APPENDIX B. Extrapolated Outstanding C&I Lending to Small Businesses

B.1 Extrapolated C&I Lending to Small Businesses Originated at Amounts Greater Than $1 Million, by Banks with Assets of $1 Billion to Less Than $10 Billion

In the survey, banks with $1 billion in assets or more were asked to report their outstanding C&I loan dollars broken down by loan size and business gross annual revenue (GAR). This was used to extrapolate the lower bound amount of C&I lending with origination values of over $1 million that went to small businesses. First, total outstanding C&I lending with origination amounts of greater than $1 million was taken from the Call Report. This was then adjusted by the ratio of outstanding C&I lending with origination amounts greater than $1 million that went to businesses with less than $1 million in gross annual revenue, to total outstanding C&I lending with origination amounts greater than $1 million, which was calculated from the answers collected by the survey. For banks that use GAR limits to define small businesses, almost all consider businesses with less than $1 million in gross annual revenue to be small businesses (see Section 2.1).

Due to sample size constraints, these calculations could only be done for banks with $1 billion to less than $10 billion in assets. A conservative estimate of the calculated ratio was used, specifically the lower bound of the 80 percent confidence interval estimated in the survey. The results are shown in Table B.1. Assuming that all businesses with less than $1 million in gross annual revenue are small businesses, these calculations suggest that, in Q4 2015, there was *at least* $19.1 billion in outstanding small business C&I loan dollars that was not accounted for in the Call Report proxy due to being over $1 million at the time of origination.

Table B.1: Extrapolated Lower Bound, C&I Lending to Small Businesses Originated at Amounts Greater Than $1 Million

(Banks with Assets of $1 Billion to Less Than $10 Billion Only)

Bank Asset Size	Outstanding C&I Lending with Origination Amounts Greater than $1M ($ Billions)	Ratio of Outstanding C&I Lending with Origination Amounts Greater than $1M That Went to Businesses with Less Than $1M GAR, to Total C&I Lending with Origination Amounts Greater Than $1M		Extrapolated Outstanding C&I Lending with Origination Amounts Greater Than $1M to Small Businesses ($ Billions)
		Mean Ratio	Lower Bound Ratio	
$1B to Less Than $10B	$132.5B	0.212	0.143	*Total: $19.1B*
Source:	Call Report	SBLS		

B.2 Extrapolated C&I Lending to Small Businesses Originated at Amounts Greater Than $1 Million, by Banks with Assets Below $1 Billion

For banks with assets below $1 billion, the extrapolated lower bound of C&I lending originated at amounts greater than $1 million that were made to small businesses is based on the share of these banks that described themselves as making "largely all" of their loans to small businesses. As shown in Figure 2.5, 86.4 percent of banks with under $250 million in assets and 76.5 percent of banks with $250 million to less than $1 billion in assets made largely all their loans to small businesses. Banks were then rank-ordered within the two asset size groups by Call Report C&I lending, and for each bank in the bottom 86.4 or 76.5 percent, respectively, Call Report small business proxy C&I lending was compared to total C&I lending. For all such banks where proxy C&I lending was less than half of total C&I lending, the difference between half of total C&I lending and proxy amount of lending was summed together, as a conservative extrapolation of the understatement for the two asset size groups of banks. In many cases, no extra C&I lending was counted as small business lending, since banks' proxy small business lending was already over 50 percent of their total C&I portfolio.

This highly conservative extrapolation assumes two very restrictive constraints (a) the banks which make largely all their loans to small businesses are the banks in each category which do the least C&I lending, and (b) banks which make largely all their loans to small businesses make only 50 percent of their loans to small businesses (unless they directly report a higher proportion in the small business C&I proxy). By this estimate, small business lending is underestimated by at least $60.2 million for banks with less than $250 million in assets and by at least $32.3 million for banks with between $250 million and $1 billion in assets.

It should be noted that much larger understatements are generated for these-sized banks if instead the simple method of counting their entire C&I portfolio as small business lending is used, as discussed in Section 2.3. Applying the simple method to the bottom 86 percent of banks with assets of less than $250 million and the bottom 76 percent of banks with assets of between $250 million and $1 billion, when ranked by their total C&I lending, instead yields for Q4 2015 an additional $16.9 billion in C&I lending to small businesses in loans with origination amounts above $1 million.

B.3 Extrapolated C&I Lending Collateralized by 1-4 Family Residences

The survey asked banks to report their total origination and renewal lending for C&I purposes as well as origination and renewal lending for C&I purposes that was primarily secured by 1-4 family residential properties (residentially-secured C&I). In order to extrapolate the lower bound total amount of *outstanding* residentially-secured C&I, the total amount of outstanding C&I lending in the Call Report was adjusted by the ratio of residentially-secured C&I originations to non-residentially-secured C&I originations calculated from the answers collected by the survey. This was done, first, because C&I lending collected by the Call Report by definition excludes any residentially-secured lending for C&I purposes (see the box in Section 2), and second, because the Call Report collects information on outstanding loan dollars, while the survey questions asked about origination dollars.[75]

A conservative estimate of the ratio of residentially-secured to non-residentially-secured C&I lending was used in the extrapolation, specifically the lower bound of the 80 percent confidence interval estimated in the survey. These calculations were done separately for banks with less than $250 million in assets, banks with $250 million to $1 billion in assets, banks with $1 to $10 billion in assets, and banks with over $10

[75] Dollar amounts at origination is the dollar amount extended by the loan at the time of origination, while outstanding loan balances, which is what is collected by the Call Report, instead reflects the remaining balance still owed on a loan. While these two measures capture different concepts, at a given moment in time for the industry the total dollar amounts in aggregate are similar as loan dollars that are paid off by borrowers are likely extended again as new lending.

billion in assets. The results are shown in Table B.2. Assuming that all residentially-secured C&I loans are made to small businesses, these calculations suggest that, in Q4 2015, there was *at least* $18.3 billion in outstanding small business C&I lending that was not accounted for in the Call Report proxy due to being residentially-secured.

Table B.2: Extrapolated Lower Bound, C&I Lending Collateralized by 1-4 Family Residences

Bank Asset Size	Outstanding C&I Lending ($ Billions)	Ratio of Residentially-secured C&I Origination to Non-residentially-secured C&I Originations		Extrapolated Outstanding Residentially-secured C&I Lending ($ Billions)
		Mean Ratio	Lower Bound Ratio	
Less than $250M	$31.5B	0.173	0.139	$4.4B
$250M to Less Than $1B	$77.3B	0.103	0.084	$6.5B
$1B to Less Than $10B	$188.5B	0.032	0.025	$4.8B
$10 Billion or More	$1,297B	0.010	0.002	$2.7B
Source:	Call Report	SBLS		*Total: $18.3B*