

# GDP, Savings, and Loanable Funds<sup>1</sup>

## Instructional Primer<sup>2</sup>

GDP, Savings and the Loanable Funds Market are instruments through which we can connect certain aspects of fiscal policy and monetary policy, both of which are important in macroeconomics. In many Macro texts (including Krugman), we begin with a basic study of microeconomics and then transition to macro. We do this because the mainstream view is that good macroeconomics should have micro foundations, and one of the easier ways of illustrating this is through a discussion of the components of markets (individuals, households, and firms) and economies (the economic make up of nation states) – which can be observed through GDP, Savings and the Loanable Funds Market.

GDP is a nation's output, or its income. We know that it can be calculated in three ways:

1. By measuring the value added in each step of the production process – which really is just a process of accounting for the inputs to production and the profits generated; remember that total costs plus profit equals total revenue and when we're looking at GDP we're looking at total revenue.
2. By measuring all of the factor input payments – which is barely different than the description above. In this we account for all of the factor input payments (which include costs and profits) and include investors' capital as an input, the payment for which is their profits.
3. By measuring consumption, investment, government spending and net exports – again each of these embodies costs and profits.

In this introduction we're going to focus on GDP as a function of  $C + I + G + \text{Net Exports}$ .

$$\text{GDP} = C + I + G + X - \text{IM} \quad (1)$$

$$G = T + B + \theta \quad (\text{T}=\text{tax receipts}; B = \text{borrowing}, \theta = \text{high powered money insertion}) \quad (2)$$

$$\text{Autarky: } I = S_{\text{national}} \quad (3)$$

$$S_{\text{national}} = S_{\text{federal}} + S_{\text{private}} \quad (4)$$

$$S_{\text{federal}} = \text{Budget Balance}^3 = T + \theta - G \quad (5)$$

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<sup>1</sup> This primer is intended to present an abbreviated discussion of the included economic concepts and is not intended to be a full or complete representation of them or the underlying economic foundations from which they are built.

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<sup>3</sup> When the Budget Balance is negative (-) there is a **budget deficit** ( $S_{\text{federal}}$  is actually *dis-savings*), when it is positive (+) there is a **budget surplus** ( $S_{\text{federal}}$  is actually savings), and when it is zero (0) the **budget is balanced**. When  $\theta = 0$ ,  $S_{\text{federal}}$  is  $-B$ ,  $-1 \times B$ , or the opposite of borrowing (B).

$$\text{In trade: } I = S_{\text{national}} + \text{NCI} \quad (6)$$

In autarky Investment = Savings; with trade Investment = Savings + Net Capital Inflows (NCI)

$$\text{NCI} = \text{IM} - X \quad (7)$$

Rearrange (1) to isolate I (investment)

$$I = \text{GDP} - C - G + \text{IM} - X \quad (8)$$

Substitute (6) into (7)

$$I = \text{GDP} - C - G + \text{NCI} \quad (9)$$

From (6) and (9) we see that

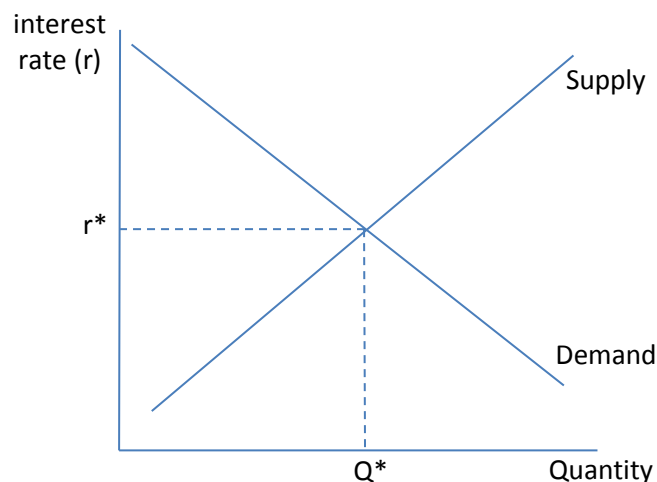
$$\text{GDP} - C - G = S_{\text{national}} \quad (10)$$

Which makes sense: a nation's savings is equal to its GDP (income) minus C (consumption) minus its G (Government spending)

All of this is to simply give us a more clear view of loanable funds, which is relevant when it comes to monetary policy and it may be viewed as the connection between fiscal and monetary policy. Each of the elements examined above is an element of fiscal policy except  $\theta$  (high powered money), which is a strictly monetary variable and in the US is the purview of the Federal Reserve. We've argued that fiscal policy is exercised by the Executive and Legislative Branches of the Federal Government while monetary policy is exercised by the nation's Central Bank (Federal Reserve). But we know that borrowing (B) can be effected through the US Treasury (Executive Branch) through the issuance of federal bonds (debt) and the Federal Reserve as they purchase these bonds – so borrowing can be both a fiscal and monetary tool. But high powered money ( $\theta$ ) is exclusively monetary and can only be manipulated by the Federal Reserve. Both  $\theta$  and B have direct impact on the loanable funds market.

### The Loanable Funds Market

Think about the loanable funds market: the supply of funds available to be loaned to consumers, firms and government as compared to the demand for funds to be loaned.



Consumers borrow money to meet demands arising from a belief that purchases today will yield greater utility in the future, enough greater to justify the cost of borrowing. Firms borrow based on a belief that investments in materials, inventory or capital today will yield profits in the future greater than the cost of borrowing. Governments borrow based on a belief that investments in infrastructure, defense, transfer payments, etc. today will yield greater social welfare tomorrow than the cost of borrowing.

We can easily envision that fiscal policy as directed by the US Congress has a direct impact on both demand and supply in this market. But we can also see that the Federal Reserve has direct impact as it sets interest rate targets and is capable of expanding and contracting the supply of money in a marketplace, which marketplace is no longer simply the US, but includes the entire world.

If firms expect increased opportunities for future profits, then they're likely to expand their borrowing to take advantage of these opportunities such that it increases the demand for loanable funds: shifts the demand curve to the right and yields an increase in both  $r$  and  $Q$ . A government's decrease in its budget deficit (borrows less money to fund expenditures) results in a decreased demand for loanable funds: shifts the demand curve to the left and yields a decrease in both  $r$  and  $Q$ . As such, we see that changes in the demand for loanable funds are positively correlated with changes in  $r$  and  $Q$ .

If households increase their consumption such that household savings declines (remember that household supply labor and financial capital to the markets) then we see the supply of loanable funds shift to the left, resulting in an increase in  $r$  and decrease in  $Q$ . When a central bank (Federal Reserve) increases the money supply through the purchase of bonds we see an increase in the supply of loanable funds such that the supply curve shifts to the right, yielding an increase in  $Q$  and decrease in  $r$ . As such we see that changes in the supply for loanable funds are positively correlated with changes in  $Q$  (as supply increases  $Q$  increase) and negatively correlated in changes in  $r$  (as supply increases,  $r$  decreases).