# The Consumption Assumption

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GDP = Consumption + Investment + Net Exports + Government Spending. This is the standard formula for determining GDP. Not figured into this equation is, of course, debt. GDP is an income statement, not a balance sheet. Technically speaking (for purposes of calculating GDP), it doesn't make any difference if ballooning debt is propping up GDP.

Consumption, investment and government spending all represent capital outflows, money we spend or invest. Net exports represent the net amount of capital we send abroad (from buying imports) and the capital that comes in from other countries (from selling exports). Today we are sending more capital out than is coming in. Net net, since more money coming in than going out would always seem better, it doesn't appear we're very capital efficient when it comes to trade. But, what about the capital efficiency of those other GDP components?

Well, maybe we should first define capital efficiency. The Armchair's definition of capital efficiency is ***capital's ability to engender greater economic value than its basic transaction value.*** In other words, the more economic value $1 of capital outflow creates, the greater is its capital efficiency.

***The most efficient capital outflows are those that enable greater productivity*** because historically, greater productivity has led to greater earnings, which are supposed to trickle down to greater wages, more investment and more consumption. All this is economically stimulating.

The Armchair has previously opined on the efficiency of capital outflows to infrastructure. Building worthwhile infrastructure is highly capital efficient because it increases productivity; but the maintenance of infrastructure is considerably less capital efficient. Maintenance capital outflows just maintain productivity that has already been captured. That's why they call it maintenance. It's a necessary fixed cost to maintain productivity.

The replacement of infrastructure is generally not as capital efficient as original infrastructure development. In order for replacement to be highly capital efficient, it has to increase productivity. Replacing a two-lane highway with another two-lane highway doesn't normally increase productivity. Replacing it with a much-needed four-lane highway would be more worthwhile. So some replacements can be highly capital efficient while others may not be any more valuable than maintenance.

And of course developing and/or replacing unproductive infrastructure is hugely capital inefficient. Building bridges to nowhere or inefficient passenger train systems is capital destructive. Not only are these assets not increasing productivity, they also still need to be maintained. And replacing adequately performing infrastructure is also capital inefficient. Shovel ready projects that don't increase productivity are at best only capital efficient as maintenance.

Keep in mind that as we increase the size of our infrastructure we also increase our fixed costs because infrastructure needs maintaining. The bigger the institutional infrastructure, the higher the institutional fixed costs. This is extremely important to understand when considering an economy's flexibility. The larger the infrastructure, the higher the fixed costs, so the less the economic flexibility.

The general takeaway should be that once an economy has mature infrastructure, capital efficiency declines, making it harder to match the growth rates achieved when productivity was initially being

captured. All we need to do is compare the growth rates of the U.S., where productivity-increasing infrastructure is mature, to those of China, where productivity-increasing infrastructure is still rapidly developing.

Let's consider productivity a bit further. In addition to institutional infrastructure that increases productivity, there is also personal infrastructure that does the same. Our first car purchase was a personal infrastructure investment. That first car increased our personal productivity. All our first appliances did as well. And just as with institutional infrastructure, when increasing our personal productivity we should be increasing our earnings, which in turn allows us to consume or save even more, which should be economically stimulating.

Consumption that increases personal productivity shares similar economic dynamics with those of institutional infrastructure. It is initially economically simulative. But, maintaining our first car is just maintaining the productivity we already captured. And our second and subsequent cars mostly just maintain the productivity already captured by the first. So just as it does with institutional infrastructure, the capital efficiency of consumption drops after productivity has already been captured.

The takeaway seems to be that capital outflows are at their highest efficiency and value when consumption, investment and government spending are simultaneously increasing productivity. As consumers buy more cars, we need to build more car factories and more highways. The process of building more car factories and highways increases employment and wages, which gives more people the ability to afford cars. All three of these GDP inputs are using large amounts of capital to increase productivity.

This is the virtuous growth cycle of middle class development, which the Armchair has previously described as the rural farm to urban factory economic transition. When capital is at its highest efficiency, we experience our highest economic growth. This would describe the mid 1940s through the early 1970s in America and Europe.

A more recent example of this is the 1990s. Institutional technology and telecommunications infrastructure was growing alongside consumer purchases of computers, cell phones and Internet connections. Productivity capturing infrastructure was developing at the same time as productivity capturing consumption. Each fed the other until we reached a point of general market saturation.

When we reach that point of saturation, we reach a plateau of capital efficiency. More capital outflows are then going to maintenance and replacement, both of which are less capital efficient. And as capital efficiency declines, we get slower organic growth. But now we also have higher fixed costs associated with maintaining the infrastructure whose productivity value has already been captured.

High growth periods also become addictive. Productivity growth spreads more profit around the system. The resulting prosperity can dull our economic senses. Assuming high growth will continue, we are prone to increasing our fixed costs even further by turning what were once wants into needs. Luxuries like $250 jeans, $5 cups of coffee and 400-station cable television become a "necessity."

So after productivity expansion matures, we begin to use capital less efficiently. This is not a huge problem if there is still ample runway to grow a middle class. Here again we can look to China. At this point in time, China can waste some money on see-through buildings and factories that overshoot market demand, and their banks can make bad loans because there is still plenty of future productivity

growth to stimulate their economy. China might certainly experience a cyclical correction, but at the moment, they still have plenty of organic growth runway before their middle class matures.

This is obviously not the case today in the U.S. and Europe. These are societies with mature infrastructures. These are societies with a mature middle class. Both institutional and personal fixed costs are high. At best, most capital outlays in these societies are used for replacement and maintenance. At worst they are used for luxury. Some luxury is okay and natural, but too much consumption of luxury is highly capital inefficient.

This is the current story of many developed market economies. Too much capital is going to maintain and replace the productivity previously captured, or worse, is going towards the consumption of too much luxury. Efficiency of capital is not great, so in order to maintain our higher growth period lifestyles and afford our higher fixed costs, we have to borrow more and more money. We're borrowing money to maintain, to replace and to afford wants that we have turned into needs.

It is no wonder organic economic growth seems impossible to come by. The inefficiency of capital outflows for maintenance, replacement and luxury is compounded by leverage. Traveling down this path too far becomes a trap, where only higher and higher leverage can sustain an economy.

Now we're playing a game of economic Monopoly, kicking the can down the road again and again and again, hoping that somehow, somewhere, some new growth will magically appear. But the waves of productivity-inspiring innovation are not predictable, or at minimum, not totally under our control. There was no government program that developed the PC, cell phone or search engine. The defense department did originate an early version of the Internet, but that innovation was not economically inspiring until private sector ingenuity developed the tools to use it.

The consumption assumption in our GDP formula suggests that all capital outlays, whether consumption, investment or government spending, are of equal economic value. Each gets calculated as an absolute value, but they are not of equal capital efficiency, so not really of equal economic value. Once productivity-capturing infrastructure is mature, an economy will grow more slowly. And borrowing money to maintain and replace infrastructure, or worse, to consume wants we have turned into needs, is a huge economic drag.

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