

Use the keyboard navigation keys to move forward & backward.

You may also use the spacebar to move forward.

Questions? Email dwheat@wheatresources.com

Feedback in the Economy

A First Look at the Significance of
Reinforcing and Counteracting Feedback

Prepared for students in ECO201

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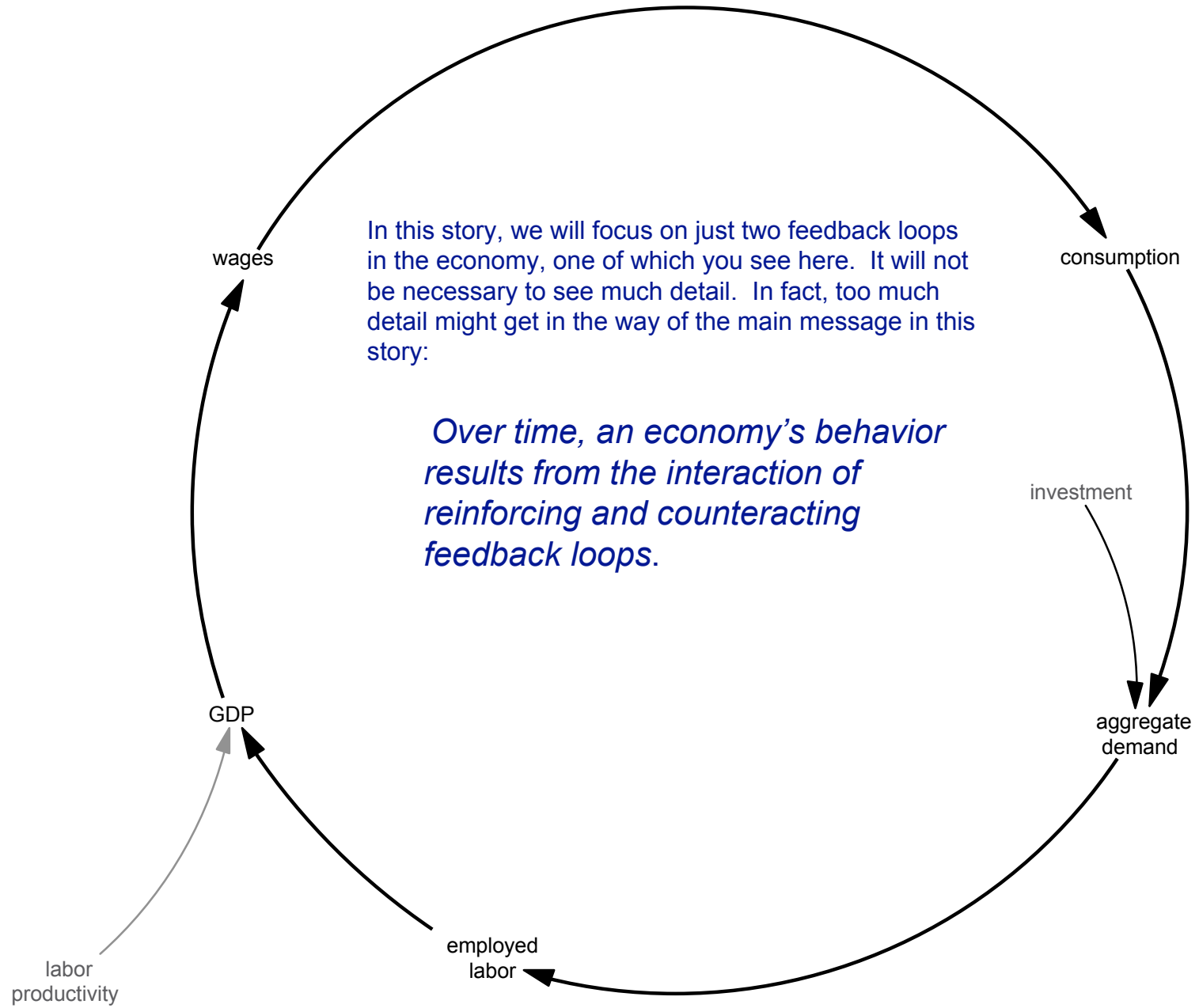
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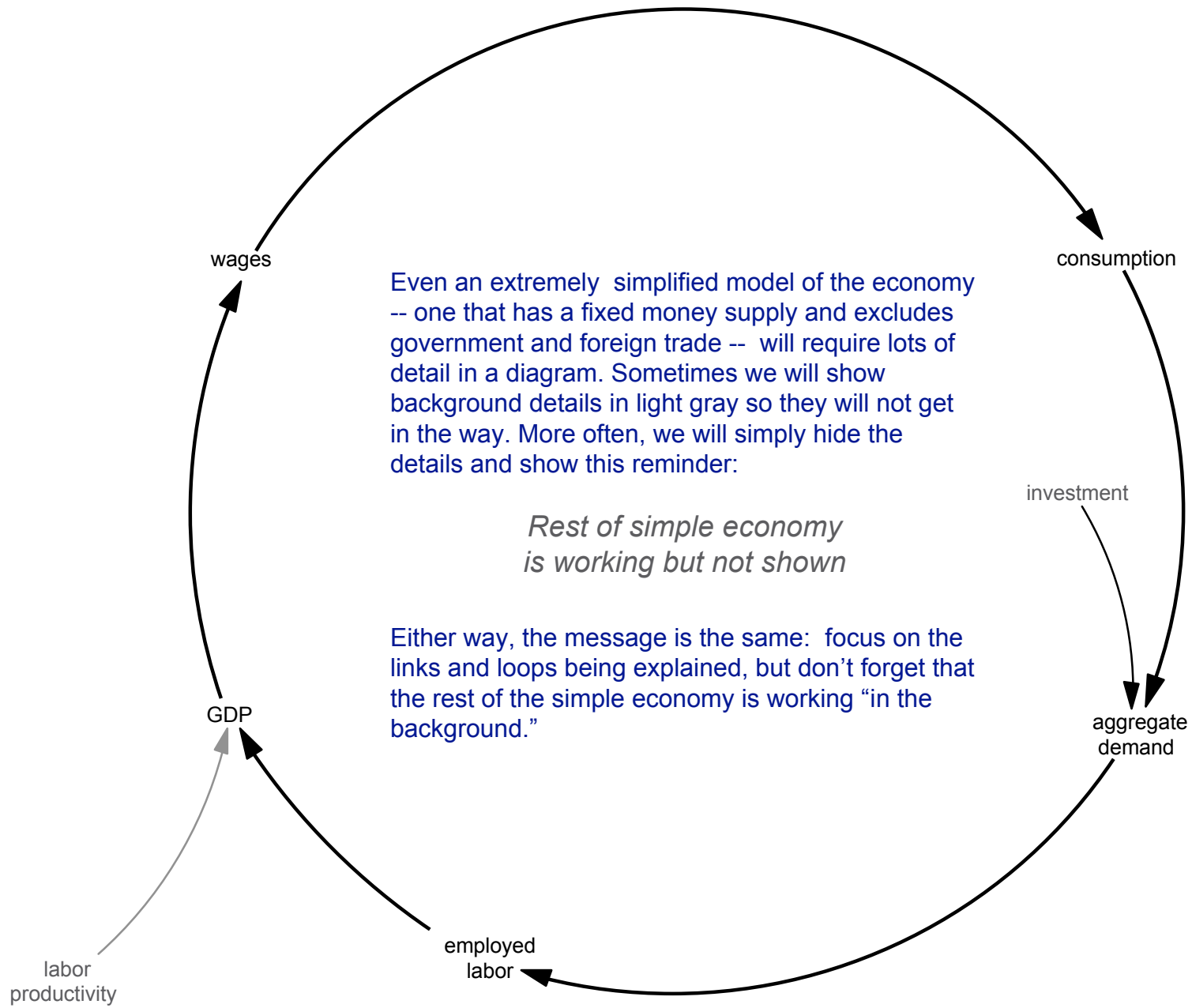
Overview

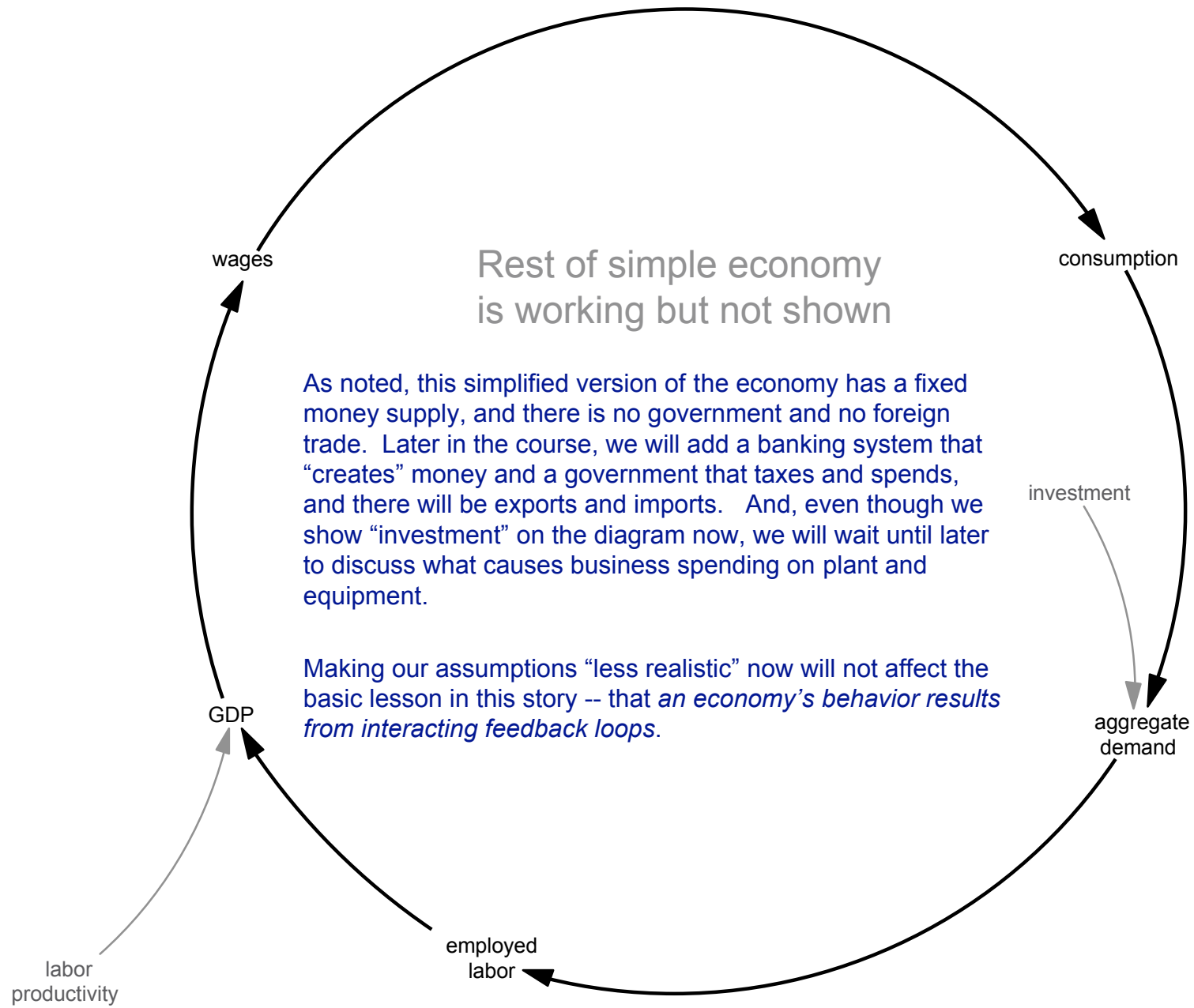
In previous assignments, you studied the *behavior* of an economy -- how GDP, prices, unemployment, etc., change over time. Now you will begin to learn about the *structure* of the economy -- how the pieces fit together to produce the behavior you have seen.

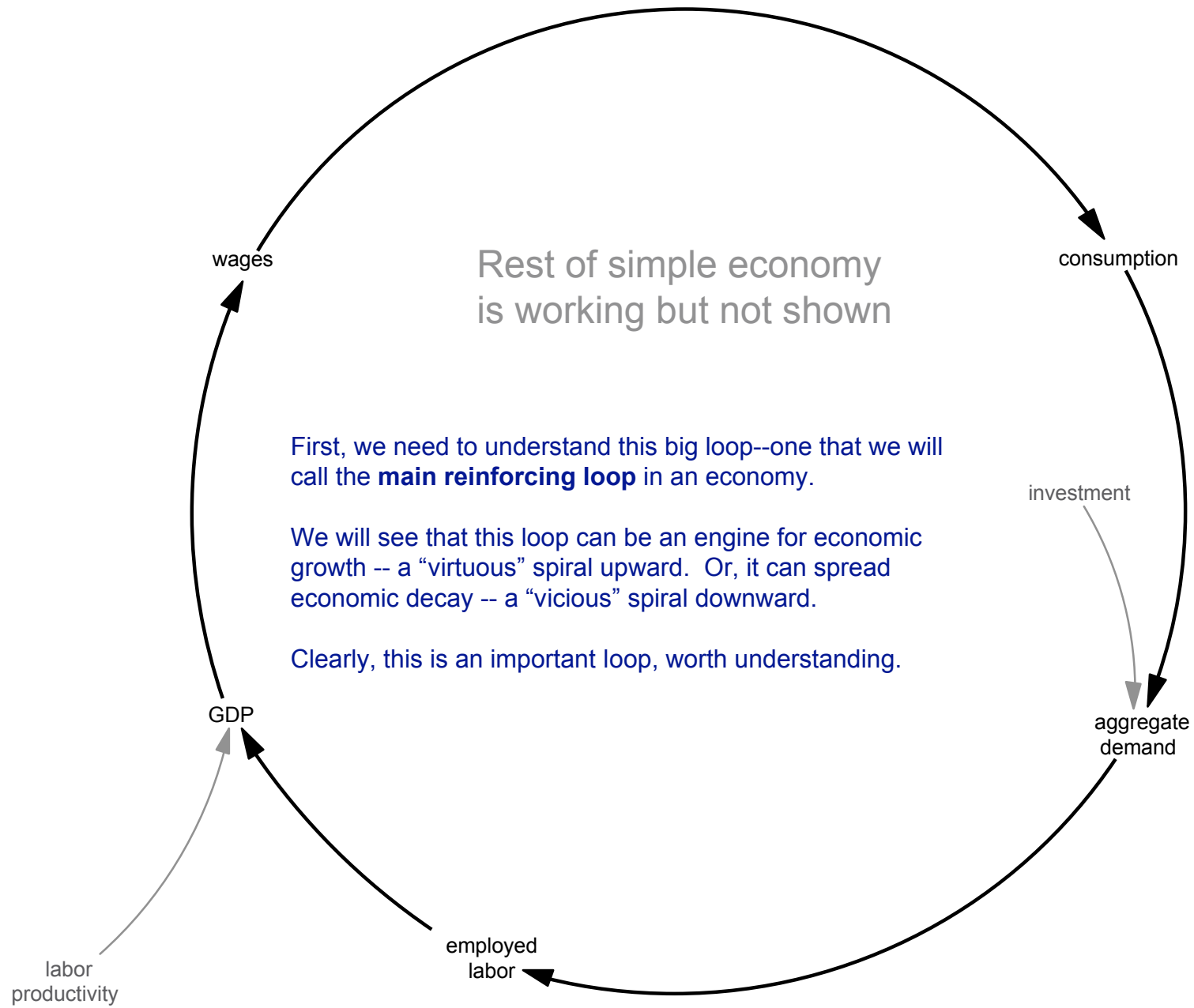
The generic structural feature responsible for the behavior of an economic system is the **feedback loop**: a circular set of cause-and-effect links that operate over time. This particular story is about the **main reinforcing loop** in an economy, and the role of **counteracting loops** as “regulators” of an economic system.

A prerequisite for understanding this story is a good grasp of links, loops, and equilibrium (Tutorials 1-3, respectively). If you feel the need to review these tutorials, be sure to do so, even if that means interrupting this story and returning to it later.



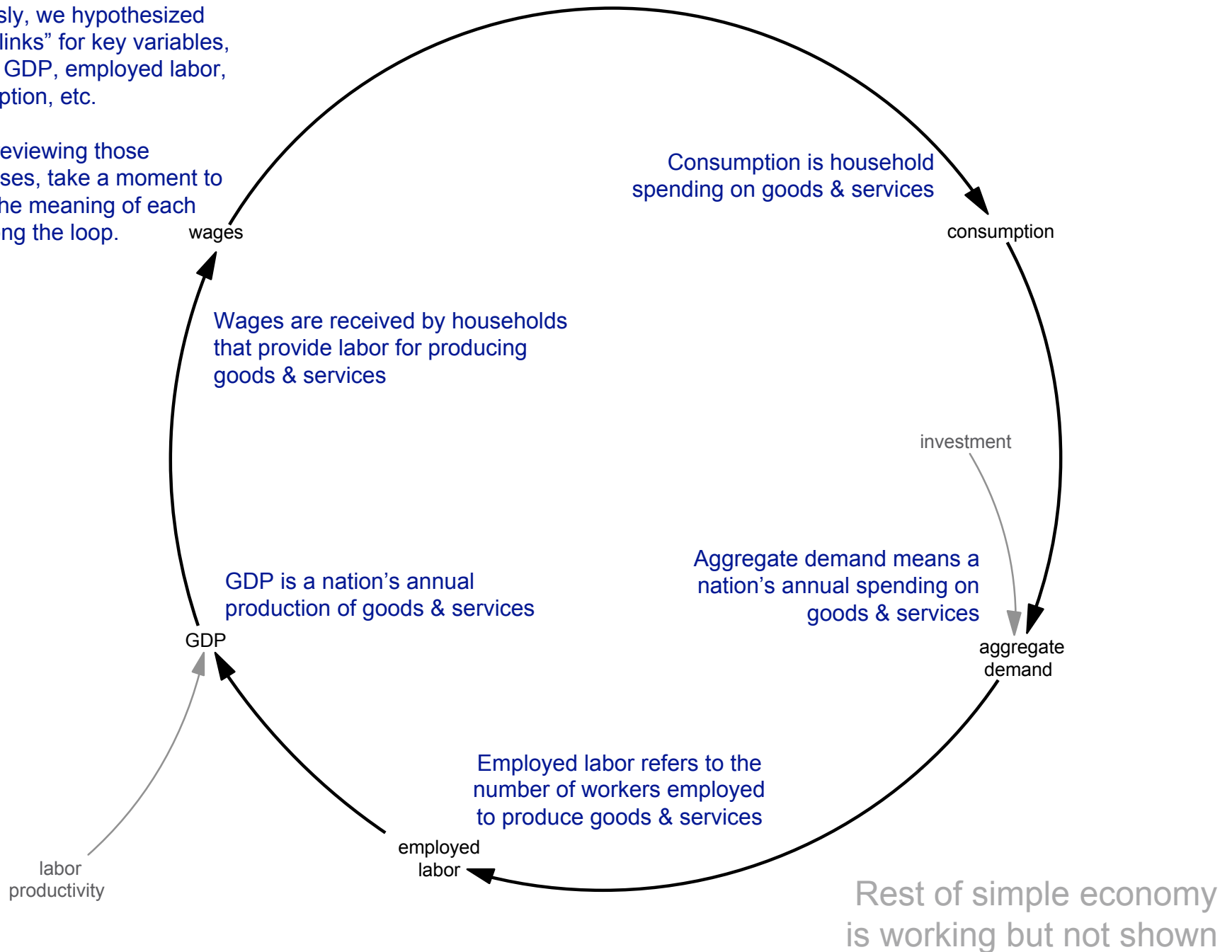


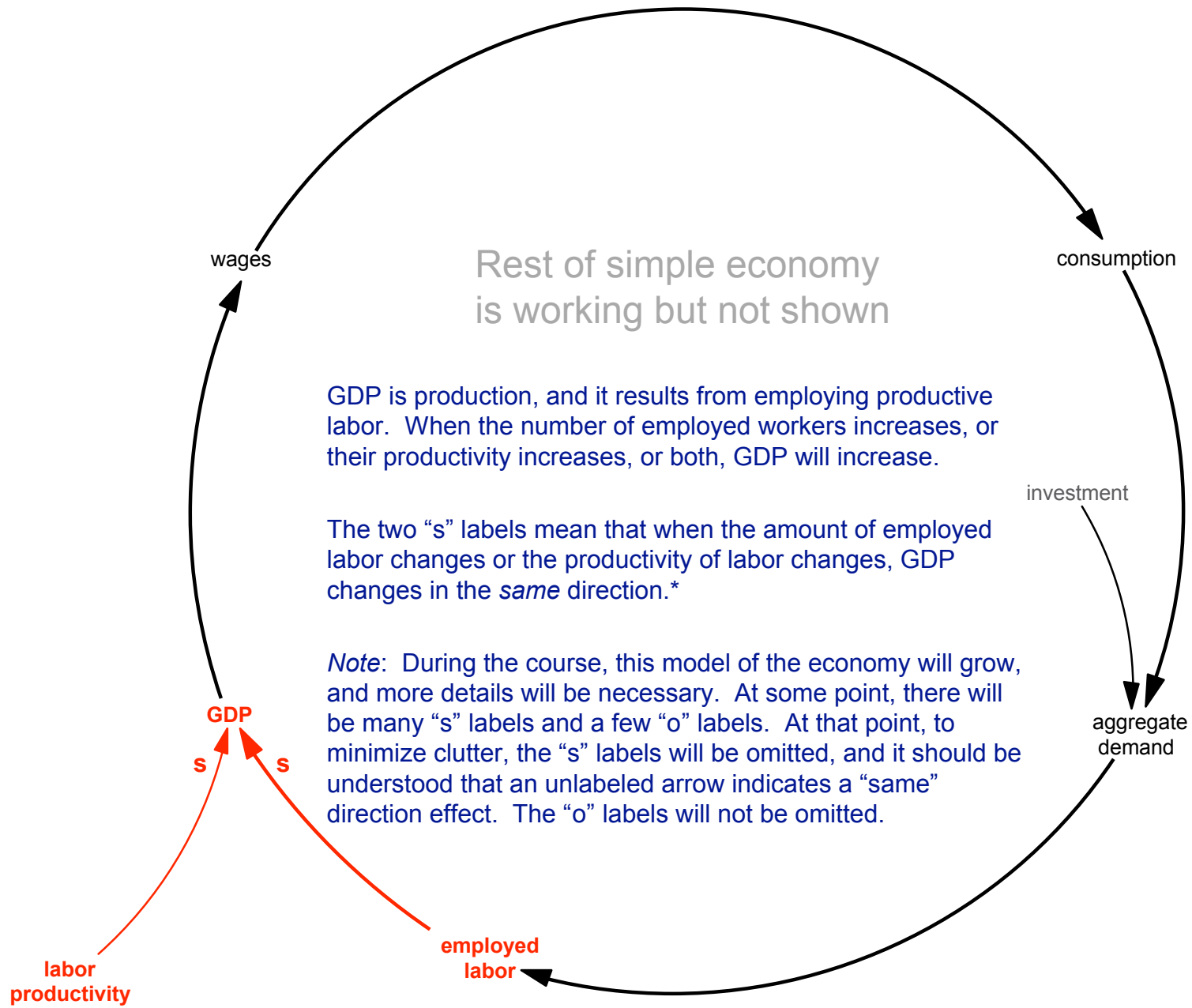




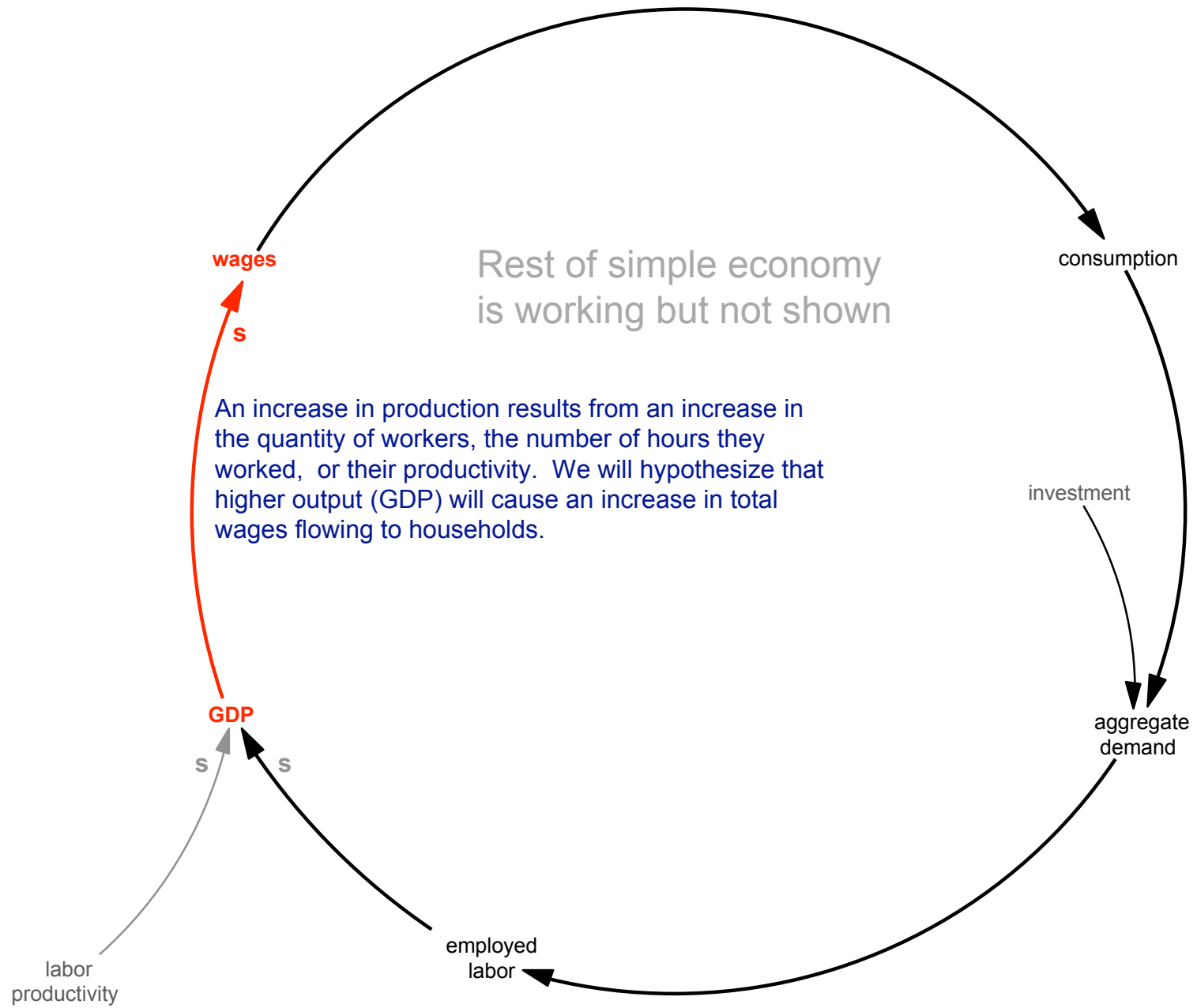
Previously, we hypothesized “causal links” for key variables, such as GDP, employed labor, consumption, etc.

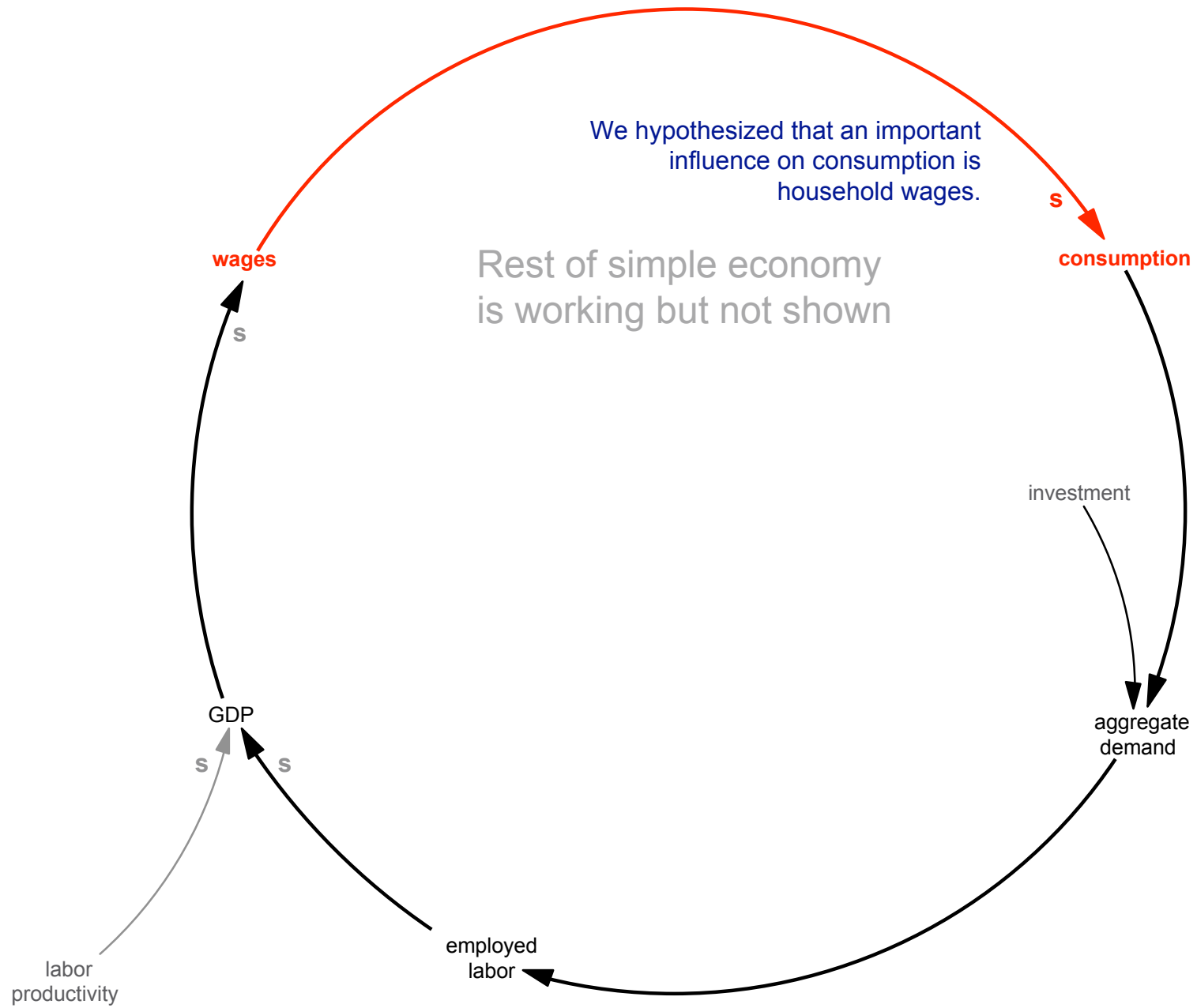
Before reviewing those hypotheses, take a moment to review the meaning of each term along the loop.

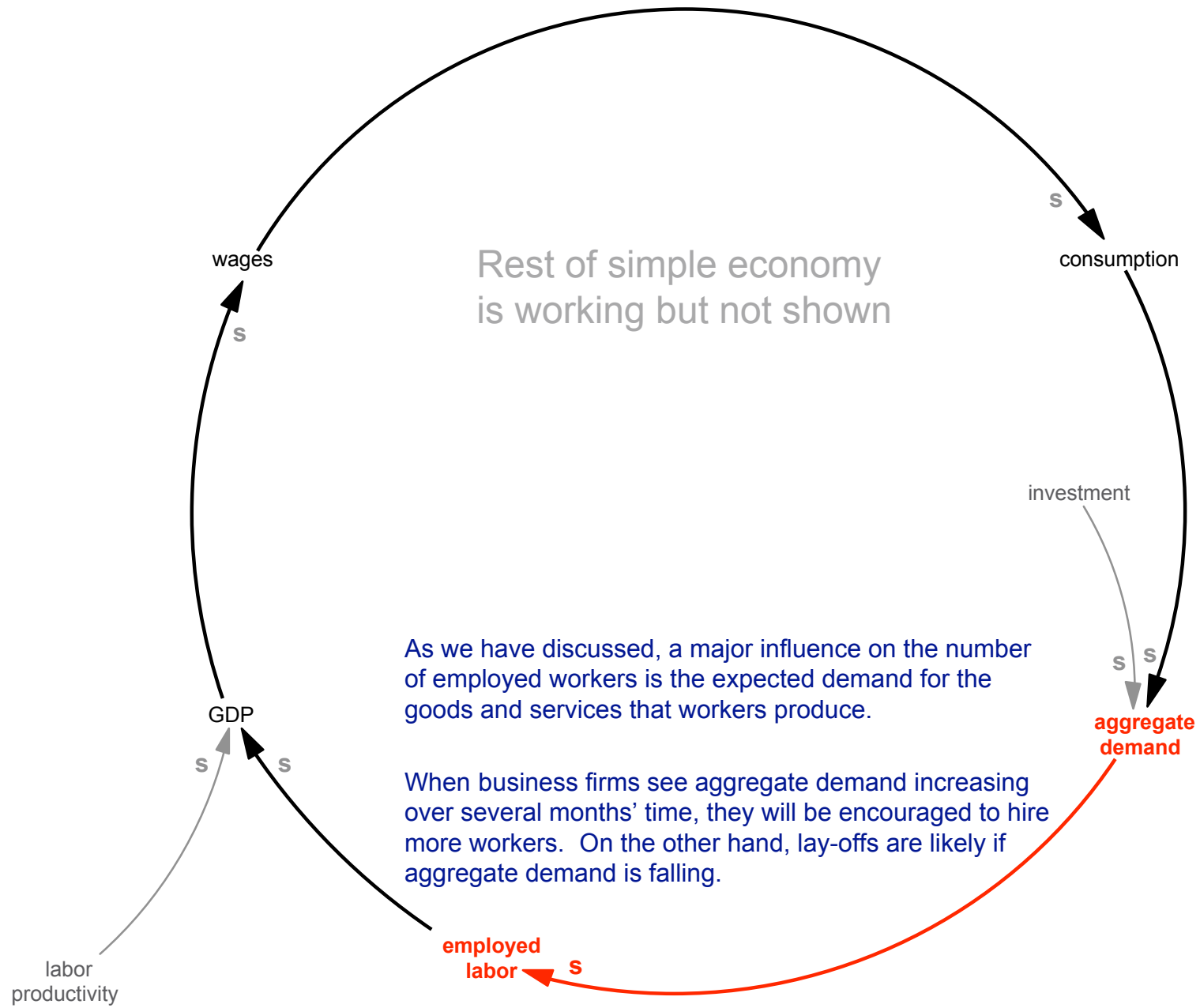




*Review Tutorial 1 if necessary.







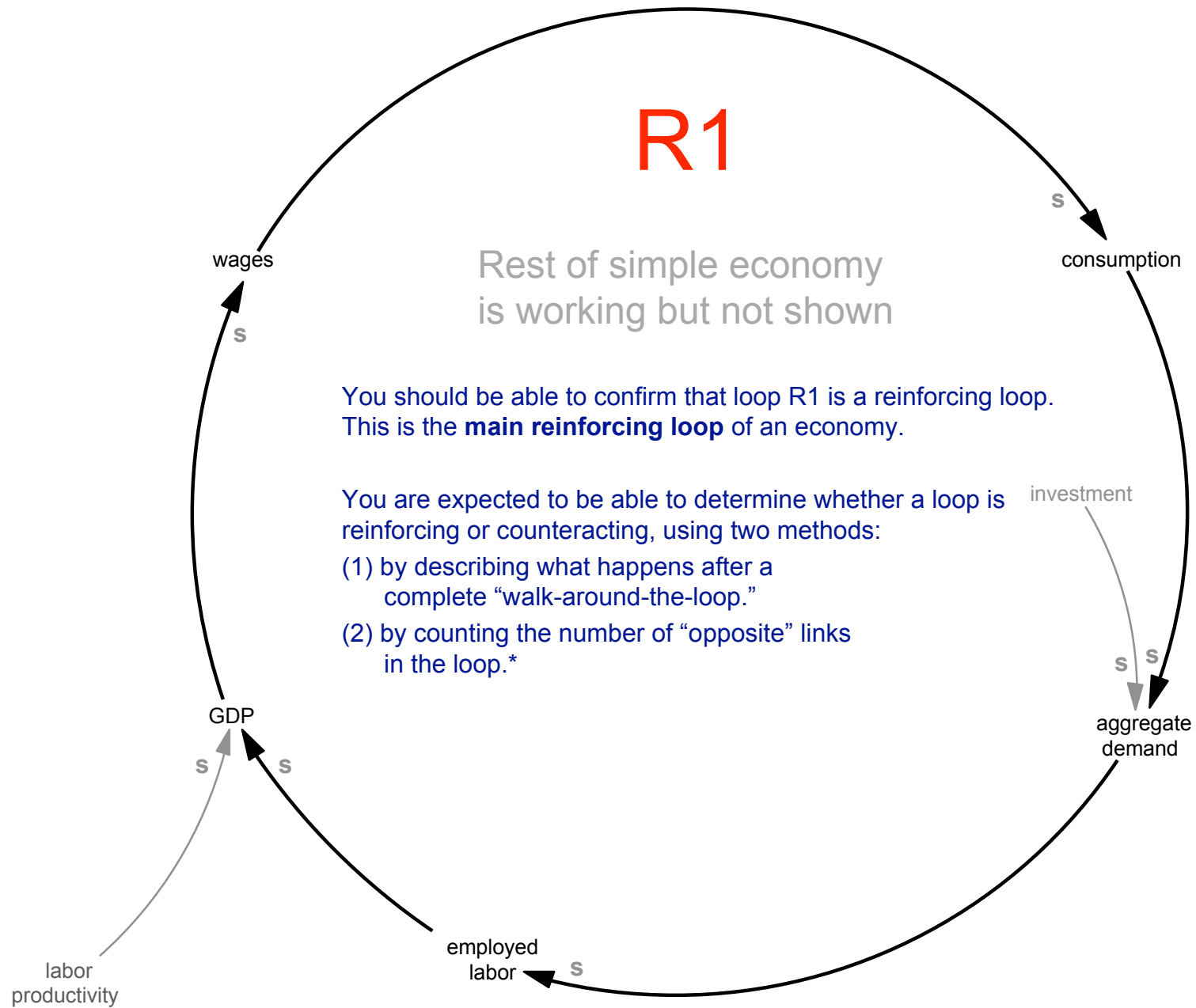
R1

Rest of simple economy
is working but not shown

You should be able to confirm that loop R1 is a reinforcing loop.
This is the **main reinforcing loop** of an economy.

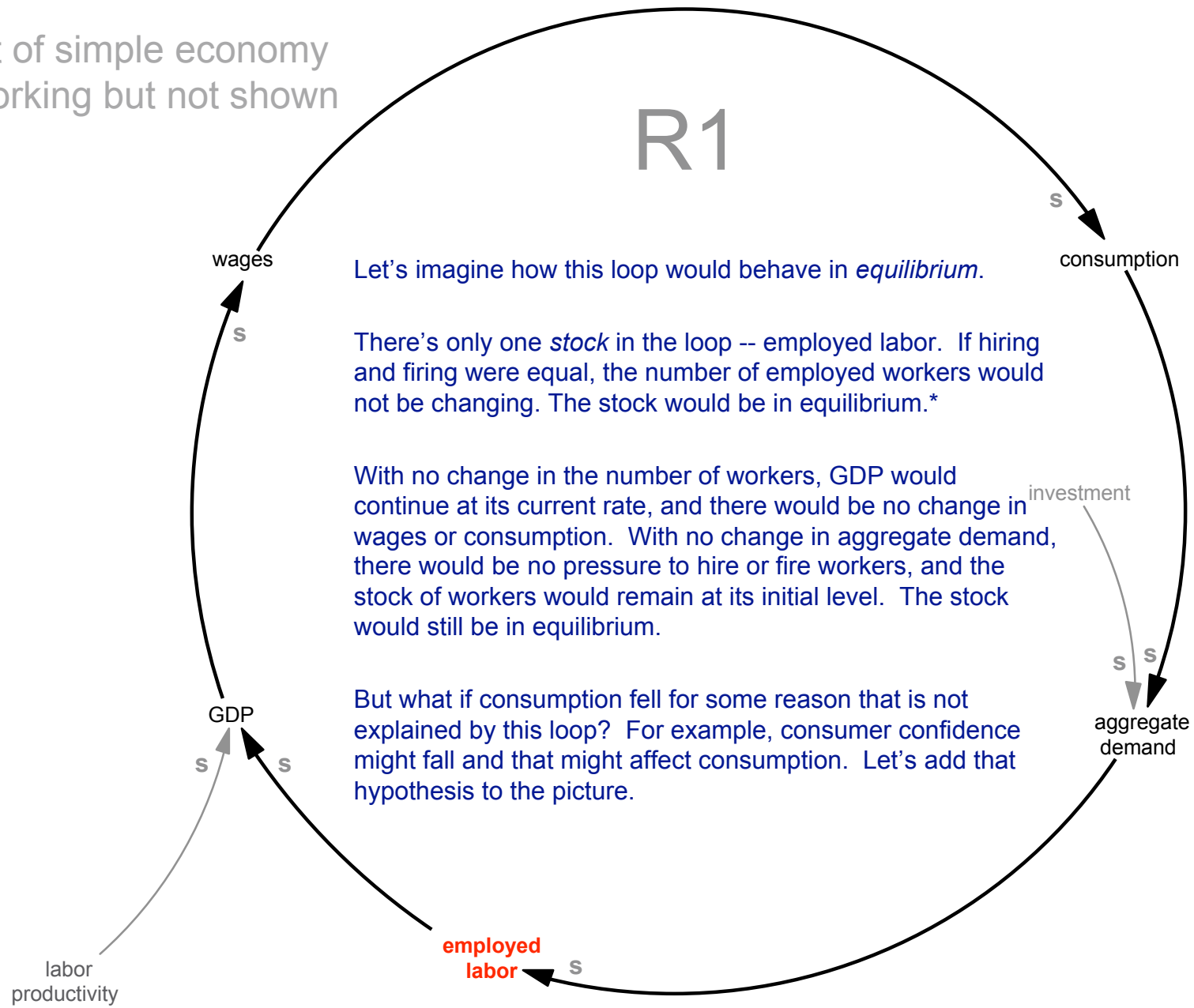
You are expected to be able to determine whether a loop is
reinforcing or counteracting, using two methods:

- (1) by describing what happens after a complete “walk-around-the-loop.”
- (2) by counting the number of “opposite” links in the loop.*



*Review Tutorial 2 if necessary.

Rest of simple economy
is working but not shown



R1

Let's imagine how this loop would behave in *equilibrium*.

There's only one *stock* in the loop -- employed labor. If hiring and firing were equal, the number of employed workers would not be changing. The stock would be in equilibrium.*

With no change in the number of workers, GDP would continue at its current rate, and there would be no change in wages or consumption. With no change in aggregate demand, there would be no pressure to hire or fire workers, and the stock of workers would remain at its initial level. The stock would still be in equilibrium.

But what if consumption fell for some reason that is not explained by this loop? For example, consumer confidence might fall and that might affect consumption. Let's add that hypothesis to the picture.

*Review Tutorial 3 if necessary.

Rest of simple economy is working but not shown

R1

wages

s

consumer confidence

s

consumption

Consumption is likely to move in the same direction as consumer confidence. After confidence falls, we would expect consumption to fall.

Falling consumption would mean lower aggregate demand, which eventually would cause a cutback in the number of employed workers. Fewer workers would mean less production; i.e., lower GDP.

Falling GDP would eventually result in lower wages. Then consumption would decline even further, setting off another round in a vicious downward spiral.

investment

s

s

aggregate demand

GDP

s

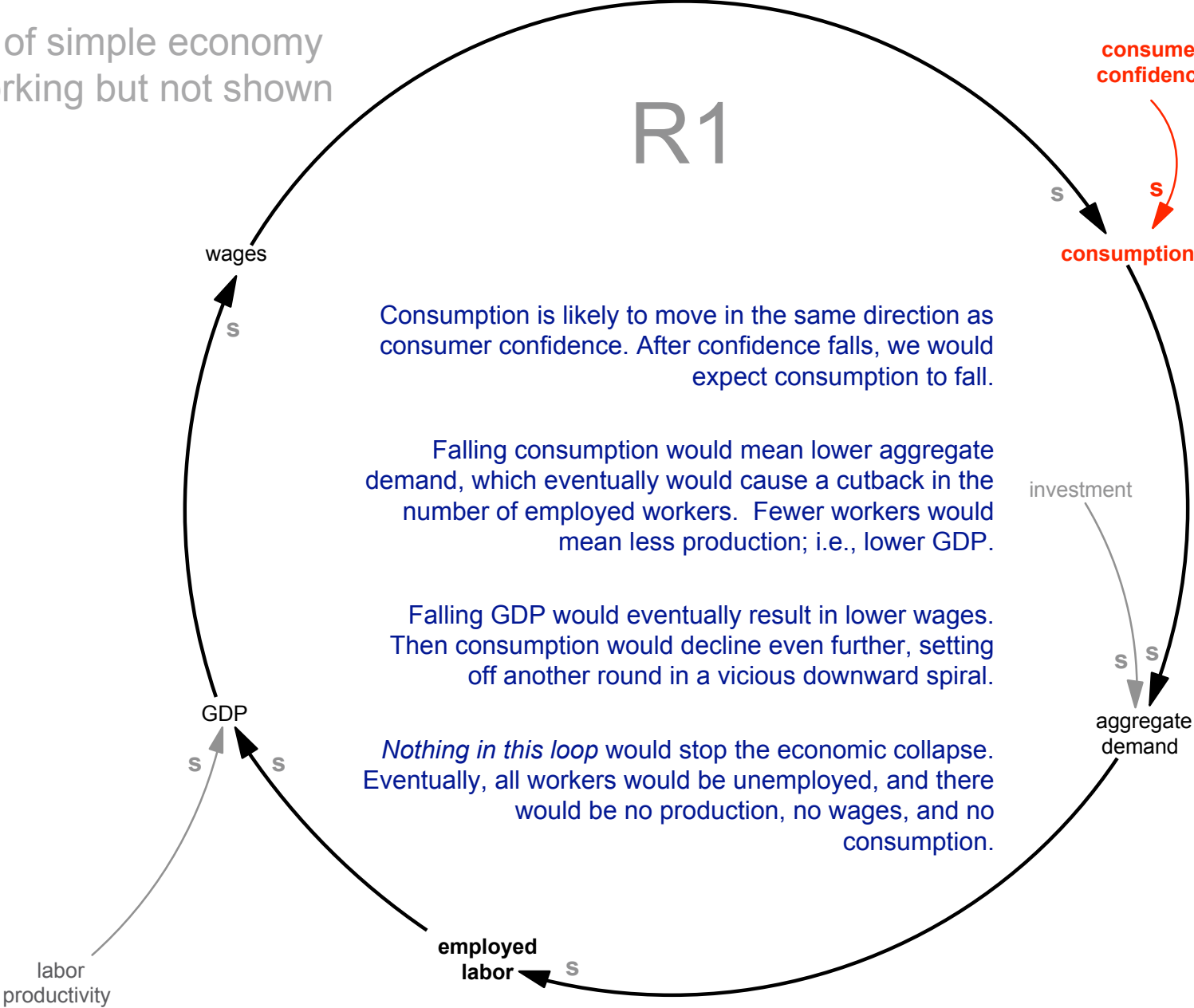
s

Nothing in this loop would stop the economic collapse. Eventually, all workers would be unemployed, and there would be no production, no wages, and no consumption.

labor productivity

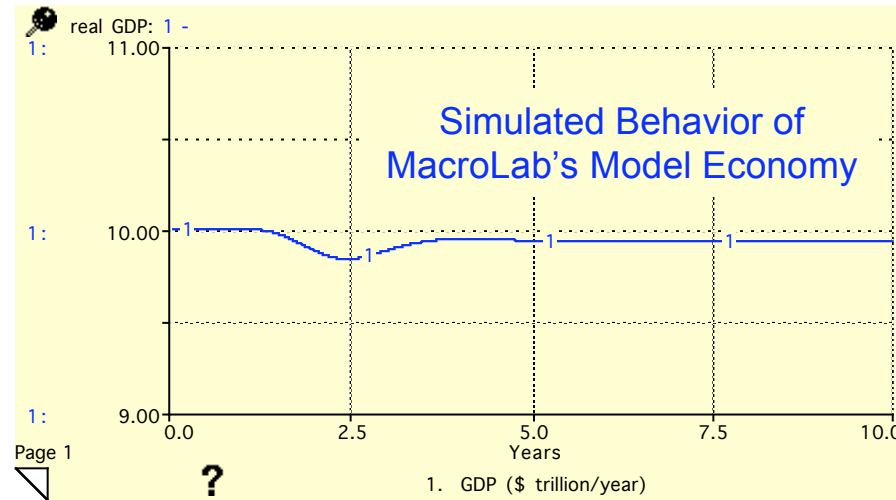
employed labor

s

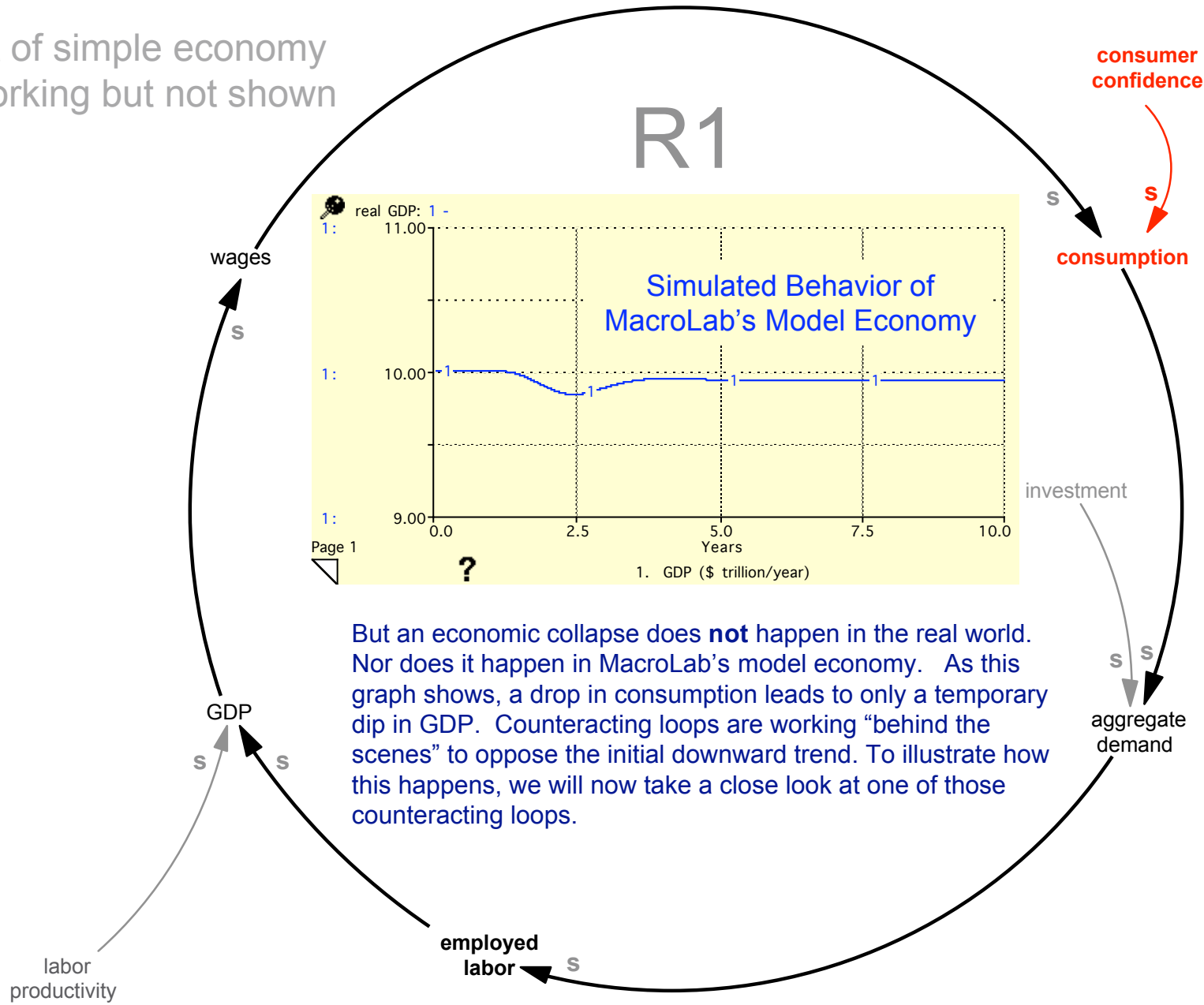


Rest of simple economy is working but not shown

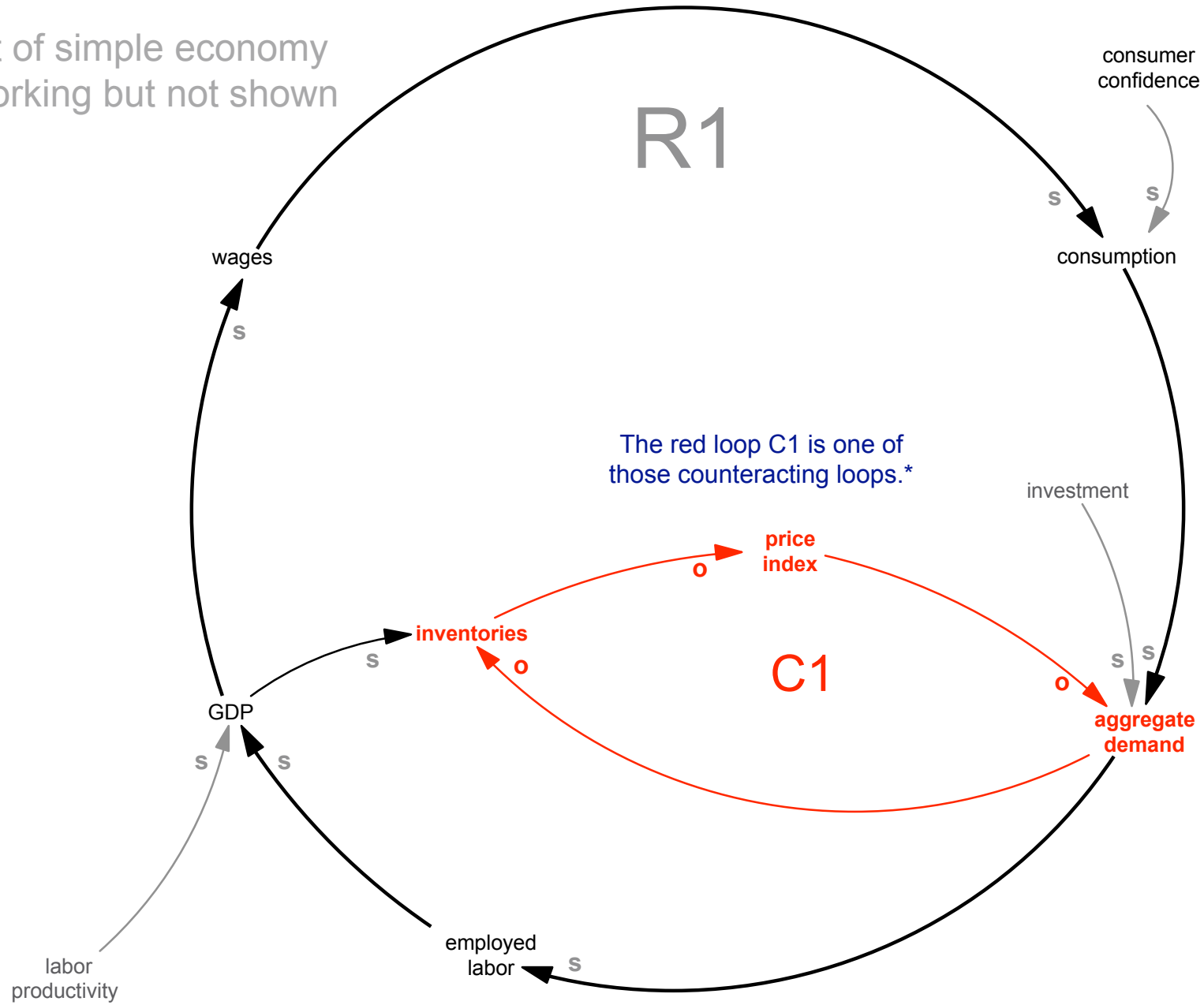
R1



But an economic collapse does **not** happen in the real world. Nor does it happen in MacroLab's model economy. As this graph shows, a drop in consumption leads to only a temporary dip in GDP. Counteracting loops are working "behind the scenes" to oppose the initial downward trend. To illustrate how this happens, we will now take a close look at one of those counteracting loops.

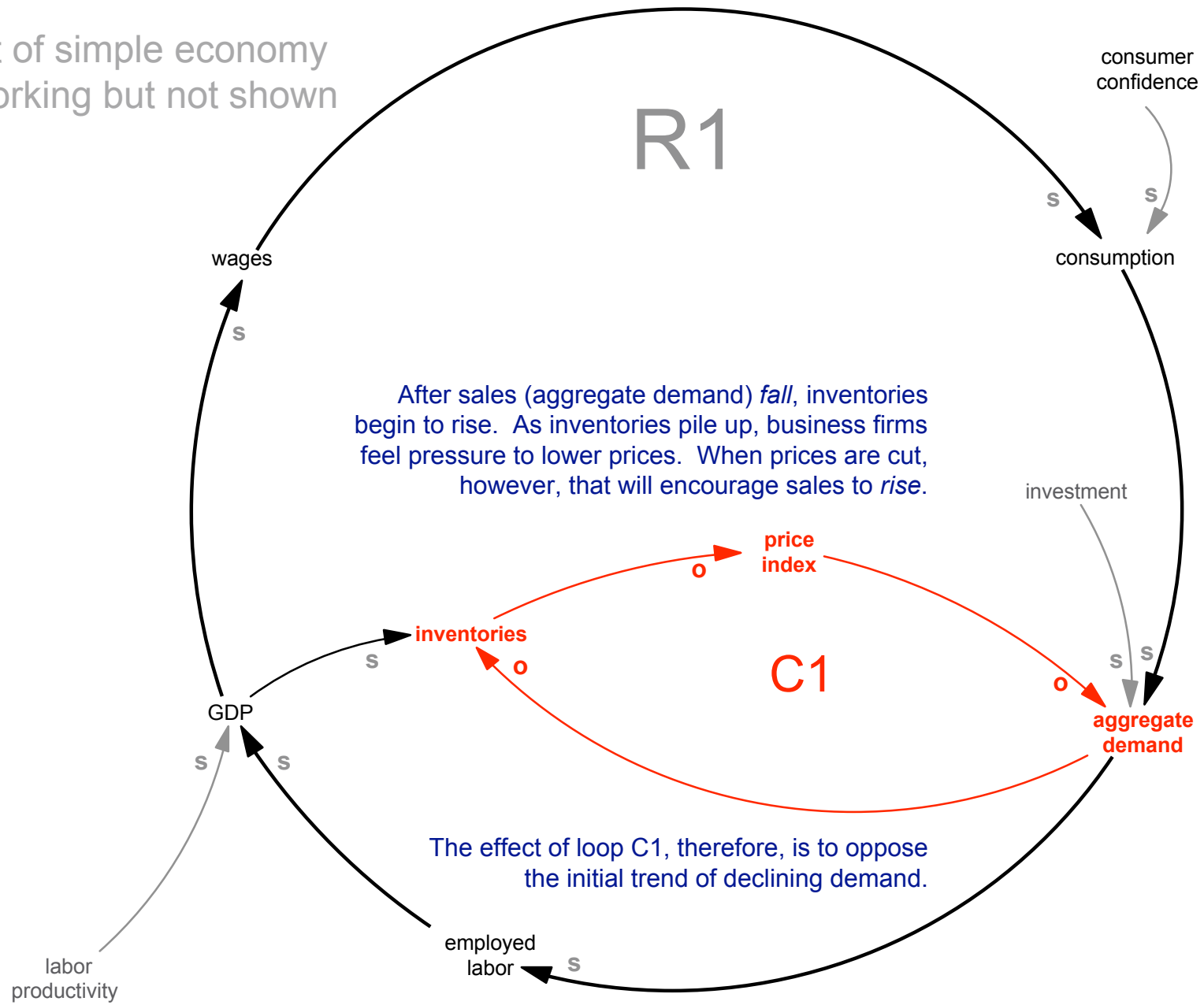


Rest of simple economy
is working but not shown

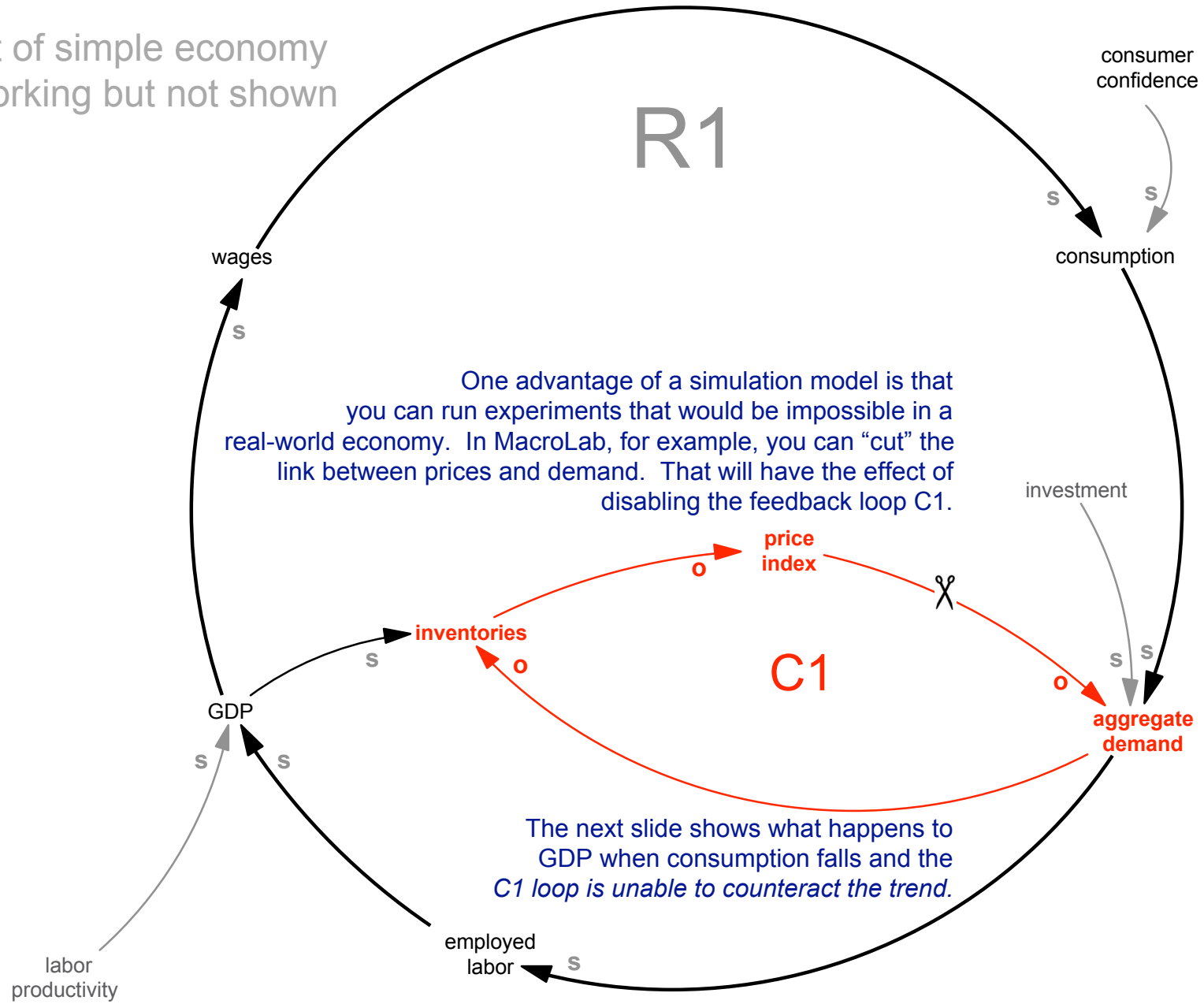


*Be sure you can confirm that this is a counteracting loop.

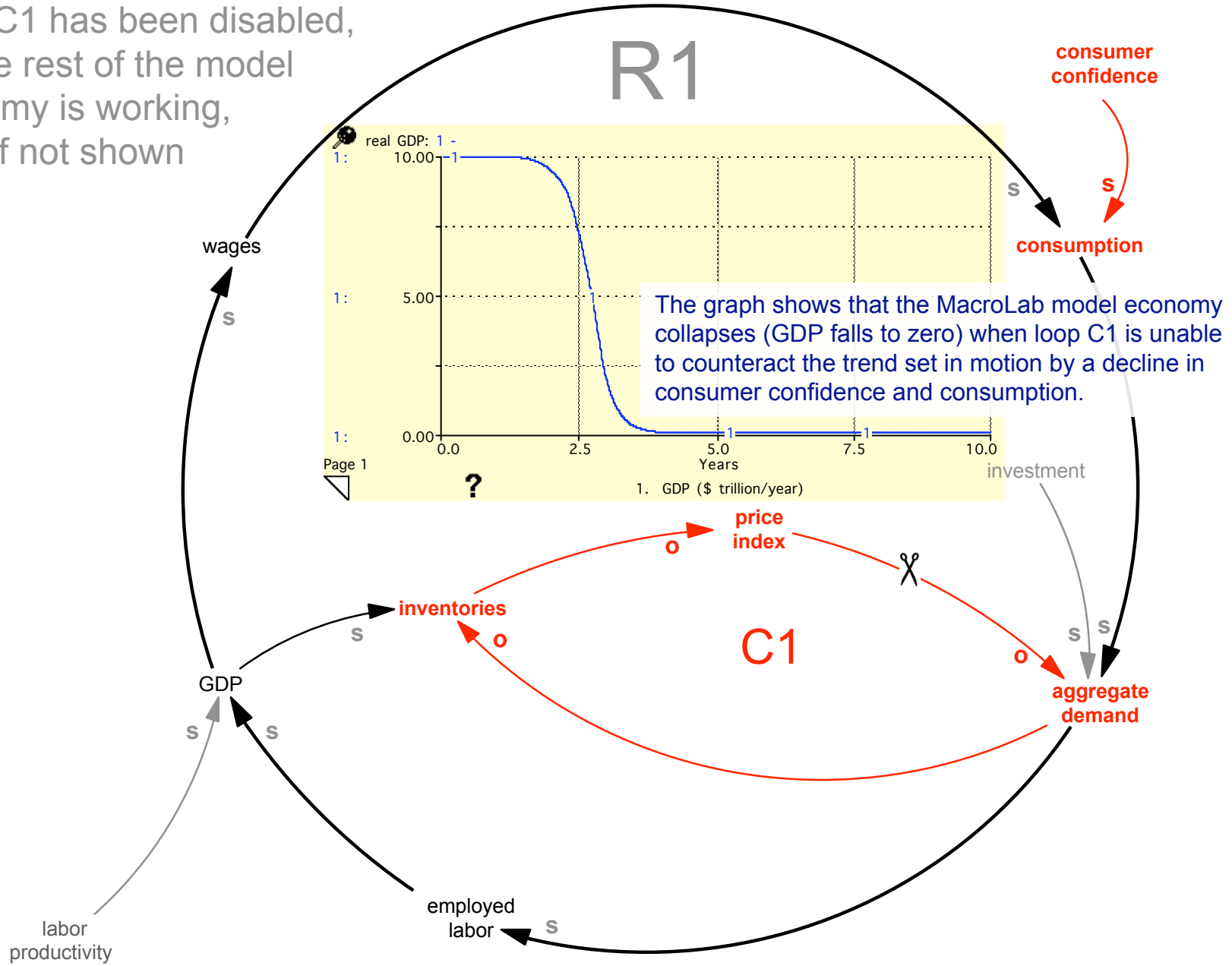
Rest of simple economy
is working but not shown



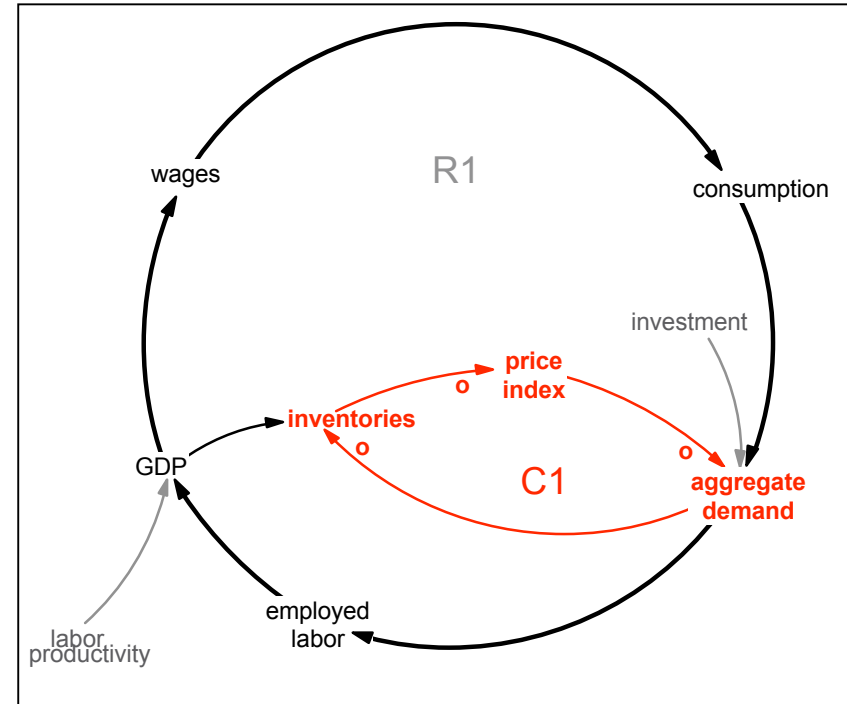
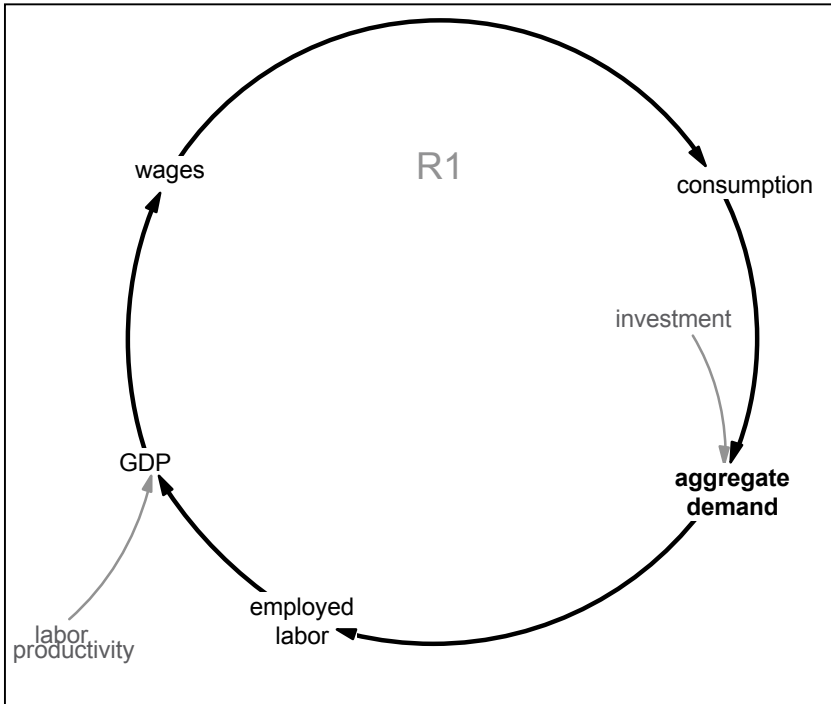
Rest of simple economy
is working but not shown



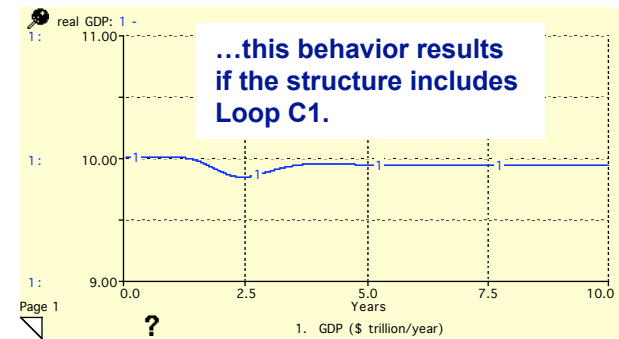
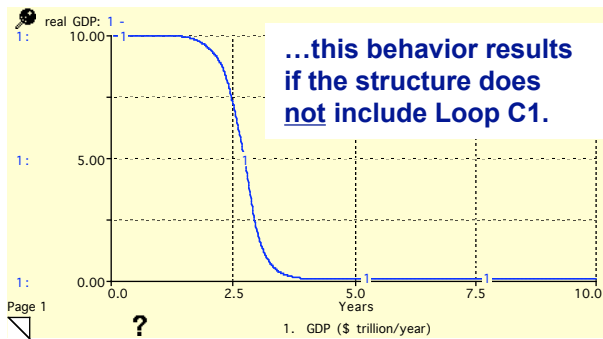
Loop C1 has been disabled,
 but the rest of the model
 economy is working,
 even if not shown



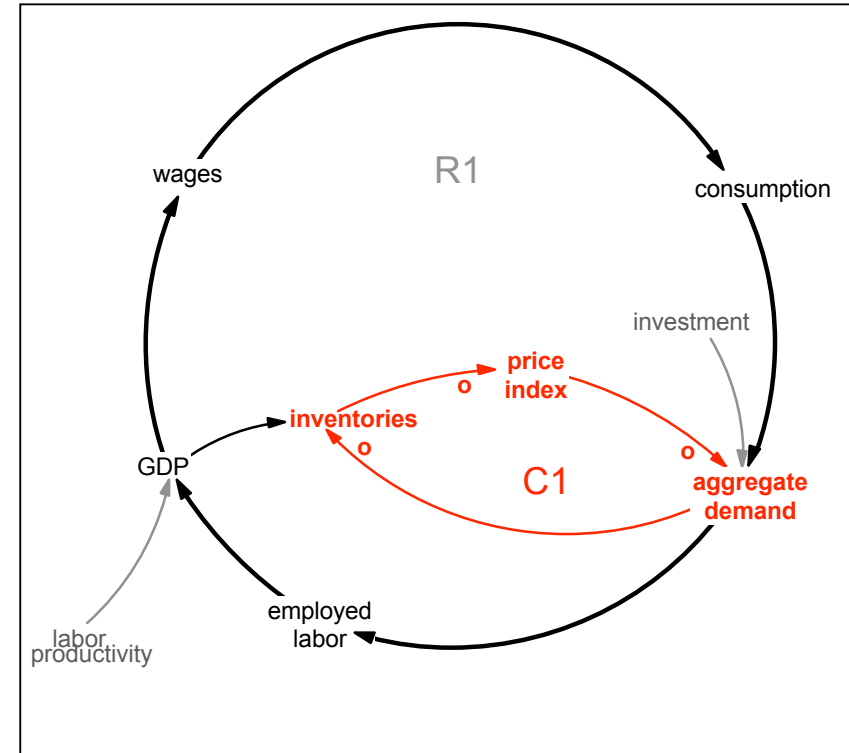
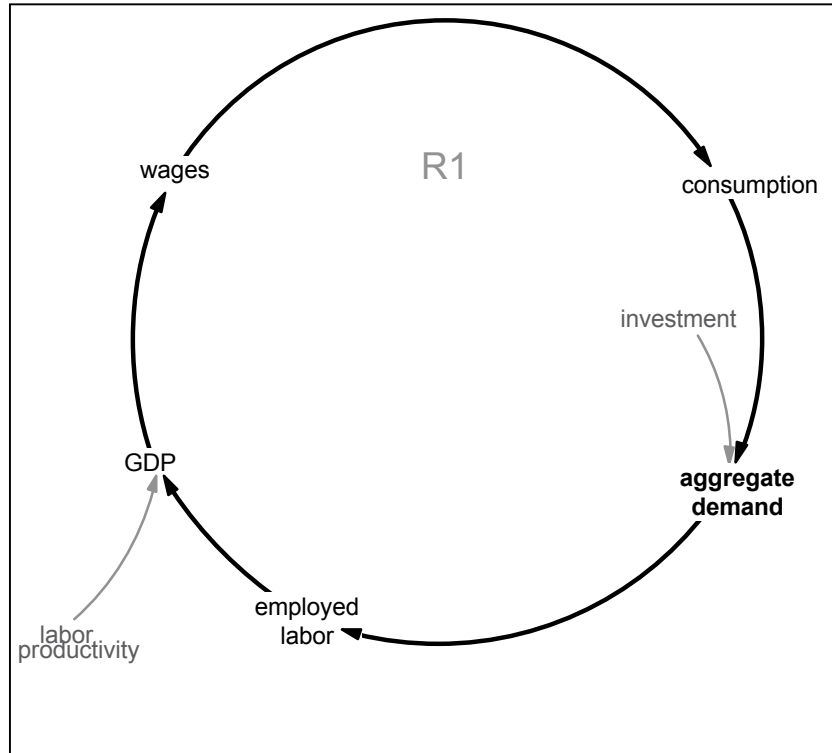
Structure Determines Behavior



After consumption drops...



What about Employment?



The graphs on previous slides showed the simulated behavior of GDP, based on two different assumptions about the structure of an economy: when the economic structure included feedback loop C1 (right) and when it did not (left).

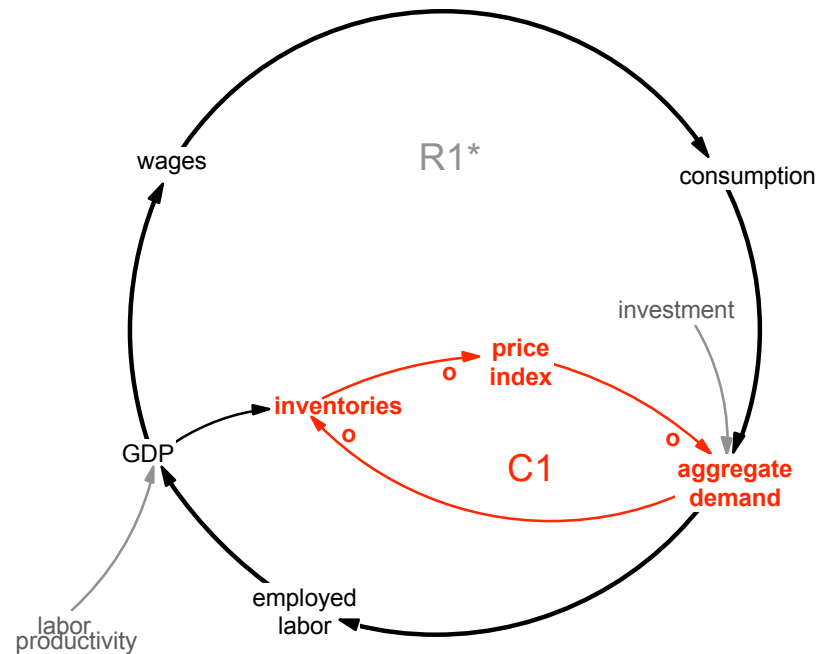
Suppose that we graphed “employed labor” instead of GDP--what patterns would you expect? What if we graphed the “unemployment rate” instead of GDP--what patterns would you expect? Keep these questions in mind as you work on this week’s MacroLab assignment.

Summary

The trend of the economy's main reinforcing loop (R1) is opposed by a number of counteracting loops that keep that main loop from spiraling out of control. Loop C1 is just one example.

The characteristic *behavior* of an economic system is determined by the particular *structure* of its interacting **feedback loops**.

The most important feedback loops will receive special attention in this course.



*All unlabeled arrows have same direction (s) effects.