D Appendix D: The Role of Federal Reserve Districts

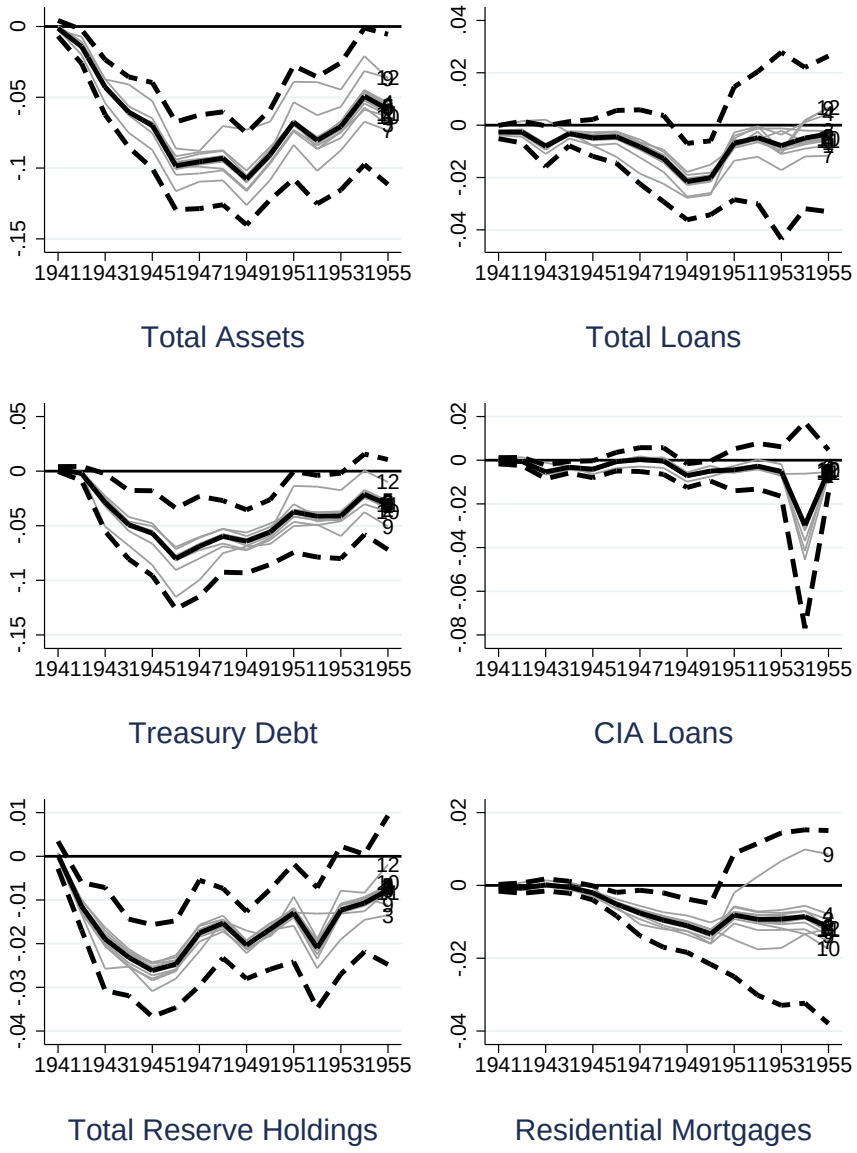
The purpose of this appendix is to explore potential regional variation. Federal Reserve Districts are used as the regional designation of interest because it is a natural division to use when exploring banking data. The basic conclusion of this appendix is that dropping Federal Reserve Districts does not alter the basic conclusions of the main text, though there is heterogeneity in the response of state balance sheets in response to military contract spending. There are two one main exceptions to this general conclusion. First, the long term (after 1950) response of total assets and total deposits is weaker when the 12th District (San Francisco District) and the 9th District (Minneapolis District) are dropped. This seems to be driven by a weaker response of Treasury debt and private demand deposits. However, the main result of this is that it adds uncertainty about whether total war spending creates a permanent (post 1950 effect) on bank balance sheets. Analysis of the subcategories of spending suggest that supply contracts, which are largely driving the results of total contract spending have fairly consistent estimates across Reserve Districts

This brings us to the second exception. The 9th District is a clear outlier when looking at the effect of plant and equipment contract spending on total assets. As discussed in the main text, the behavior of the 9th District is part of the reason why it is accepted that it is not possible to draw conclusions about the relationship of plant and equipment spending and bank balance sheets in the context of this study.

Looking at individual Federal Reserve Districts using state level data is complicated because many states are divided between two districts. To deal with this issue I employed a type of bootstrapping in which states that were split between districts were randomly assigned to one of the overlapping districts and then treated as a member of the district they had been assigned to. The reported values below are the average of 500 repetitions of this random assignment for each Reserve District. The assumption of this approach being that within those 500 repetitions, all possible iterations are represented more or less equally. It should be be noted that the results presented below do not depend on this approach. The change in effect from dropping the 9th District is not dependent on the inclusion of Wisconsin and Michigan in that district. The 12th District does not contain any partial states.

Figure 1 is analogous to Figure 5 in the main text. The black lines indicate the estimates in the figure from the main text. The grey lines are the average responses of the bank variable to total contract spending when dropping an individual Reserve District, labeled by number. As the reader can see, the 9th and 12th district stand out in many of the individual figures. Their exclusion weakens the effect of total contract spending on total assets. The

effect of excluding the 9th district is particularly strong. From 1947-1955 the response of total assets to war contract spending when excluding the 9th District is on average 2.6 cents smaller and statistically insignificant after 1950 (not shown) than will the full population of Districts. It should also be pointed out that dropping the Chicago District (7th District) strengthens the response of total assets to war spending.

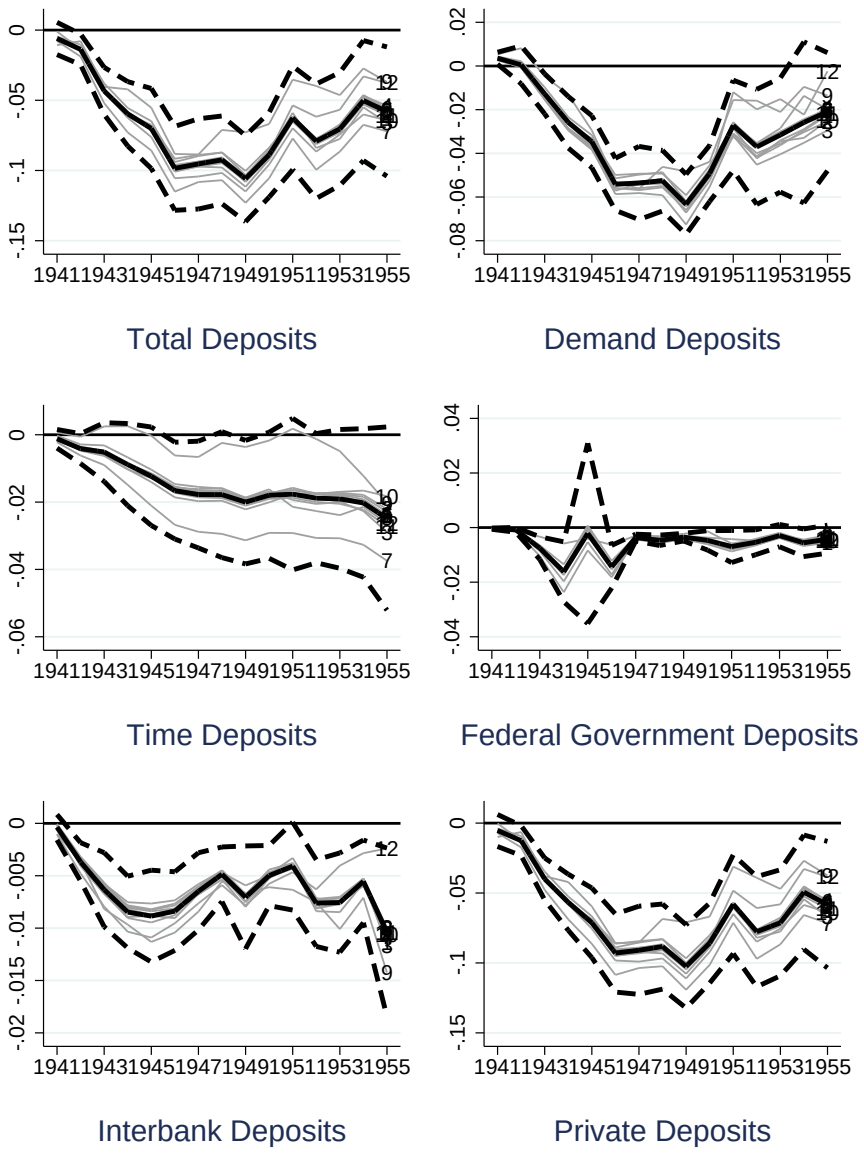


Gray lines show the response of banking variables when Numbered District is dropped from analysis. Dashed lines are 95% confidence intervals.

Figure 1: The Response of All Bank Assets When Excluding Federal Reserve Districts

I mention the offsetting effect of the 7th District to make the basic point that while there is obviously a heterogeneity of response among Fed Districts, it is not clear that individual Districts should excluded as outliers. There are two reasons for this. First, there is no systematic reason to believe Fed Districts should be treated as outliers in the same way that DC—as both not a state and the seat of the Federal Government—has clear characteristics that suggest it should be excluded. Second, from a pragmatic standpoint, the exclusion of Districts 9 and 12 would mean the removal of over one fifth of the total population of states. The weaker effect from dropping District 12 is less substantial than the stronger effect from dropping the 7th District which also implies the 7th District is also an outlier. Given that, over a quarter of the states would be dropped.

Figure 2 shows the effect of dropping Reserve Districts on deposits and corresponds to Figure 6 in the main text. The results show the role of the 9th and 12th District in deposits. As the figure shows, there is a similar weakening effect after 1950 of the response of demand deposits to total contract spending. The magnitude of the weakening of the response is similar to that of total assets.



Gray lines show the response of banking variables when Numbered District is dropped from analysis. Dashed lines are 95% confidence intervals.

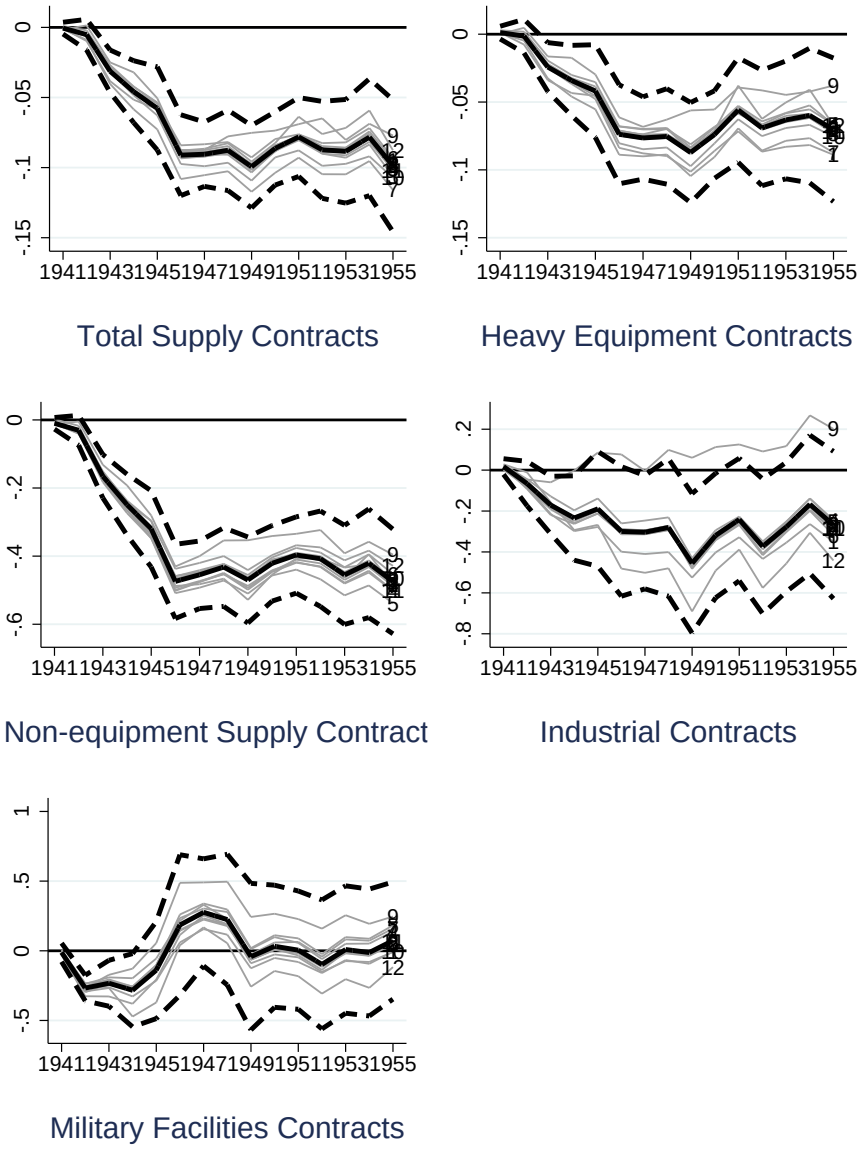
Figure 2: The Response of All Bank Deposits When Excluding Federal Reserve Districts

It should be pointed out that removing the 9th district has a very strong effect on residential mortgages (Figure 1) and time deposits (Figure 2). However, in both instances, the results were treated in the main text as either obviously statistically insignificance or difficult to interpret. The exclusion of the 9th District simply allows for a more precisely estimated zero effect. It should also be noted that for time deposits, excluding the 7th

District has an offsetting effect to excluding the 9th District.

Finally, to put the regional effects in perspective, it is useful to look at the effect of dropping Reserve Districts from the response of total assets to the subcategories of war spending. As Figure 3 (similar to Figure 8 in the main text) makes clear, the problem of heterogeneity in the response of total assets to contract spending by Reserve District is less severe for the subcategories of contract spending. The most obvious exception being the response of total assets to industrial contracts. The strongly different response from dropping the 9th District is taken—along with the fact that the response for all states is of dubious statistical significance—as grounds to admit that there is not much that I can say about the role of Plant and Equipment spending and bank balance sheets.

The weaker effect of heavy equipment spending and plant and equipment spending when dropping the 9th district is likely what is driving the results for total contract spending. Though, it is of interest that there is no clear reason for why dropping the 12th District also produces a weaker effect for total spending since industrial contracts and military facilities spending show a stronger response when the 12th District is dropped and there is no real difference in the effect of the 12th District on supply contracts.



Gray lines show the response of banking variables when Numbered District is dropped from analysis. Dashed lines are 95% confidence intervals.

Figure 3: The Response of Total Assets to the Subcatagories of WWII Contract Spending When Excluding Federal Reserve Districts