Watching the River Flow,

Macroeconomic Performance in Cubic Feet Per Second

As we entered Riggins, Idaho, in late August, we read on the handcrafted sign, an Idaho “reader board,” that the flow that day in the Salmon River would be 3,200 cfs. We would have to avoid many exposed rocks in the river, but with skilled boat guides, even a group of aging college professors on the Dean’s retreat would have a good float and plenty of fun in the rapids. This was a low flow for the Salmon at Riggins. Some in our party noted that normally at this time of year the flow was 8,000 cfs, and at flood stage in the spring, often over 100,000.

Flows are very important in running rivers, and also in economics, especially macroeconomics. A flow is a magnitude with a time dimension. Flows are not to be confused with stocks. Here, I don’t mean common stock indicating ownership in a corporation, but merely a hunk of something, a mass just sitting there. In water resources a stock of water would be measured in gallons, or cubic feet, or in acre-feet, the amount of water it takes to cover an acre to a depth of one foot. In economics, the amount of money in an economy at a particular time is a stock, as is the amount of other assets owned by people, their wealth.

Monitoring the performance of an economy is much like watching a river. Flows are often more important and interesting than stocks. The amount of water trapped behind the ice dam in the ancient Lake Missoula is not as interesting as the great Missoula flood, which scoured and drained the Inland Northwest with daily flows equal to that of annual flows of all the rivers of the world today. It’s not the amount of water
behind a concrete dam that is important, but the flow through the turbines generating electricity, or the flow flushing salmon smolts to the sea, or the amount used by households, measured, say, in gallons per capita per day. Gross domestic product is a flow, as is national income, the total product or income of an economy in a year.

Given the importance of flows in both water resources and economics, we use many hydrologic metaphors in macroeconomics. We demonstrate the circular flow of income with something called the circular flow model, appearing on about page 50 of most encyclopedic economics texts. We talk of injections to and leakages from the circular flow of income. An overheated economy “lets off steam,” a flow changing the form of matter. A “rising tide lifts all boats,” is another.

So imagine an economic river. Let’s call it the Real GDP River. We measure the flow rate in dollars per year, dollars with constant purchasing power. Upstream from our river gauge, we have some tributaries and some diversions, as well. The four main tributaries are streams called consumption, investment, government purchases and exports. We also have two diversions from the river channel, imports and taxes.

Suppose we have a drought in the Consumption River basin. In the real world, this metaphorical drought might occur if people become grumpy and fearful of the future, and reduce their spending on consumer goods. The flow of the Consumption River, a tributary to the Real GDP River now falls. Other things held constant, what happens to our river gauge on the banks of the Real GDP? The arrow shows a reduction in flow. If the flow reduction lasts for at least six months, we have something called a recession. Luckily, rainfall in the Consumption River drainage is very stable, but not so stable that we don’t want to measure what is happening there. Various real-world organizations like
the Conference Board, a collective of businesses, and the University of Michigan Survey Research Center monitor something called consumer confidence, a measure of current economic precipitation that gives some indication of future flows in the Consumption River.

Let’s now look at the Investment River. It’s much smaller than the Consumption River, but in hydrologic terms it’s much more interesting, with large changes in flow. It’s a very unstable river. Imagine a flash flood on the Investment River. What will happen to our gauge on the Real GDP? Yes, the gauge begins to rise. In the real world, we call this an investment boom.

Use your new knowledge of hydrology to examine changes in flows from the Export River, one that flows into our economy from across the border, and the Import Diversion, water flowing out of the Consumption and Investment Rivers into another economy. Can you see what will happen to the gauge at the river’s edge?

Finally, I want to mention one very important tributary, the Government Purchases River, and one important diversion, the Taxes Diversion. The Government Purchases River is a controlled river, one with dams on it. While much of the flow in the government river is related to what the government does in a society, the river has a very interesting characteristic. It has dams. The federal government can keep its eye on the Real GDP River gauge, and if the gauge is starting to fall, maybe because of a drought in the Consumption River drainage, it can let some water out from behind the dams. As this water moves downstream, we will eventually see the Real GDP River gauge start to rise again. If a prolonged boom threatens a flood, the government can close spillways on the dams and reduce flows on the Real GDP River.
Likewise, the government can control the gate of the Taxes Diversion. If the Real GDP River gauge were starting to fall, the government could close the gate on the Taxes Diversion a little, leaving more water in the Consumption River. This would feed the Real GDP River and make the flow gauge rise. In the real world, this is called discretionary or compensatory fiscal policy. The government watches the Real GDP River gauge, and adjusts flows from the dams on the Government Purchases River, and the flows out through the gate of the Taxes Diversion to compensate for changes in flows in the Consumption and Investment Rivers.

And finally, a note on the history of economic thought. All the dams on the Government River were built after 1936, as were the discretionary gates on the Taxes Diversion. The engineer responsible for design of this system was a British economist by the name of John Maynard Keynes. His blueprints appeared in a book entitled *The General Theory of Employment, Interest, and Money*. Before Keynes, if the gauge on the banks of the Real GDP River fell, the government, upon advice from their “economic engineers” would say, “Flows in the river are going down. Don’t worry. It will rain soon.” The early years of the Great Depression were very dry. The rains came gradually in the 1930s, and the Real GDP River gauge rose again, but the largest jump in the river gauge came from a persistent thunderstorm called World War II.