1. AS-AD-LRAS for Republican tax cuts / expenditure package. $150 bil first year then $400 bil second year (data from CFRB)
   - abstract from growing US economy, recently 4.5% so can round to 5% for back-of-the-envelope calculation
   - so absent fiscal stimulus nominal GDP would be about $21 tril at end-2018 and $22 tril at end-2019
     - = Year 1: $150 → $300 **post-multiplier**

       Year 2: $400 so extra $250 bil → $500 **post-multiplier**
     - = $20 tril so grows to $20.8 tril 8/20 = 4%
2. Lead / lag
   - annual budget process, normally work begins end of previous calendar year with target of passage by start of US fiscal year (begins Oct 1st – why Oct 1st? because in 1834 it was shifted from Jan 1 to July 1 and in 1974 to Oct 1 [effective 1976] because Congress was perennially late in passing a budget, the later date allowed time after summer recess). any changes after summer won't make it in until the following year.
   - then implementation. Federal contracting for road construction – issuing an RFQ, approving bidders, choosing best bid, and then starting work. so easily a 12-month process.
   - but prior to that informational lag, need at least 3 months data absent some sort of crisis, and often more – a deceleration that may or may not lead to widespread job losses, so it takes 5-6 months to really spot that things are deteriorating and not just the result of bad spring weather.

   ∑ early hope of "fine tuning" the economy that was widespread in 1960 proved unrealistic. Congress does not make fine-tuning the budget process around macroeconomic considerations the top priority – they don't even make passing a budget a top priority!

   = some countries have a twice-year process, eg a supplemental budget in Japan. fiscal policy works a *little* better but still suffers from up-front information delays and back-end implementation delays.

   = in crisis many countries have proved able to move quickly. China, India growth only slowed during the Great Recession, it was never negative.

   even in the US we had the ARRA in 2009. it was poorly designed, and worked under the premise that we would have a V-shaped recession, a sharp decline followed by a sharp upturn. the decline was much, much larger than either Congress or the Administration assumed, and there was no sharp upturn.
3. Structural vs Cyclical

   how to judge the stance of fiscal policy? we can't look at the deficit, because that will shrink when the economy is strong, and rise sharply in a downturn. so instead Congressional Budget Office staff build a model of an economy at "full employment" and use that to gauge likely tax receipts, unemployment insurance expenditures and so on. they then can use that to calculate a "structural" surplus or (in the US) deficit, and a "cyclical component" that reflects atypically high or low levels of revenue.
4. Automatic Stabilizers

Fiscal policy is not 100% exogenous. We know that tax receipts fall in a recession, so that while incomes fall taxes also fall. There is unemployment insurance, and even if it's only for 60% of normal pay and expires after 6 months, it likewise mutes the impact of a recession. Medicare and Disability and various other programs also vary in response to the economy.

The net effect is to automatically stabilize the economy, relative to no endogeneity. One illustration: if taxes were 10% instead of 30% then the multiplier would be larger (1/.3 instead of 1/.5) and so a negative shock would be amplified more. In Europe, where taxes are higher and social insurance programs more robust, the automatic stabilizer effect is qualitatively larger. Compare German GDP to US GDP in 2008-2010…

https://fred.stlouisfed.org/graph/?g=iUYV on China vs India vs US

https://www.brookings.edu/interactives/hutchins-center-fiscal-impact-measure/ on cyclical measures