

The U.S. Infrastructure Shortfall

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Even casual observation reveals that public infrastructure in the United States needs improvement. Infrastructure investment in the last few decades has not kept up with a growing economy. The \$1 trillion infrastructure bill that has passed the Senate will obviously improve matters if it is passed into law. How much will this make up for past neglect?

One measure of the size of infrastructure in a country is the ratio of the stock of infrastructure to GDP. The more economic activity in a country the larger is the infrastructure needed to support that activity. The ratio of the stock of infrastructure to GDP can be computed for the United States using government fixed asset data from the Bureau of Economic Analysis. Infrastructure can be divided into defense and nondefense. In the post war period the ratio of the stock of defense infrastructure to GDP peaked in 1954 at 0.46 and has continually fallen since then. In 2019 the ratio was only 0.08, a dramatic fall.

Of more current interest, however, is nondefense infrastructure, since this is what the \$1 trillion bill is about. The ratio of nondefense infrastructure to GDP is plotted in Figure 1 for the 1950–2019 period. The ratio rose from 0.68 in 1950 to 0.85 in 1970. The period of the 1950's through the 1960's was one of high infrastructure investment and thus a rising ratio. This rise reflects in part the construction of the interstate highway system and the increase in educational infrastructure driven by the baby boom.

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Since 1970 the ratio has more or less continually fallen. In 2019 it was 0.61, the lowest on record. For the last 50 years infrastructure investment has not been large enough to keep the stock of infrastructure relative to GDP from falling; hence the current problem.

How large is the shortfall? Should the goal be to get the ratio back to the peak in the early 1970's, which is 0.85? Or perhaps back to the average ratio over the 1950–2019 period, which is 0.72? There is no precise answer to this question. To get a sense of magnitudes, if the ratio in 2019 were the same as it was in 1970, the value of nondefense infrastructure in 2019 would be \$18.2 trillion in current dollars. The actual value is \$13.0 trillion, so a \$5.2 trillion shortfall. If the ratio were the same as the average over the period, the value in 2019 would be \$15.4 trillion, a \$2.4 trillion shortfall.

The \$1 trillion infrastructure bill has in it some infrastructure investment that would likely take place anyway. The incremental amount is about \$550 billion. This amount is about 25 percent of the \$2.4 trillion shortfall and about 10 percent of the \$5.2 trillion shortfall. Another way of looking at this, if the \$550 billion were added to the stock in 2019 (rather than spread out over 10 years beginning in 2022 as will be the case if the bill is passed), the ratio of the stock of nondefense infrastructure to GDP would be about 0.64 rather than the actual value of 0.61. This gets the ratio back to its value in 2013.

These numbers thus suggest that the infrastructure bill is quite modest. Much more investment would be needed to get the ratio back to even its average over the period. Oh for a bullet train from Boston to Washington D.C.!

Figure 1
Ratio of Nondefense Infrastructure to GDP
1950--2019

