leads the cycle (Leamer, 2007)
- We ask to what extent the problems in the housing market can account for the slow recovery so far
- We ask the counterfactual: what would the current recovery look like if it followed the historical pattern based on the depth of the contraction?

The effect of Housing

- We then determine if the effects of the financial crises or problems in the housing market can account for the difference between this weak recovery and the historical pattern
- We first look for outliers in the relationship between recession depth and recovery
- We compare actual with fitted values in a regression of real GDP growth in the recovery against contraction depth, measured by the drop in real GDP

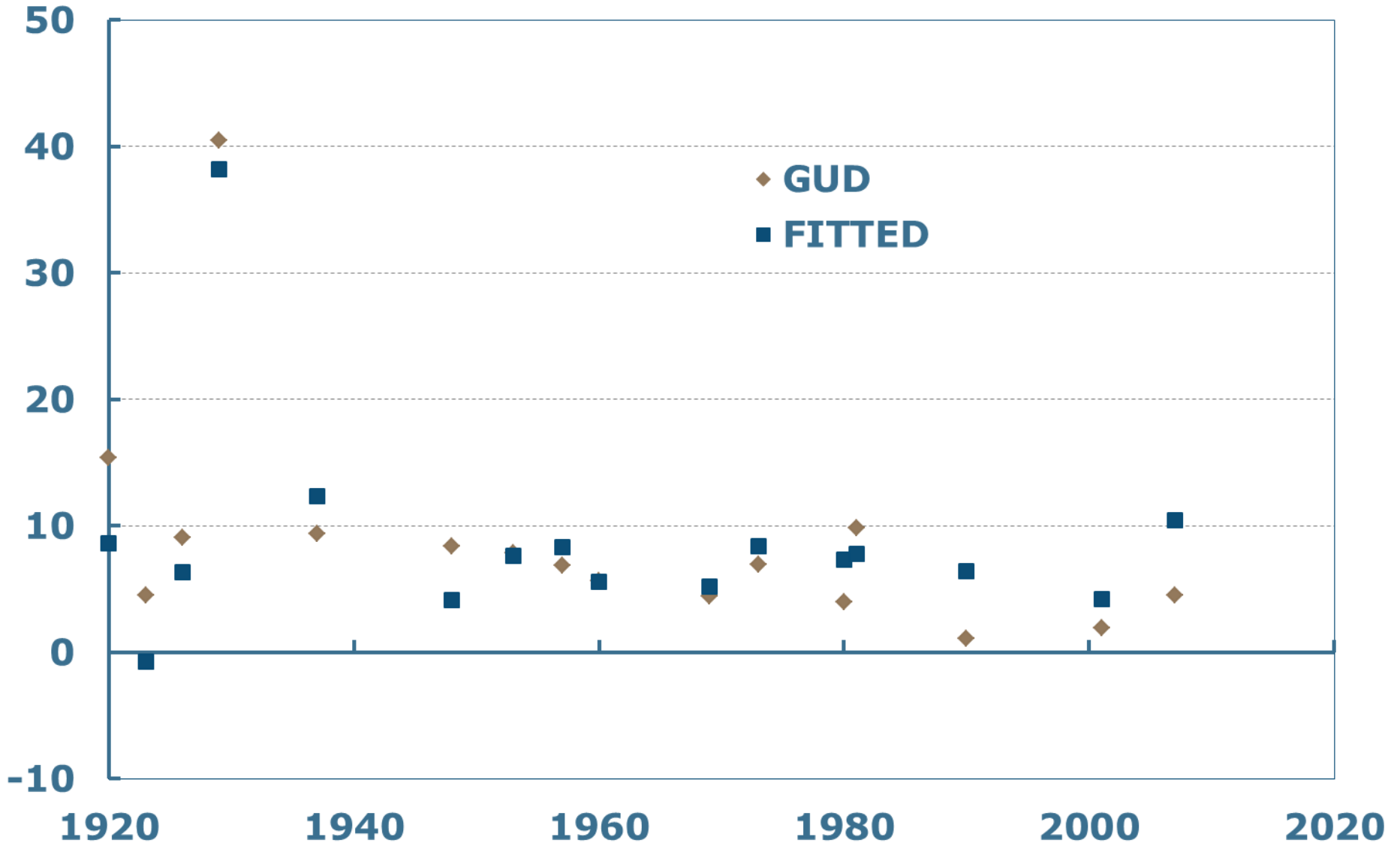
The effect of Housing

- We then add a measure of financial distress, the risk spread (Baa less Long-term Treasury Composite)
- And we compare fitted with actual values
- Finally, we add in Residential Investment, as our measure of the housing market and compare actual to fitted values
- Because of data limitations, we do this only for the post-world war one era
- See figure 5
- Table 9 reports the regression

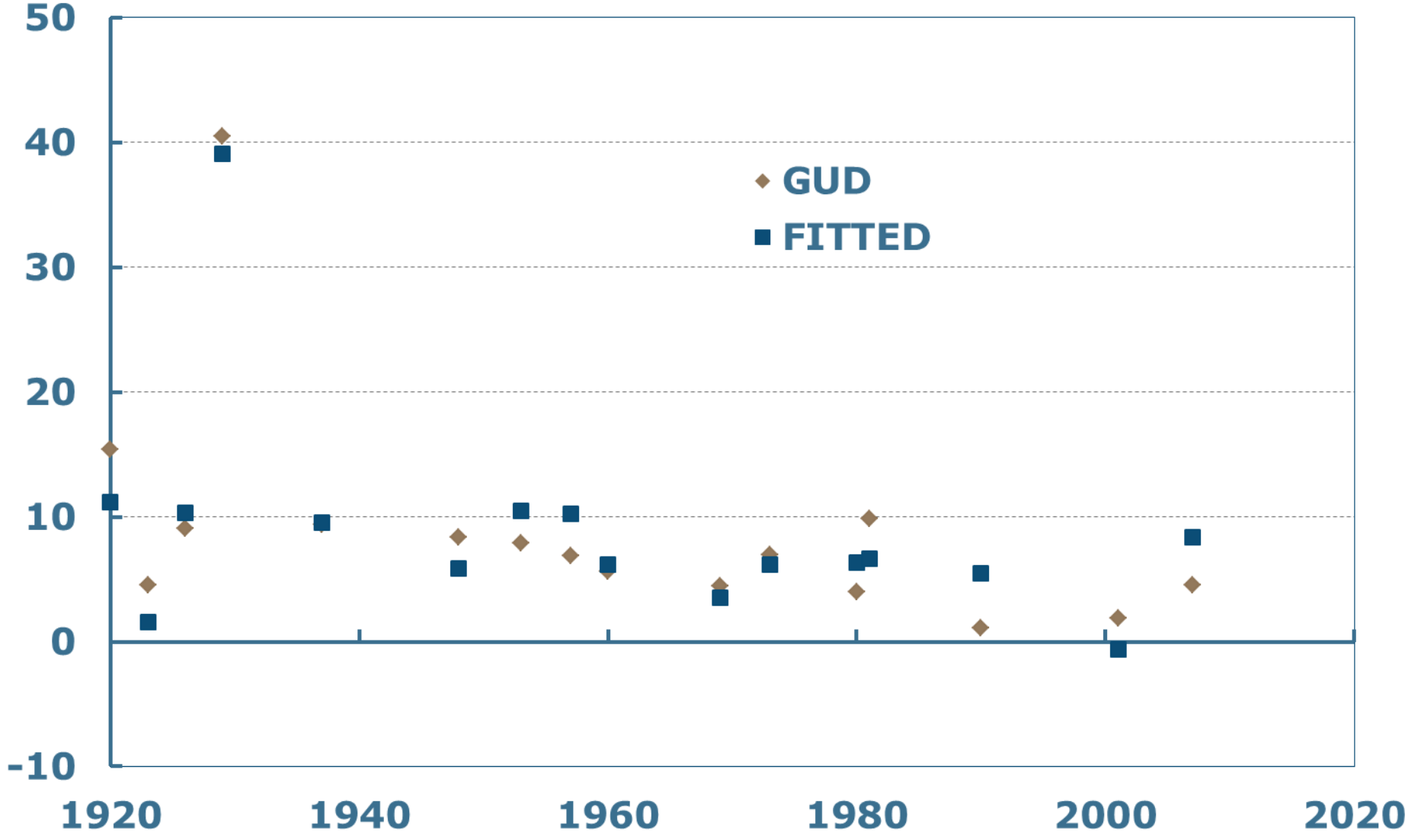
The effect of Housing

- The first panel compares actual change in real GDP for the recovery with the fitted value from the regression against contraction depth
- The most recent 3 cycles stand out as particularly weak recoveries given the size of the recessions
- The second panel shows how much of the shortfall we attribute to problems in the financial sector
- Adding these financial variables reverses the trend of last three recessions, which no longer look weaker than predicted.

Strength of Recovery vs. Drop



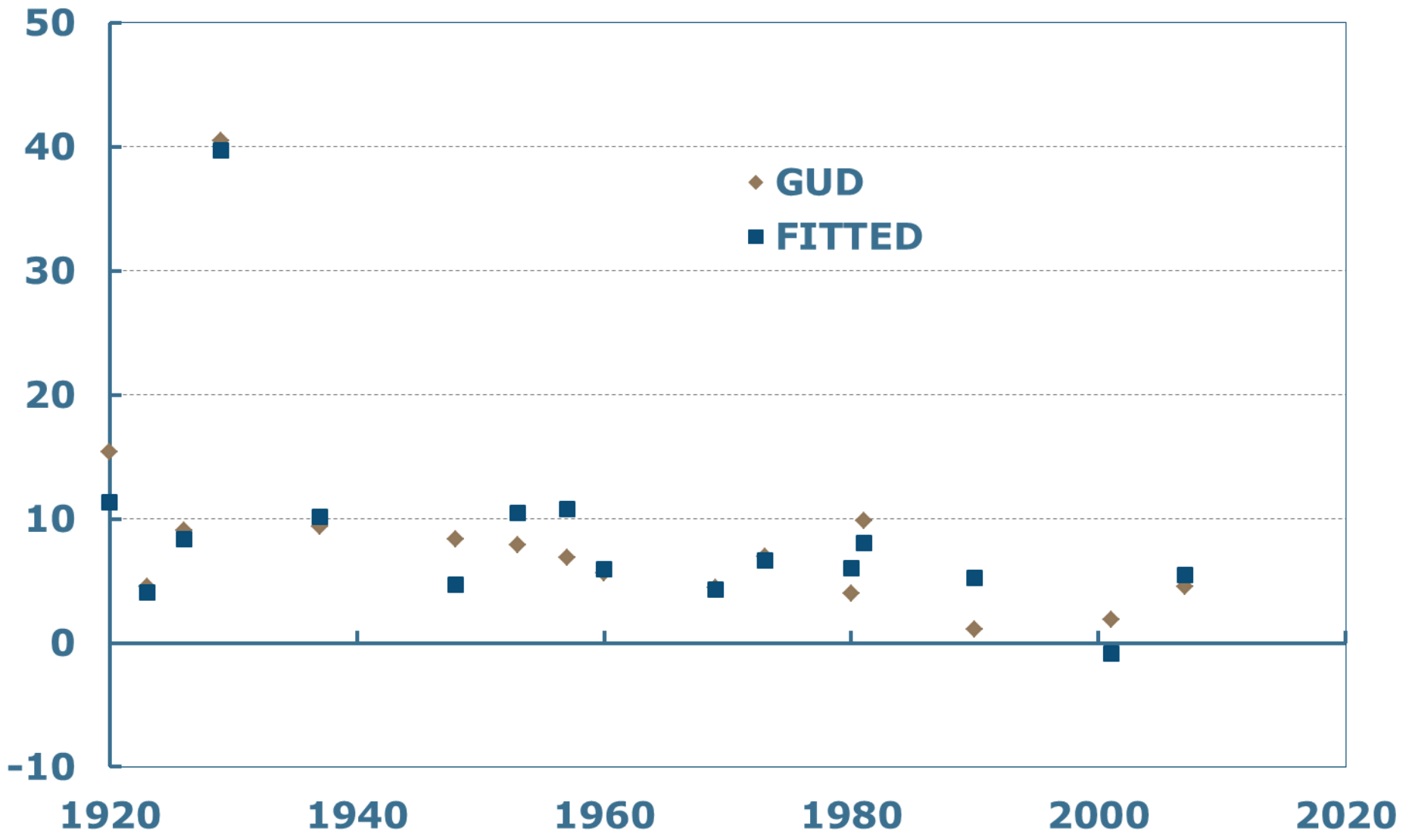
Strength of Recovery vs. Drop, Baa Spread, Stock Appreciation, Real Loan Growth



The effect of Housing

- So, there is some limited support in the most recent cycles for financial crises leading to weaker recoveries.
- The third panel shows the effect of adding Residential Investment, a measure of the housing market
- Residential investment is not a large component of national expenditure but it is closely linked to the purchases of consumer durables and other housing sensitive sectors which together give it a bigger bang

Strength of Recovery vs. Drop, Baa Spread, Stock Index Change, Real Loan Growth, and RES I



The effect of Housing

- The improvement is particularly noticeable for the current recovery but less so for the previous four recessions seen in Figure 5
- In the absence of a model, this finding points to the need for further analysis, to determine if weakness in housing was directly to blame for the weak recovery or reflecting other problems, such as weakness in the intermediary sector

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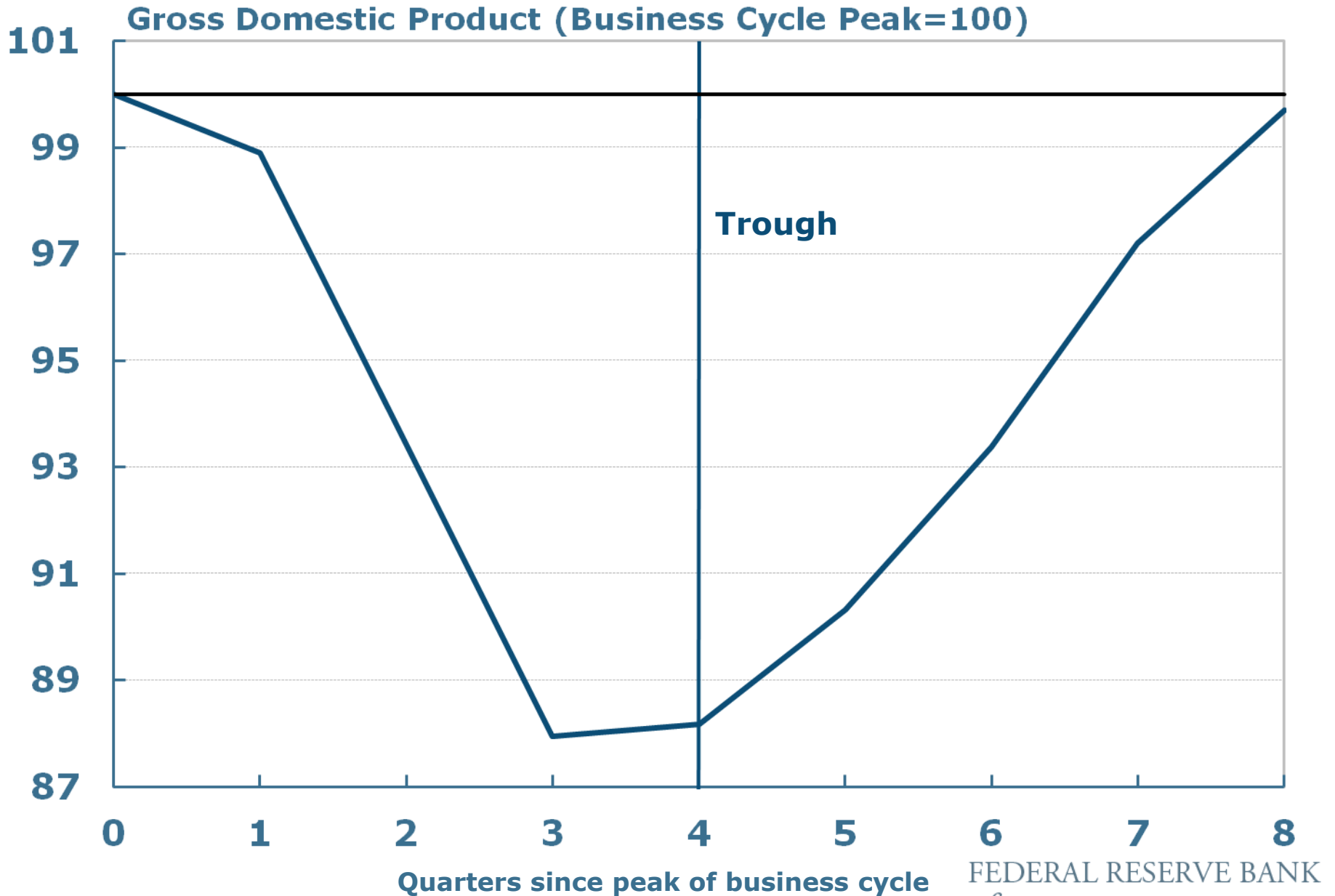
Recoveries after Financial Crises

- Jorda, Schularick and Taylor (2012) find slow growth after a credit boom but say little about the patterns after a recovery started
- Stock and Watson (2012) attribute recent slow recoveries to demographic factors
- Gali, Smets and Wouters (2012) estimate a DSGE model and attribute the slow recovery to aggregate demand shocks
- Hall (2011) discusses slumps

Pre Federal Reserve

- U.S. was on the gold standard and it did not have a central bank
- NBER documents 11 business cycles, 2 had major recessions: 1893-1894; 1907-1908
- There were also 4 banking panics and 6 stock market crashes
- Most of the recoveries were followed by recoveries at least as rapid as the downturns with the exception of the cycles that bracketed World War I

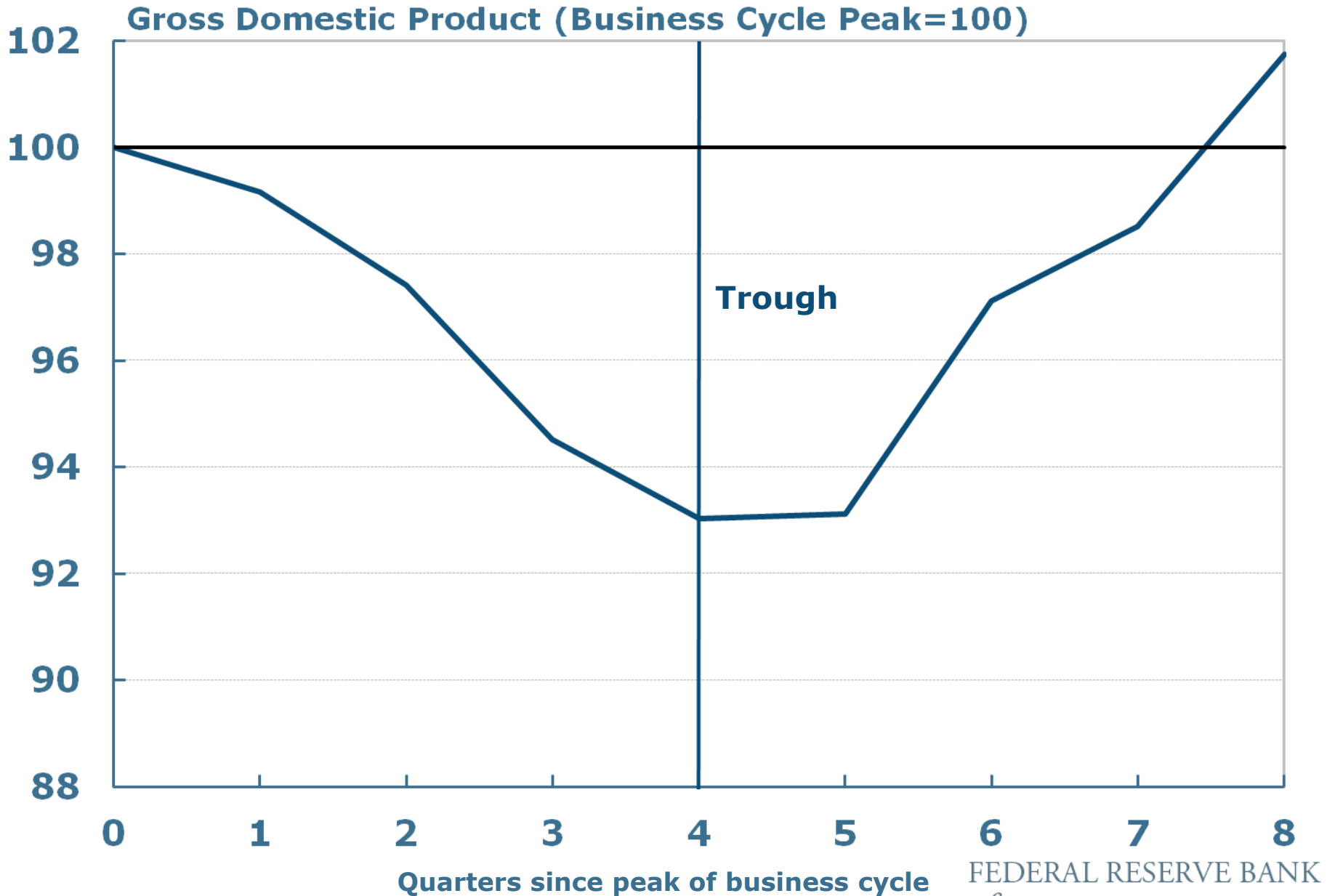
Business Cycle Peak: May 1907



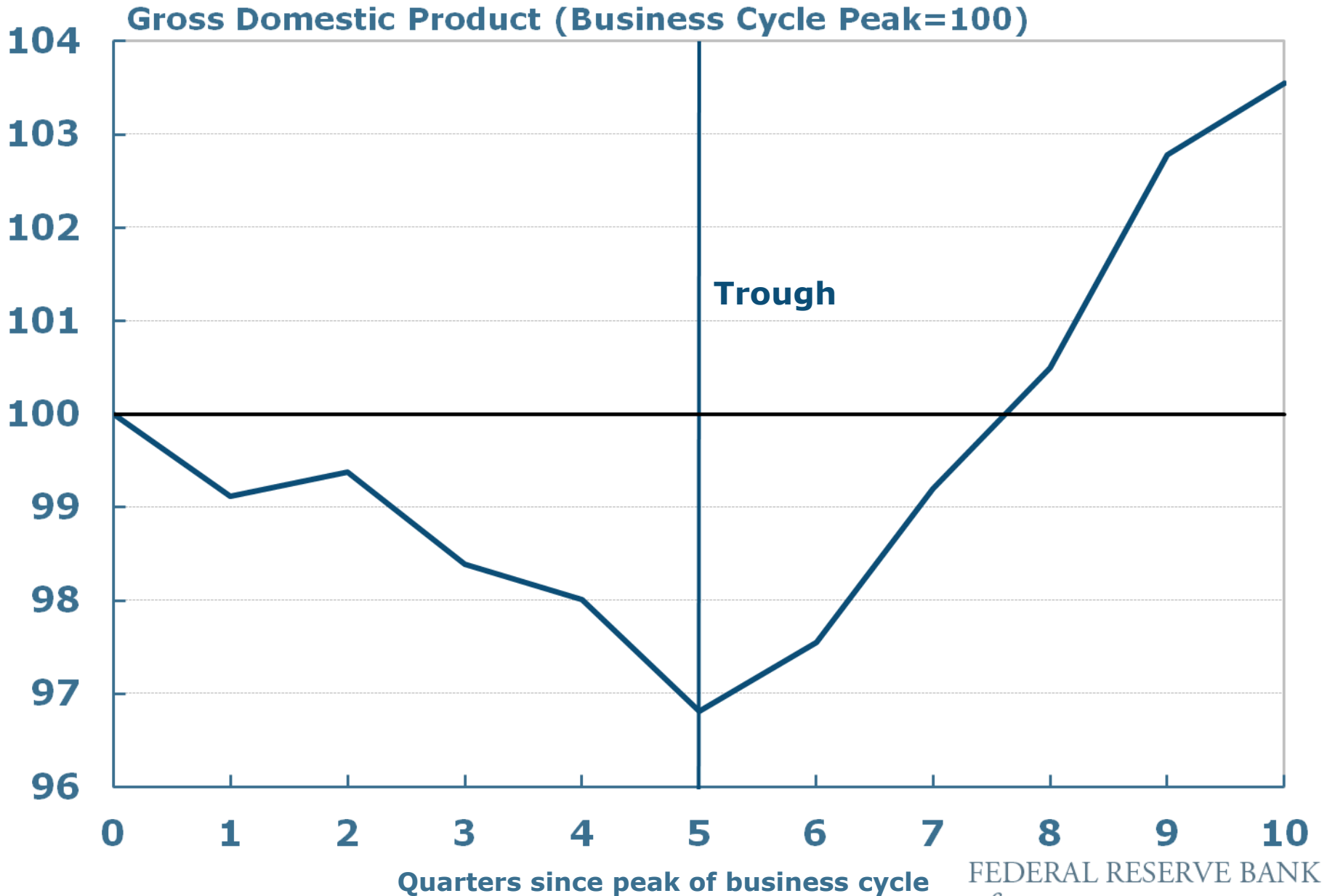
The Interwar Period

- Most of the recoveries in this period were at least as rapid as the downturns that preceded them with one important exception: the recovery from the Great Contraction 1929 to 1933
- We show the three cycles that had severe recessions: 1920-21, 1929-33 and 1937-38

Business Cycle Peak: May 1937



Business Cycle Peak: November 1973



Business Cycle Peak: July 1990

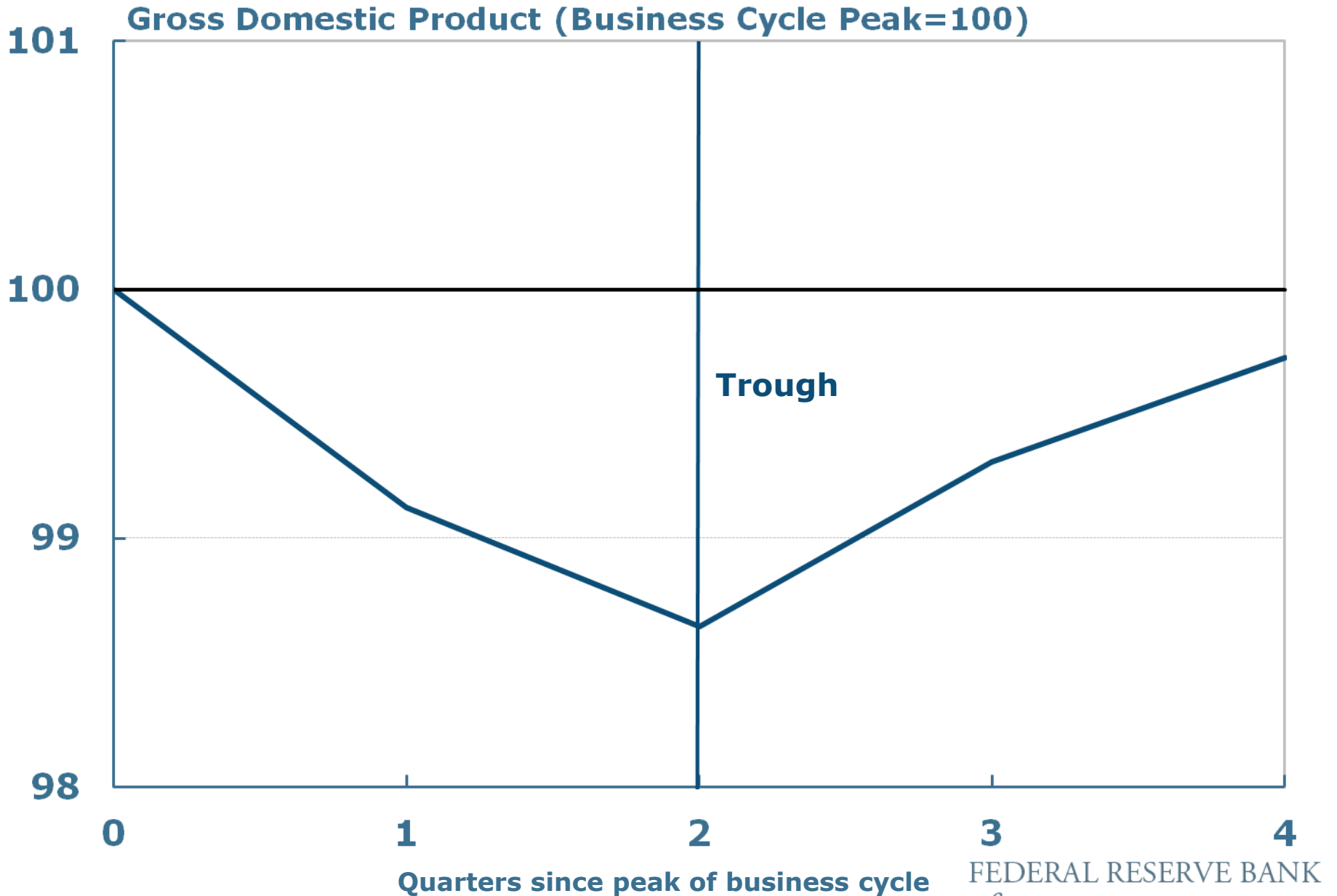


Figure 2: Expansion Growth: All Cycles

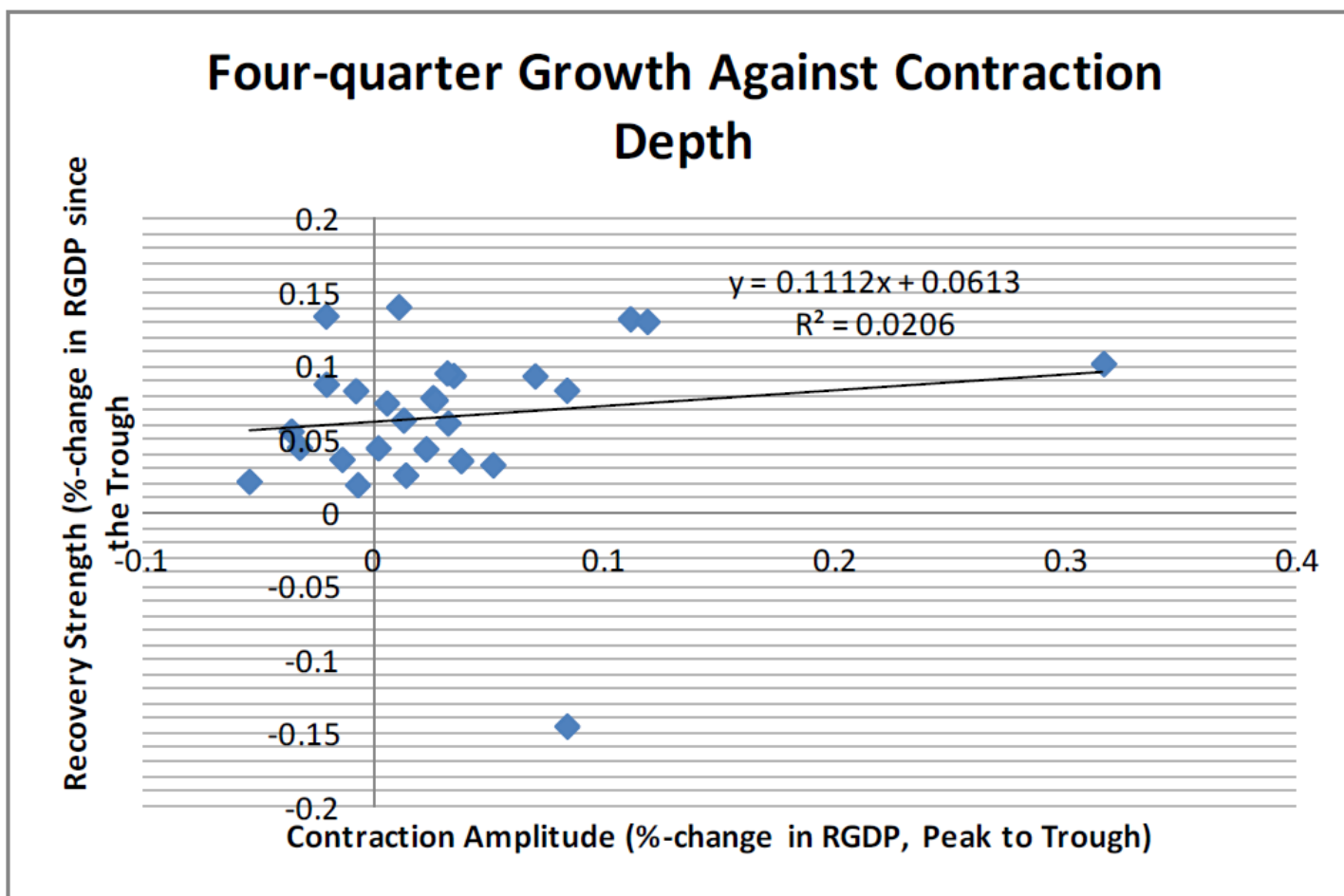
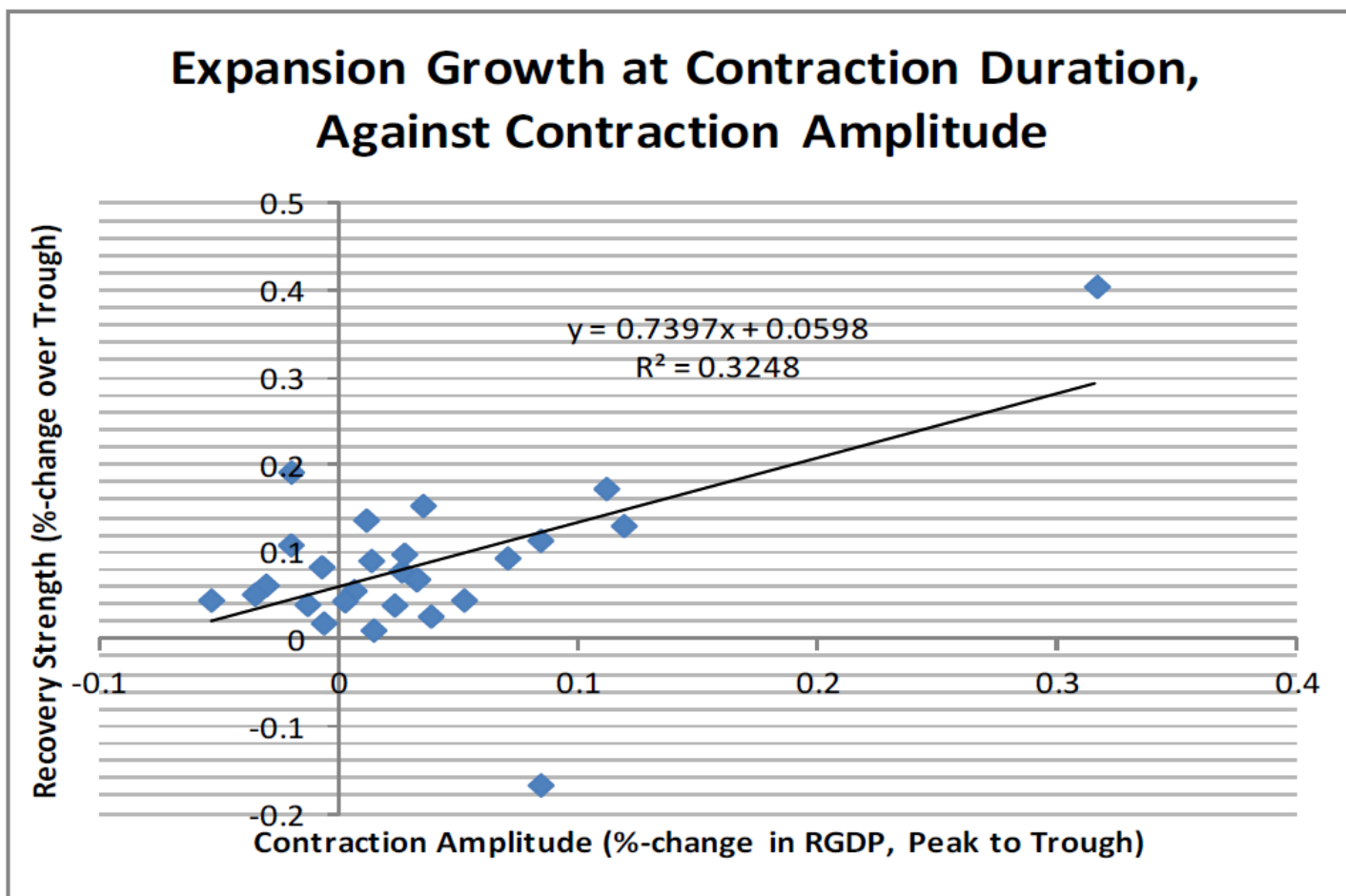


Figure 2: Expansion Growth: All Cycles



Are deep recessions followed by steep recoveries?

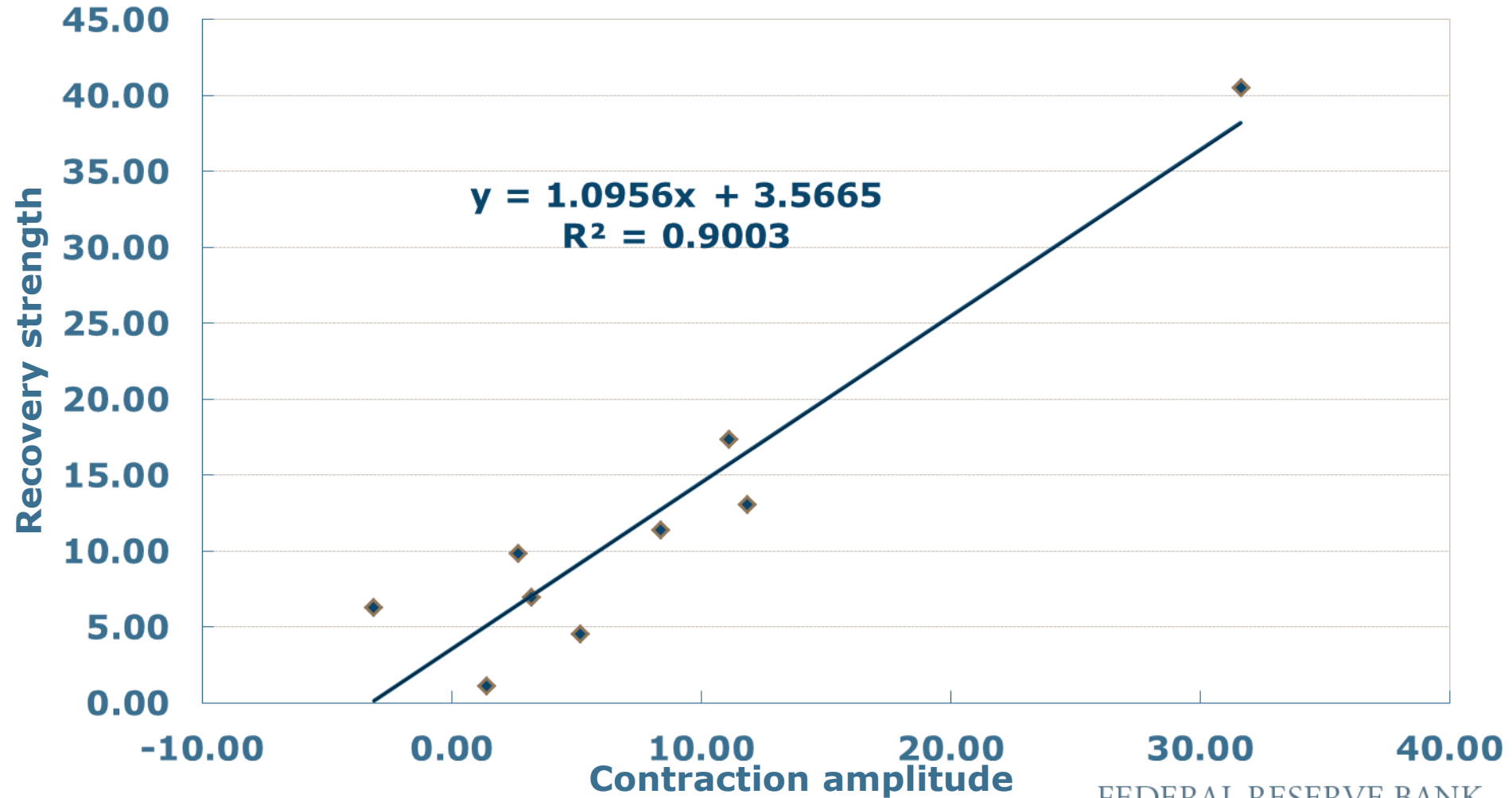
- Regressing growth 4 quarters after the trough against contraction amplitude shows a positive and statistically significant relationship
- The relationship is tighter and stronger, if we measure growth in the recovery out to the duration of the contraction after the trough
- Much of the difference between the two panels is driven by the Great Depression

Are deep recessions followed by steep recoveries?

- Figure 2 suggests that deep recessions are followed by strong recoveries

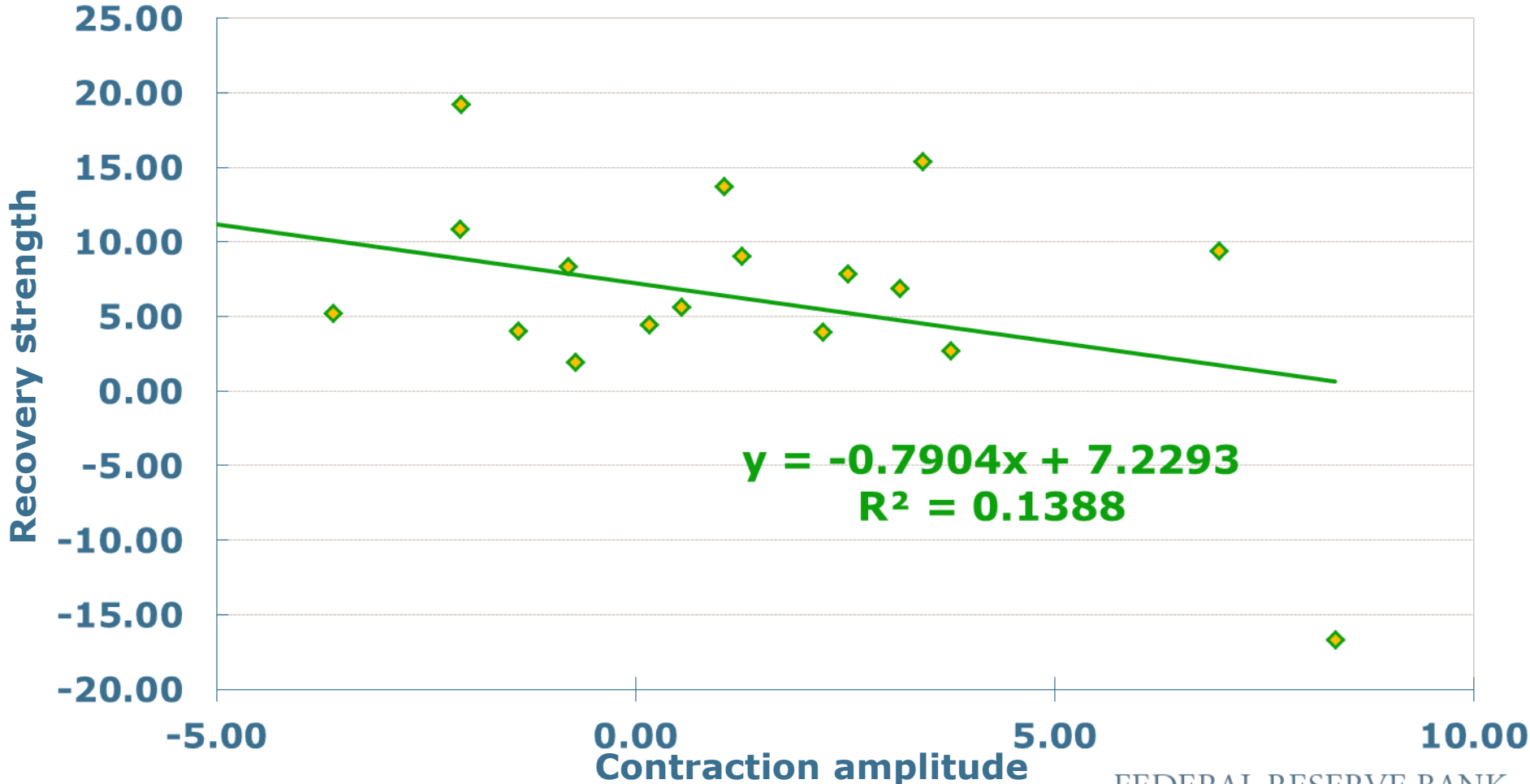
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Recovery Against Contraction Duration: Crisis Cycles

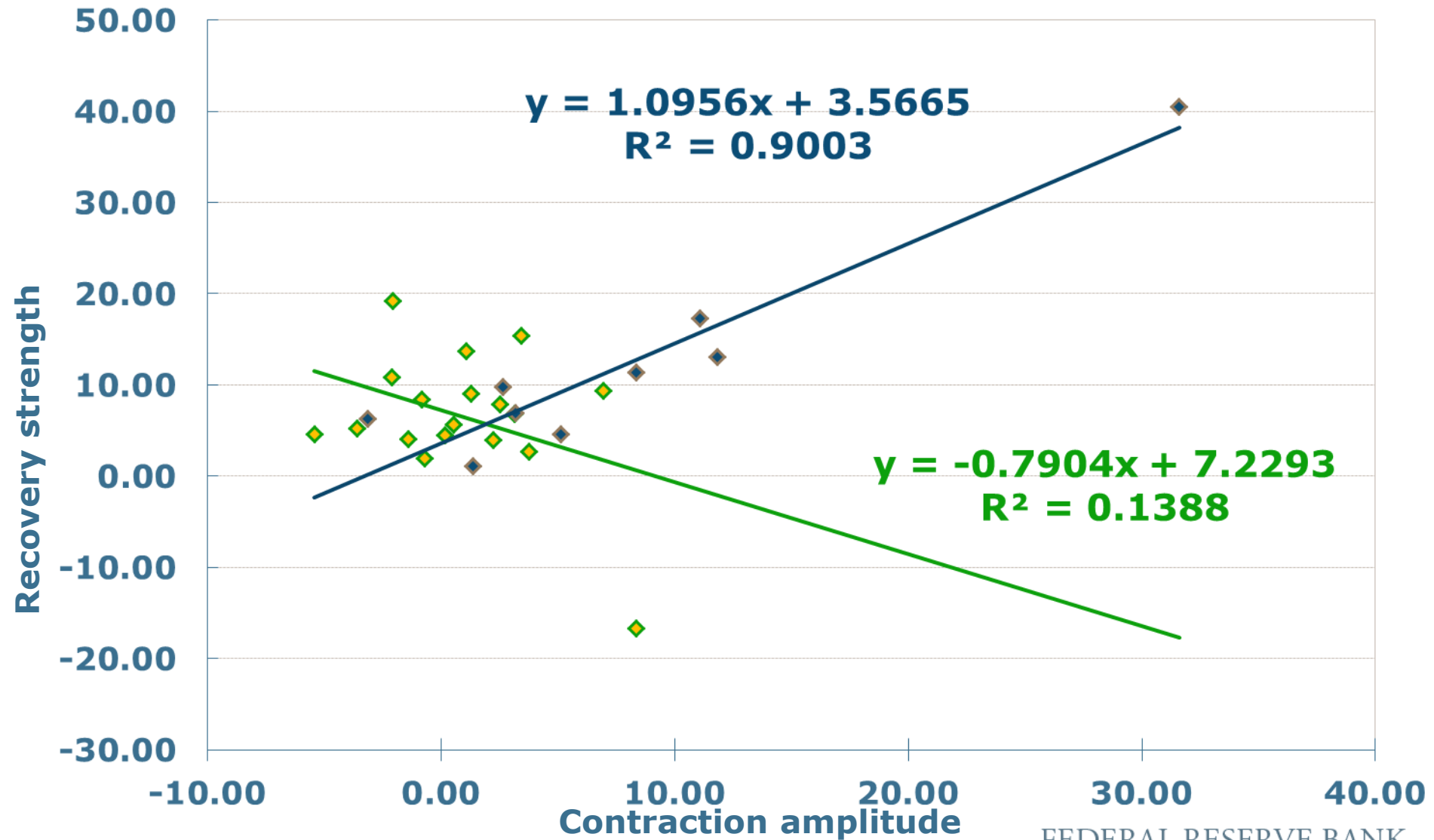


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Combine the two charts for Duration measurement



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