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Questions? Email [dwheat@wheatresources.com](mailto:dwheat@wheatresources.com)

# Government Sector Tutorial

## Taxing, Borrowing, and Spending

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# Overview

*Until now*, we have been working with an extremely simple version of the U.S. economy -- one with *no government taxation, borrowing, or spending*, and no foreign trade.

For example, the previous tutorial focused on *private* spending decisions -- those made by households and business firms.

Now we will add the Government Sector, and see how *public & political* decisions about taxation, borrowing, and spending affect the main reinforcing loop in the economy and some important counteracting loops.

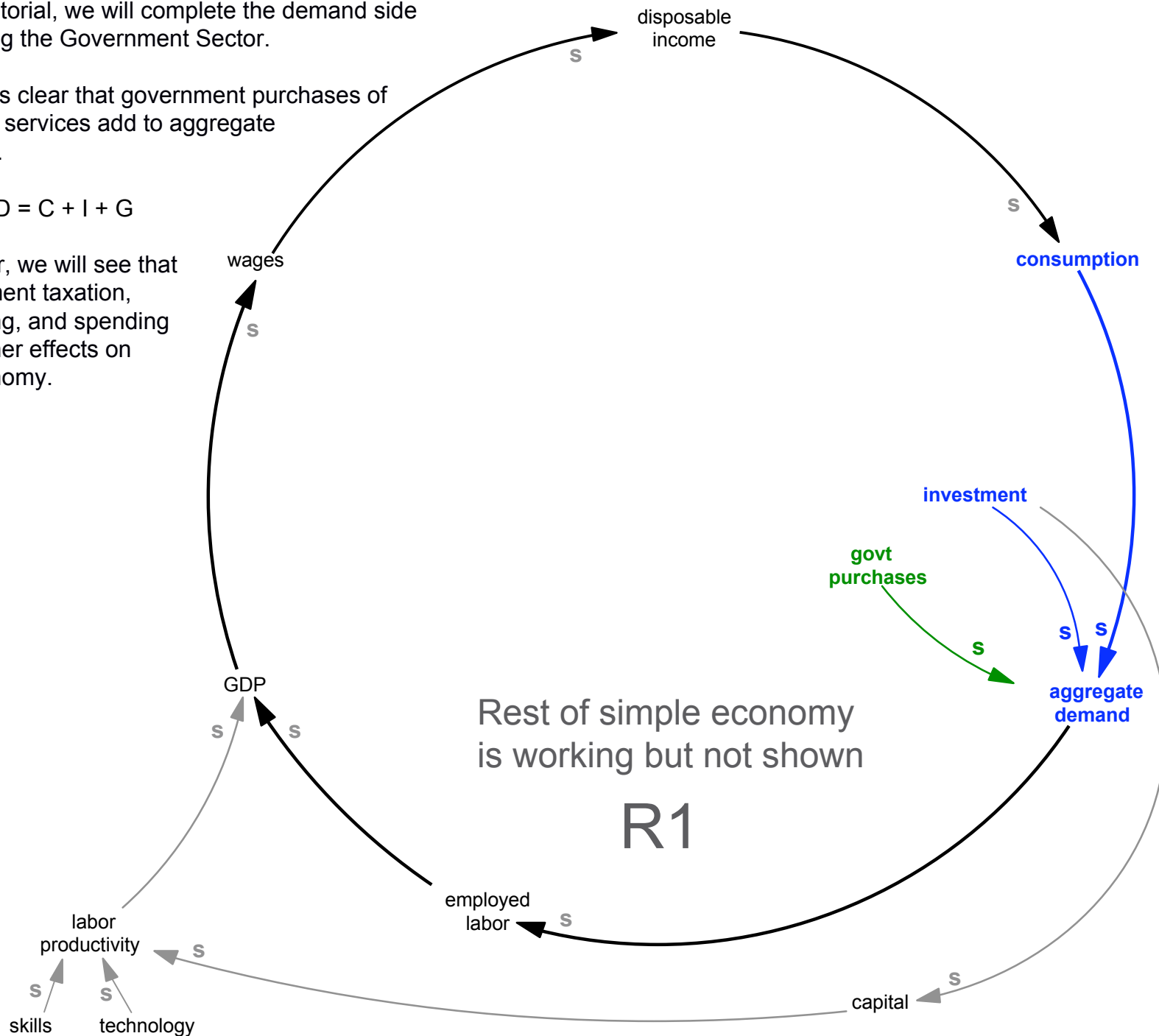
In the MacroLab model, a single Government Sector represents the total activities of the national government and all state and local governments.

In this tutorial, we will complete the demand side by adding the Government Sector.

Here, it is clear that government purchases of goods & services add to aggregate demand.

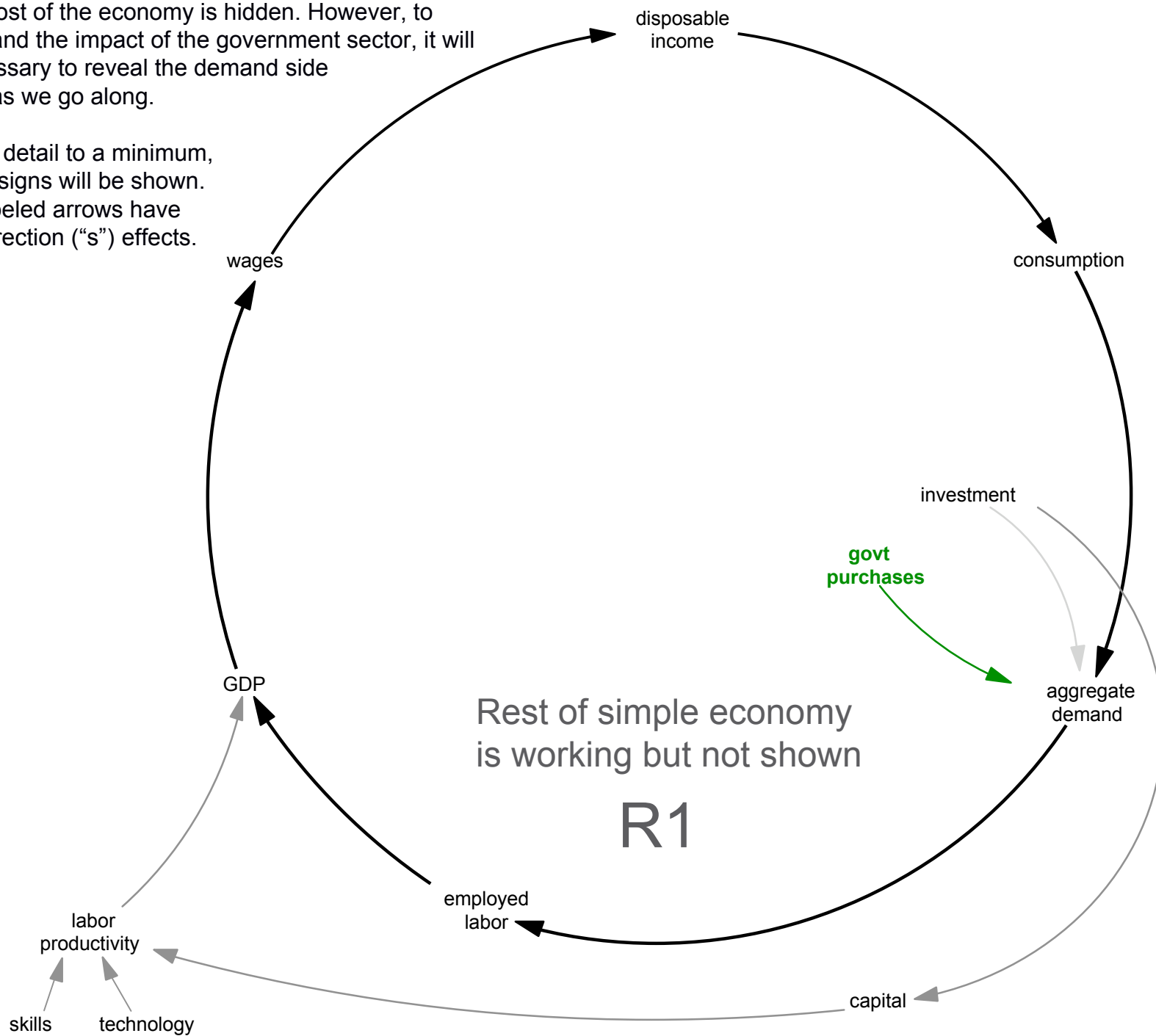
Now,  $AD = C + I + G$

However, we will see that government taxation, borrowing, and spending have other effects on the economy.



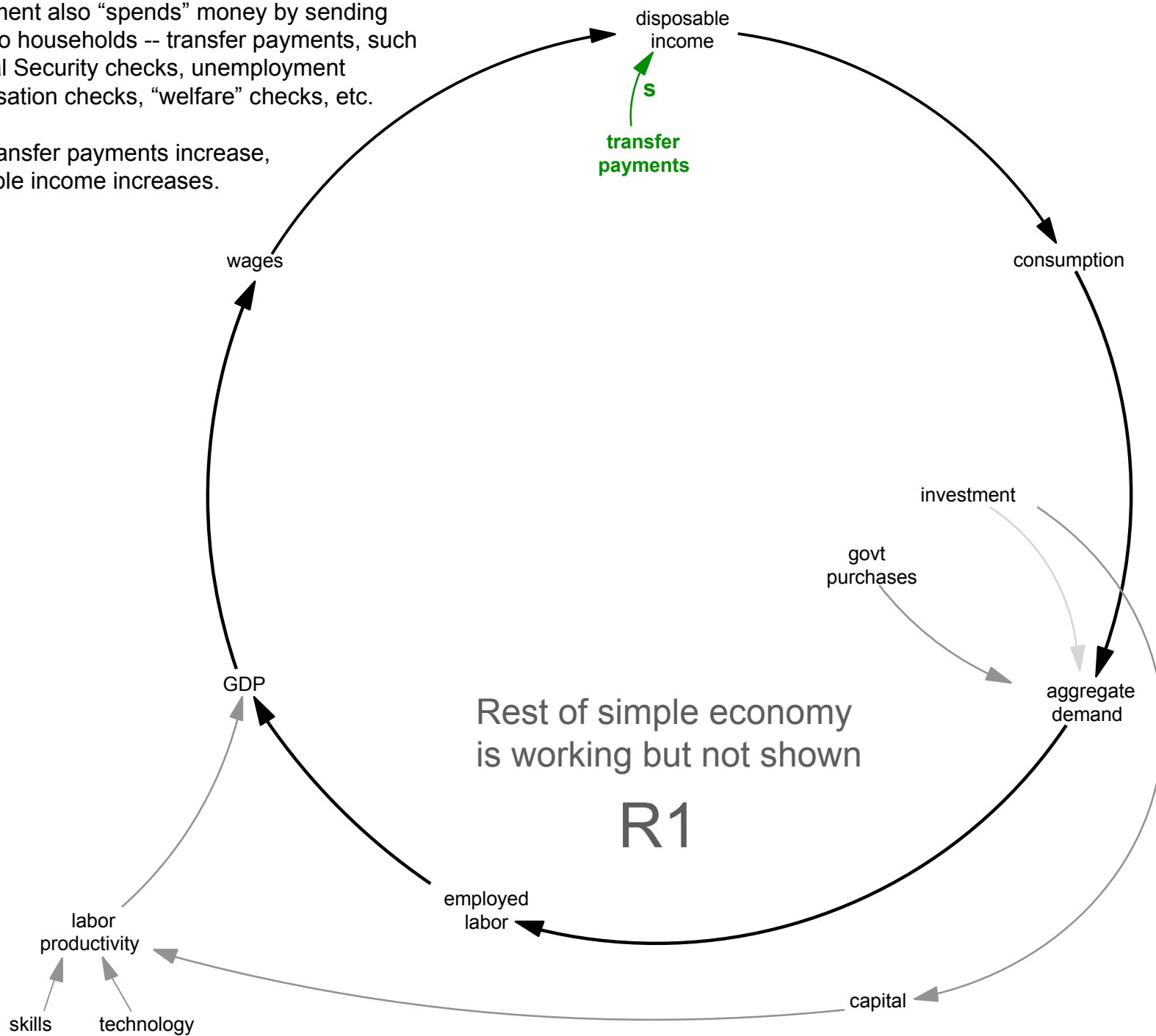
Here, most of the economy is hidden. However, to understand the impact of the government sector, it will be necessary to reveal the demand side slightly as we go along.

To keep detail to a minimum, only "o" signs will be shown. All unlabeled arrows have same direction ("s") effects.



Government also “spends” money by sending checks to households -- transfer payments, such as Social Security checks, unemployment compensation checks, “welfare” checks, etc.

When transfer payments increase, disposable income increases.



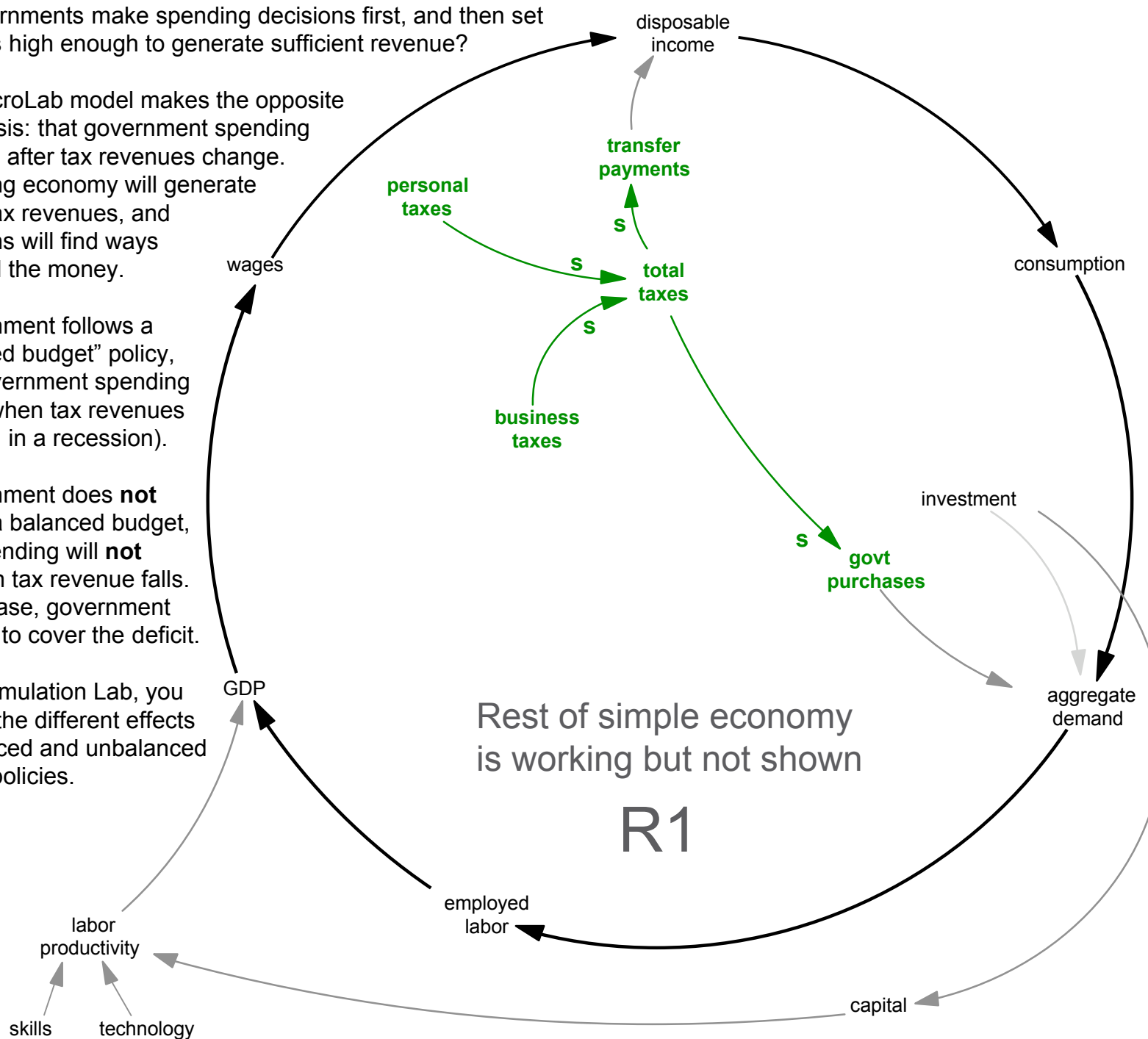
Do governments make spending decisions first, and then set tax rates high enough to generate sufficient revenue?

The MacroLab model makes the opposite hypothesis: that government spending changes after tax revenues change. A growing economy will generate higher tax revenues, and politicians will find ways to spend the money.

If government follows a “balanced budget” policy, then government spending will fall when tax revenues fall (e.g., in a recession).

If government does **not** aim for a balanced budget, then spending will **not** fall when tax revenue falls. In that case, government borrows to cover the deficit.

In the Simulation Lab, you will see the different effects of balanced and unbalanced budget policies.

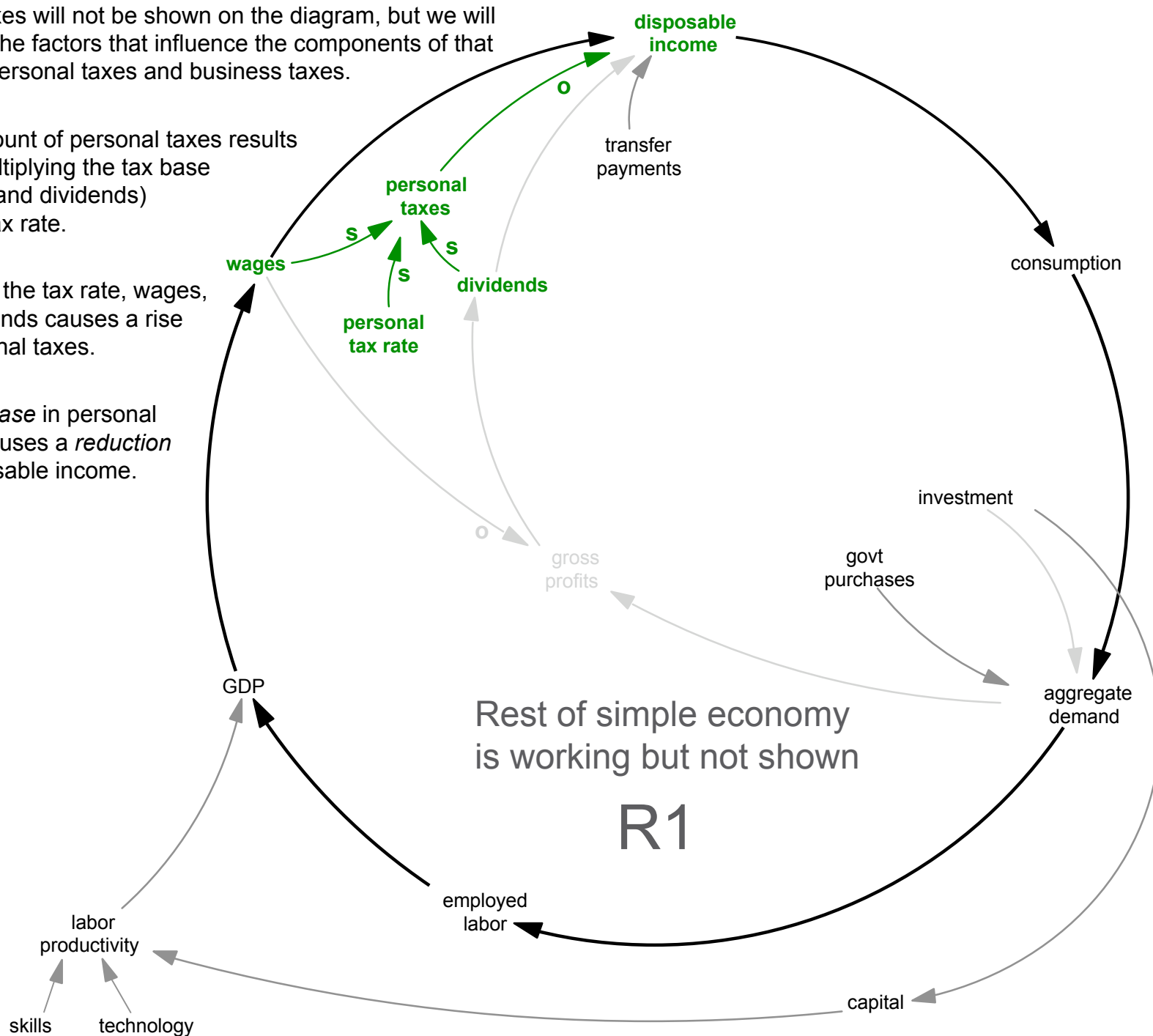


Total taxes will not be shown on the diagram, but we will identify the factors that influence the components of that total -- personal taxes and business taxes.

The amount of personal taxes results from multiplying the tax base (wages and dividends) by the tax rate.

A rise in the tax rate, wages, or dividends causes a rise in personal taxes.

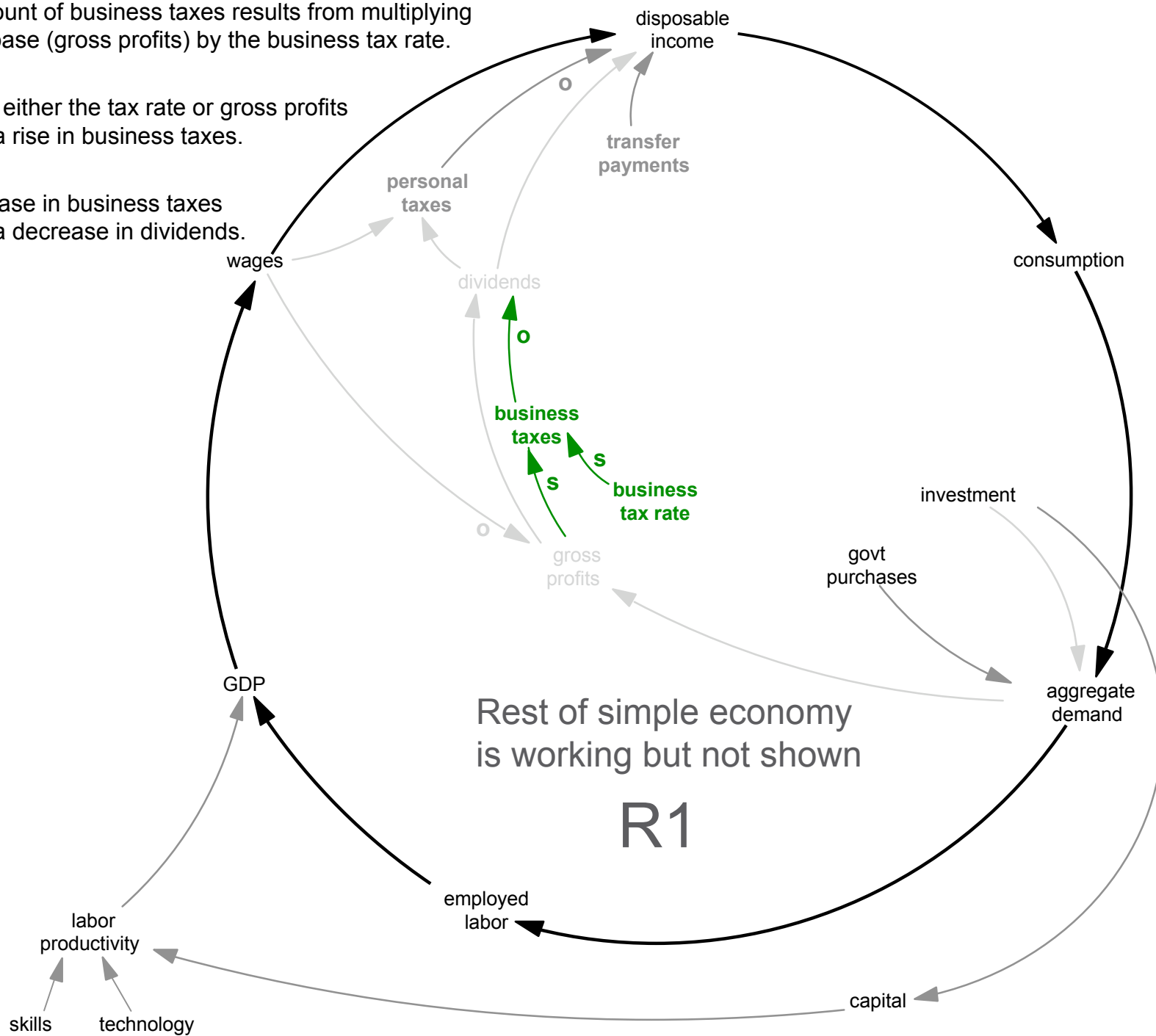
An *increase* in personal taxes causes a *reduction* in disposable income.



The amount of business taxes results from multiplying the tax base (gross profits) by the business tax rate.

A rise in either the tax rate or gross profits causes a rise in business taxes.

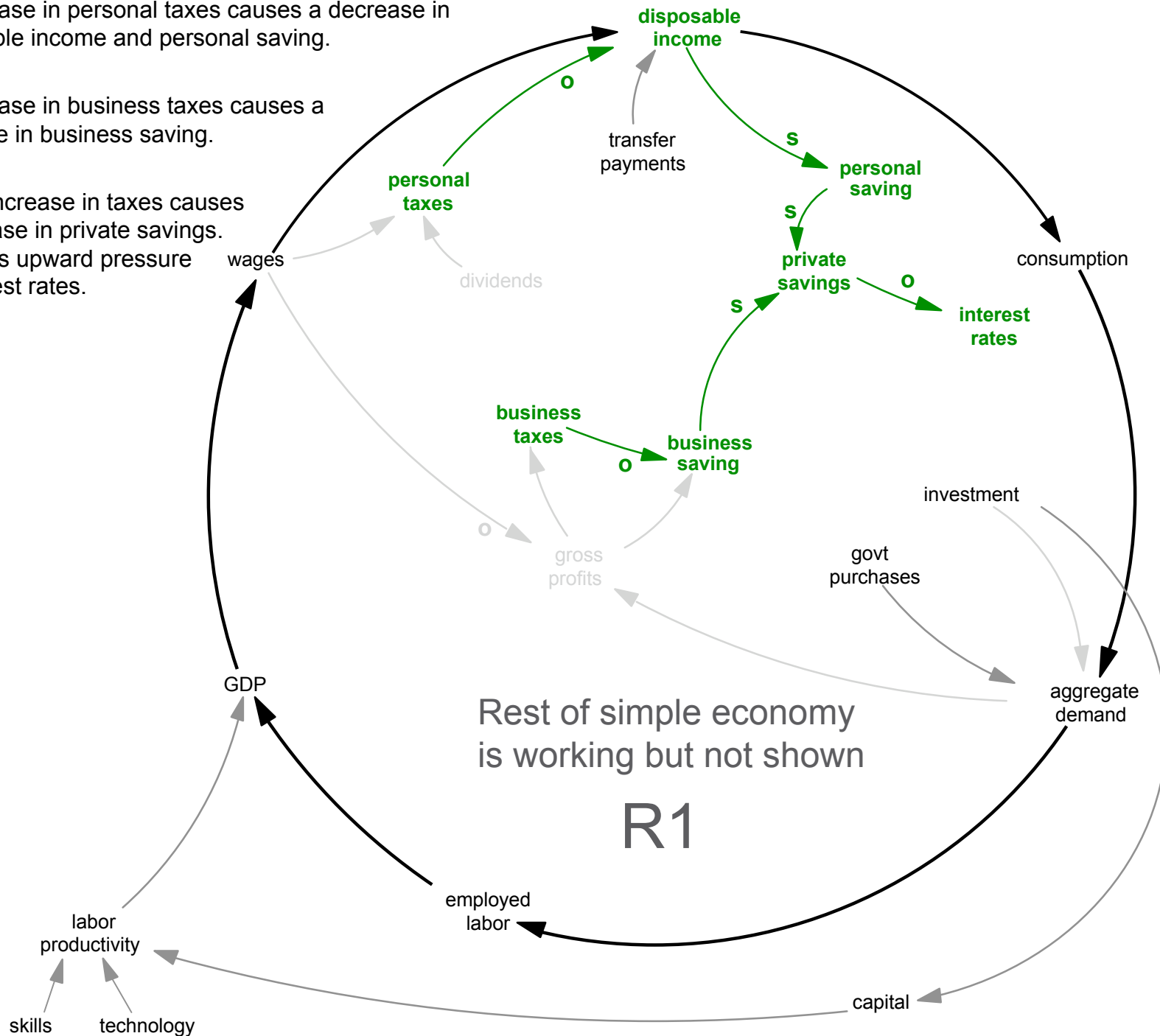
An increase in business taxes causes a decrease in dividends.



An increase in personal taxes causes a decrease in disposable income and personal saving.

An increase in business taxes causes a decrease in business saving.

So, an increase in taxes causes a decrease in private savings. That puts upward pressure on interest rates.

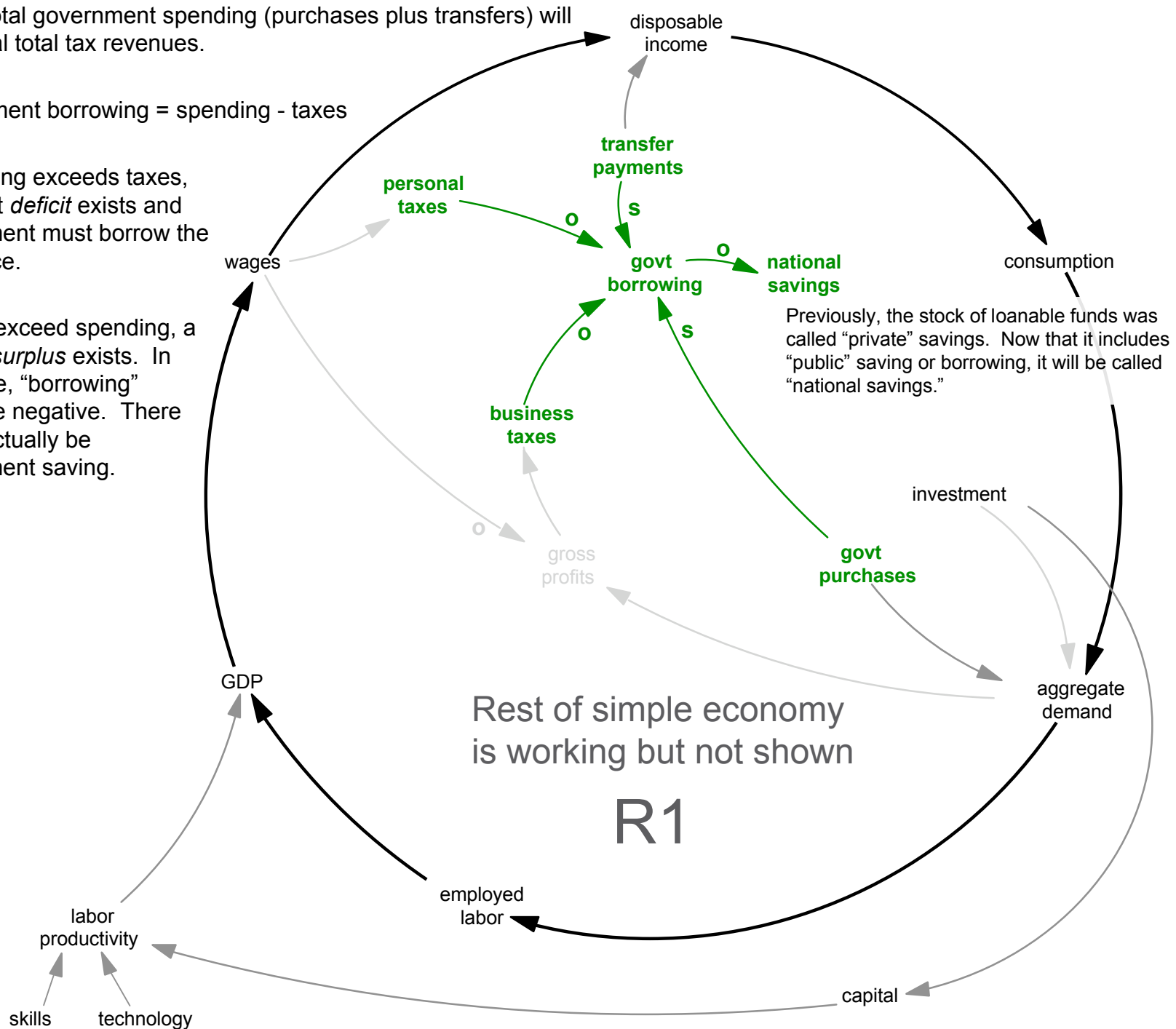


Often, total government spending (purchases plus transfers) will not equal total tax revenues.

Government borrowing = spending - taxes

If spending exceeds taxes, a budget *deficit* exists and government must borrow the difference.

If taxes exceed spending, a budget *surplus* exists. In that case, "borrowing" would be negative. There would actually be government saving.

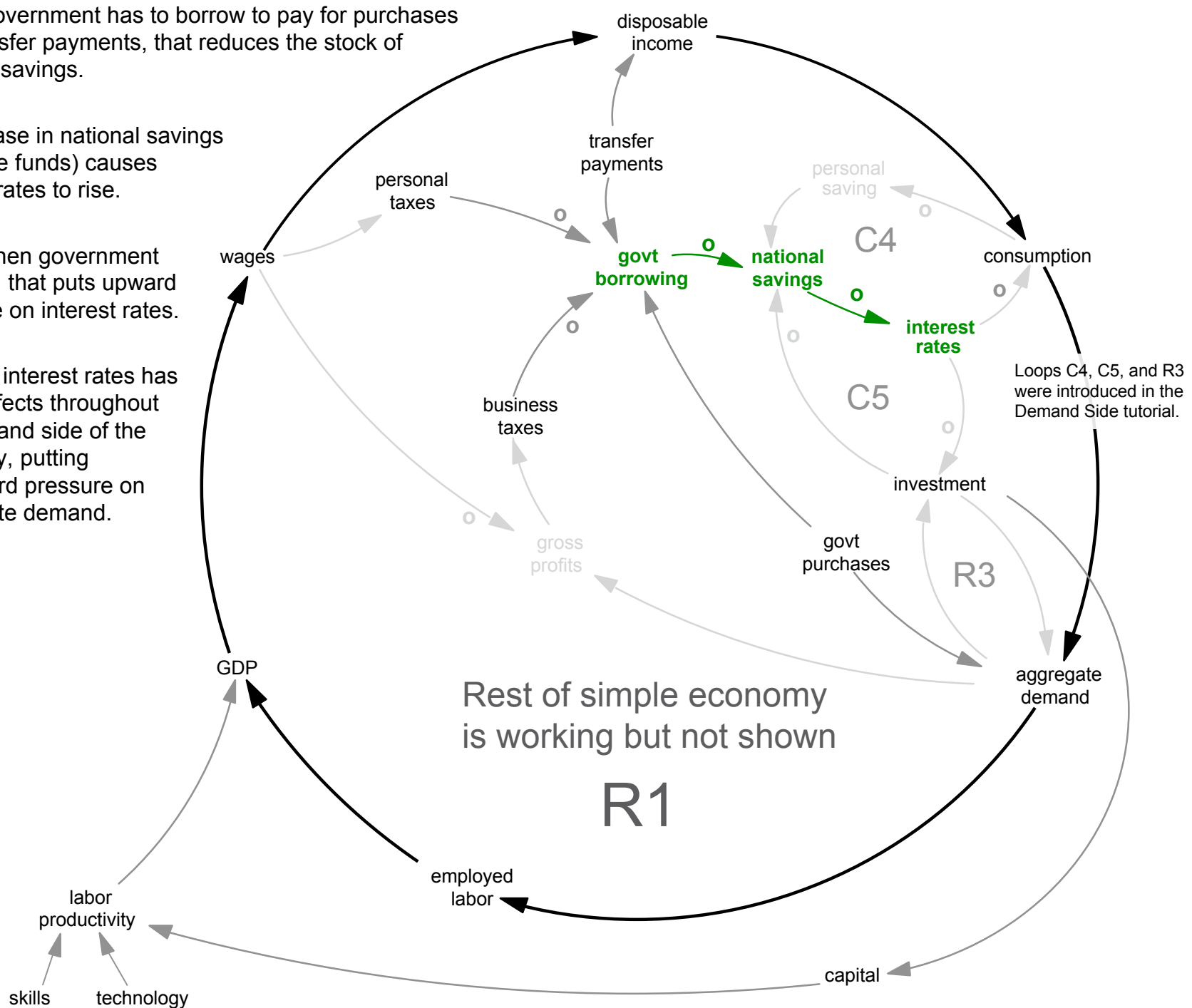


When government has to borrow to pay for purchases and transfer payments, that reduces the stock of national savings.

A decrease in national savings (loanable funds) causes interest rates to rise.

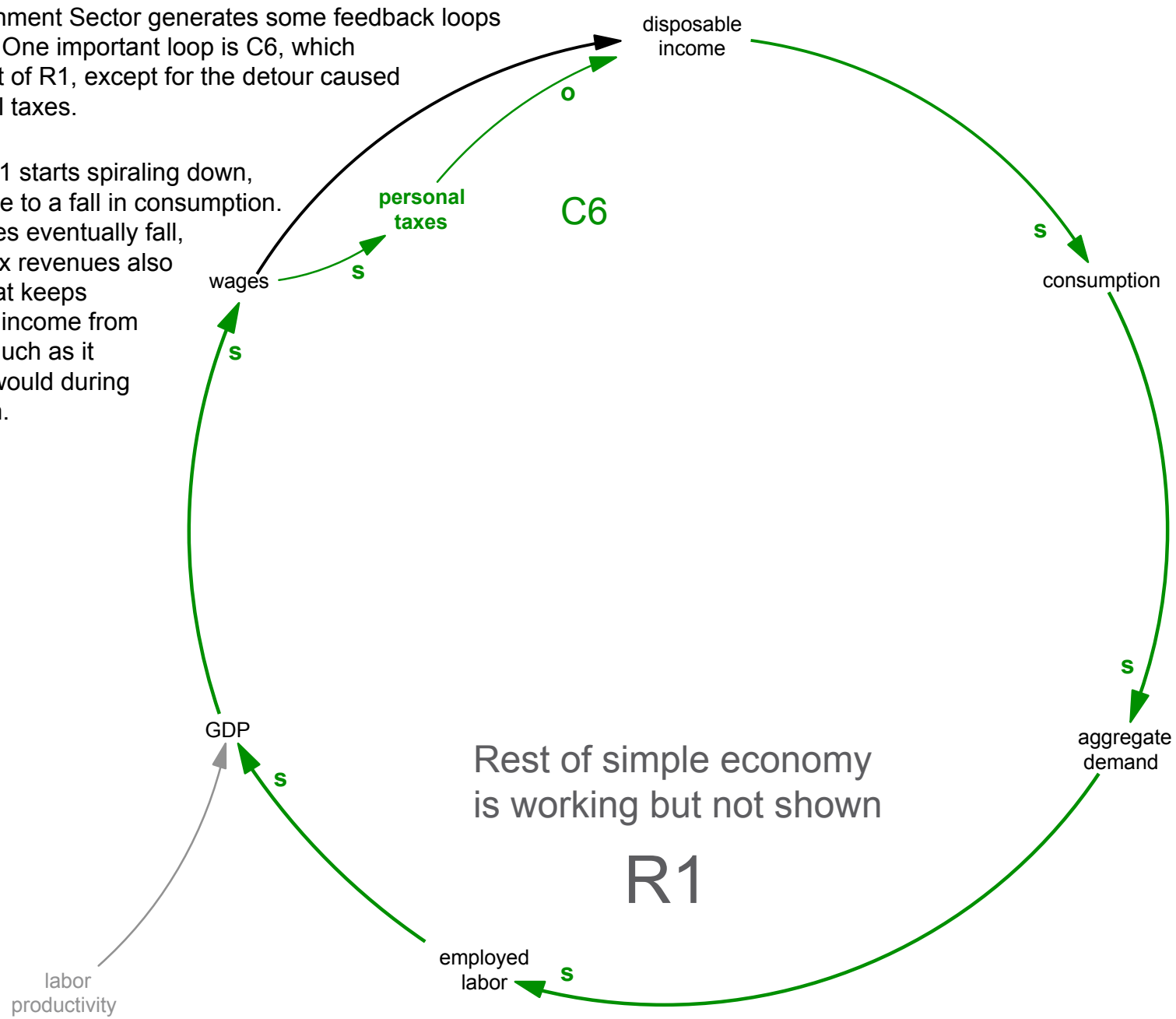
Thus, when government borrows, that puts upward pressure on interest rates.

A rise in interest rates has ripple effects throughout the demand side of the economy, putting downward pressure on aggregate demand.



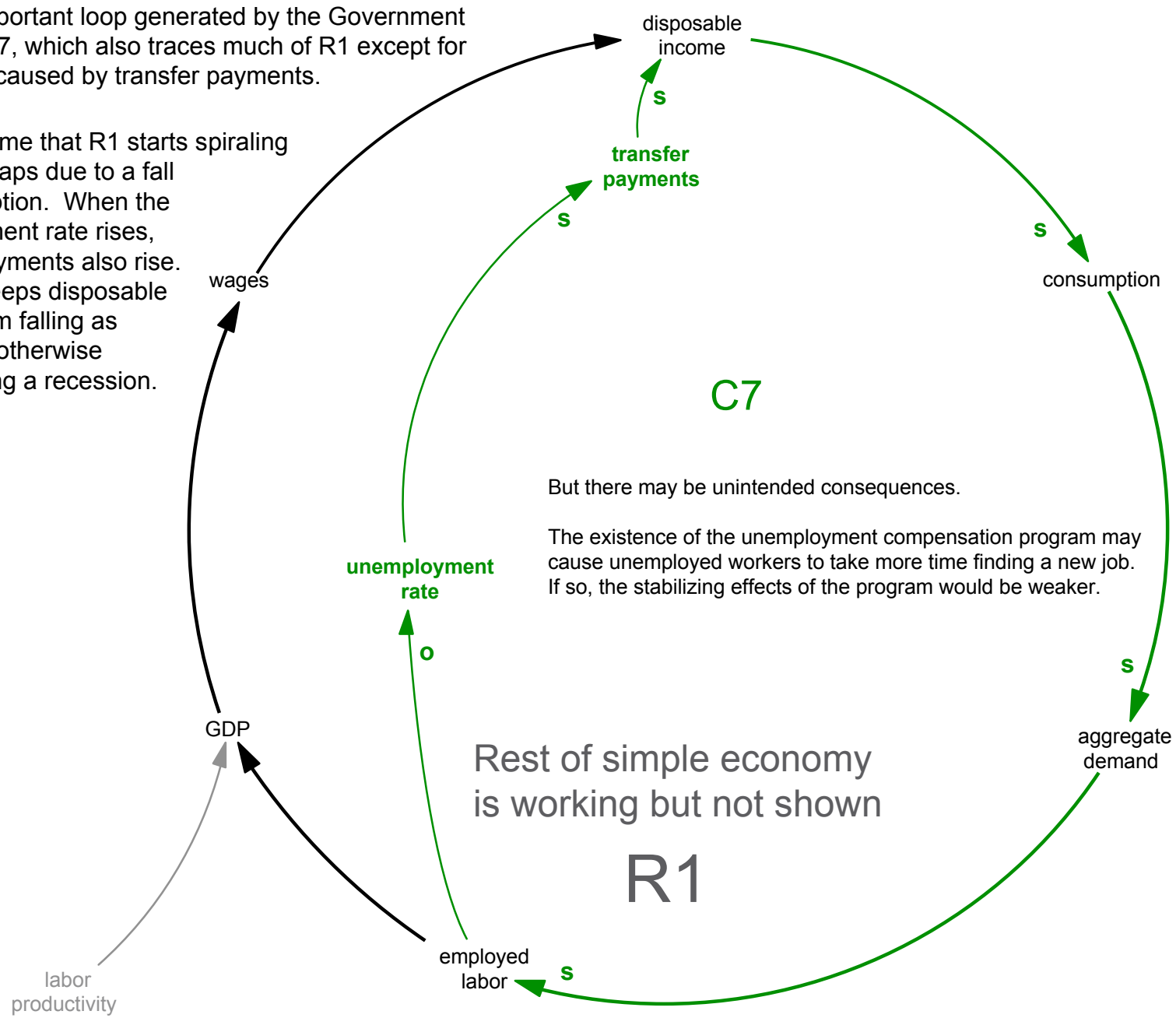
The Government Sector generates some feedback loops of its own. One important loop is C6, which traces most of R1, except for the detour caused by personal taxes.

Suppose R1 starts spiraling down, perhaps due to a fall in consumption. When wages eventually fall, personal tax revenues also fall. And that keeps disposable income from falling as much as it otherwise would during a recession.



Another important loop generated by the Government Sector is C7, which also traces much of R1 except for the detour caused by transfer payments.

Again assume that R1 starts spiraling down, perhaps due to a fall in consumption. When the unemployment rate rises, transfer payments also rise. And that keeps disposable income from falling as much as it otherwise would during a recession.



But there may be unintended consequences.

The existence of the unemployment compensation program may cause unemployed workers to take more time finding a new job. If so, the stabilizing effects of the program would be weaker.

Rest of simple economy is working but not shown

R1

# Summary

Government purchases add directly to aggregate demand in R1, the main reinforcing loop. That boosts employment, GDP, wages, and consumption, and also accelerates R3, the reinforcing loop connecting aggregate demand and investment.

But there's no free lunch.

- If Government raises taxes to pay for the purchases, that reduces the funds available for the private sector to spend, which keeps the reinforcing loops from gaining as much momentum as might be expected.
- Both Government taxation and borrowing put upward pressure on interest rates. Higher interest rates discourage private sector spending, which again keeps the reinforcing loops from gaining as much momentum as might be expected.

Two important counteracting feedback loops help stabilize the economy by moderating changes in disposable income:

- Loop C6, involving personal taxes
- Loop C7, involving transfer payments