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Questions? Email dwheat@wheatresources.com

Foreign Sector Tutorial

**Completing *MacroLab* by Connecting
the Domestic Model to the Rest of the World**

Part B: Interest Rates and Exchange Rates

Objectives of this Tutorial

After studying the previous tutorial, you should have been able to...

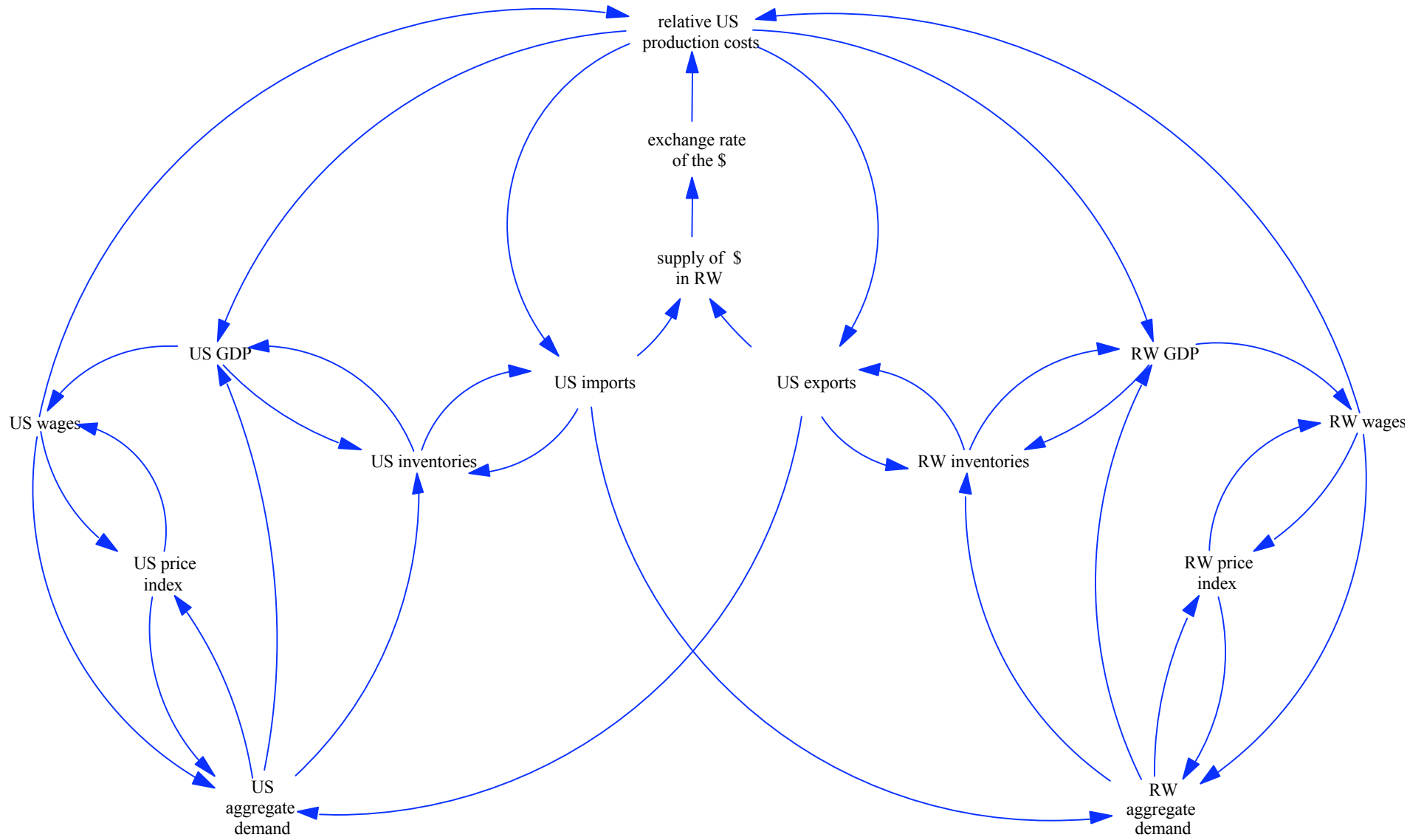
- Suggest three hypotheses for a US trade deficit (i.e., why US imports might exceed US exports).
- Describe how changes in exchange rates can counteract a trade deficit.

Studying this tutorial should enable you to...

- **Explain how US trade deficits produce a surplus of dollars in international currency markets.**
- **Describe how US trade deficits raise relative US interest rates and attract surplus dollars back to the US.**
- **Describe how changes in relative interest rates affect exchange rates.**

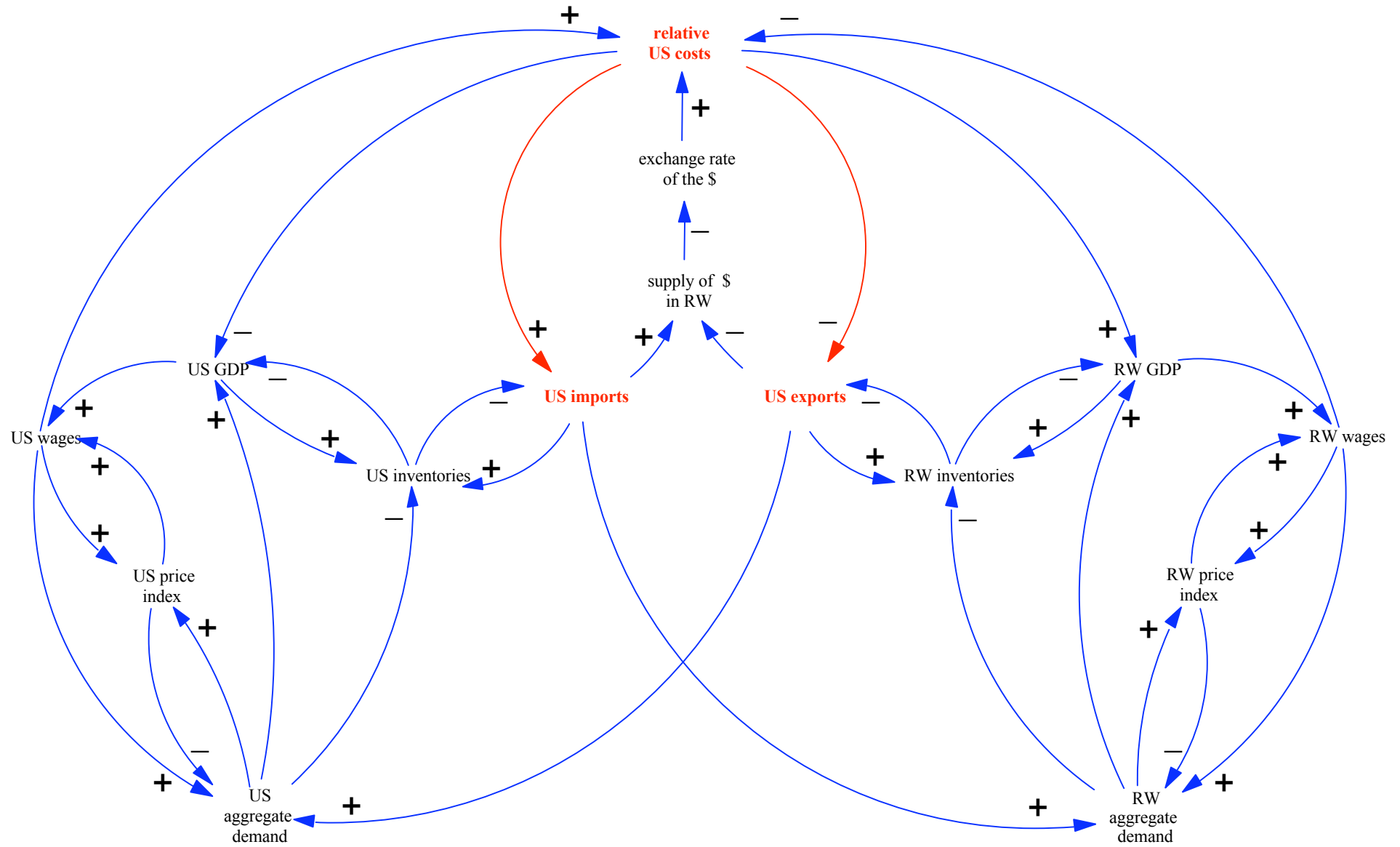
**Quick Review
of the
Previous Tutorial**

In the previous Foreign Sector tutorial, we developed this feedback loop diagram that connects the “US” economy on the left with the “RW” economy on the right.



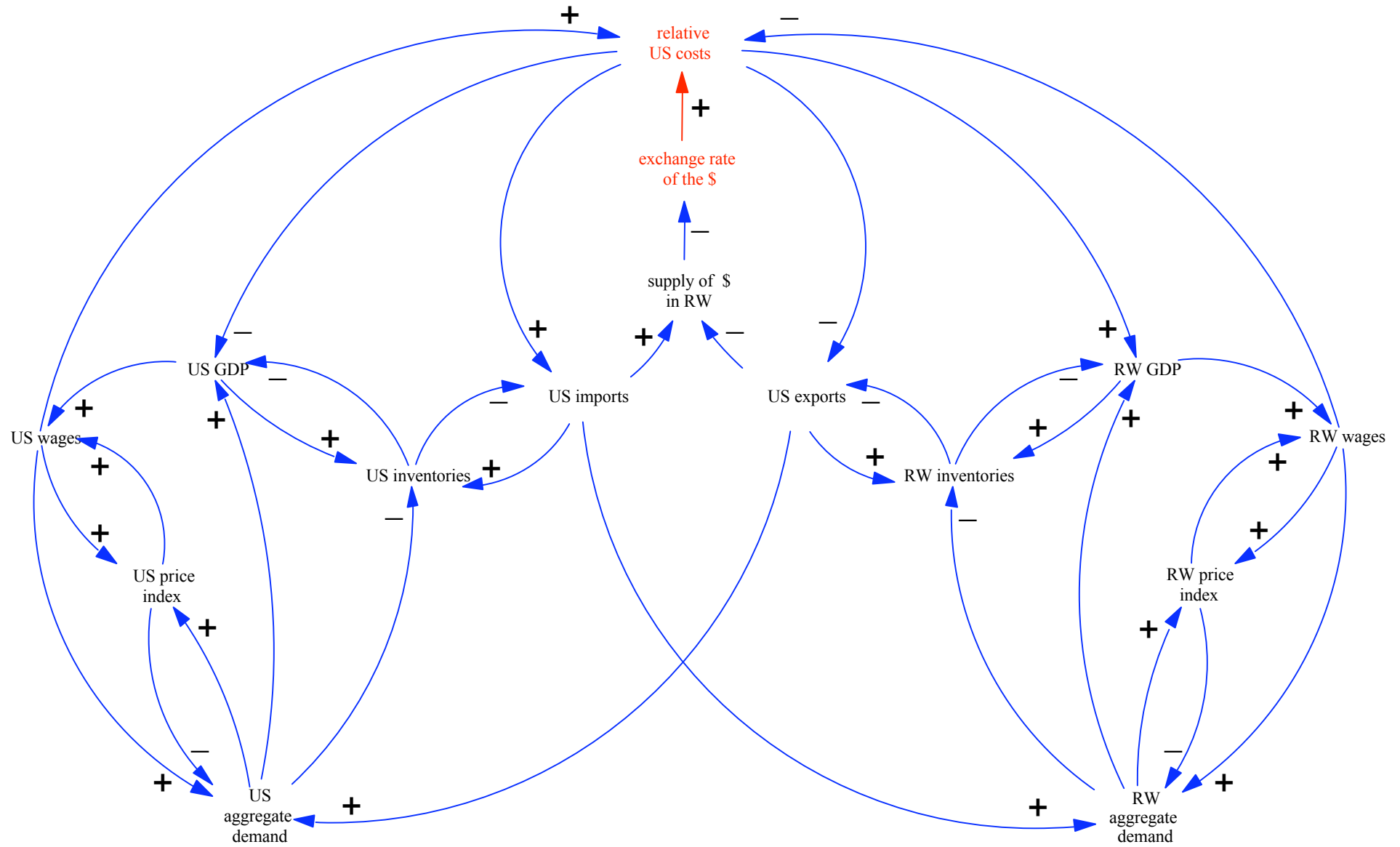
Review

Another possible cause of US imports exceeding US exports:
US production costs might exceed RW production costs.

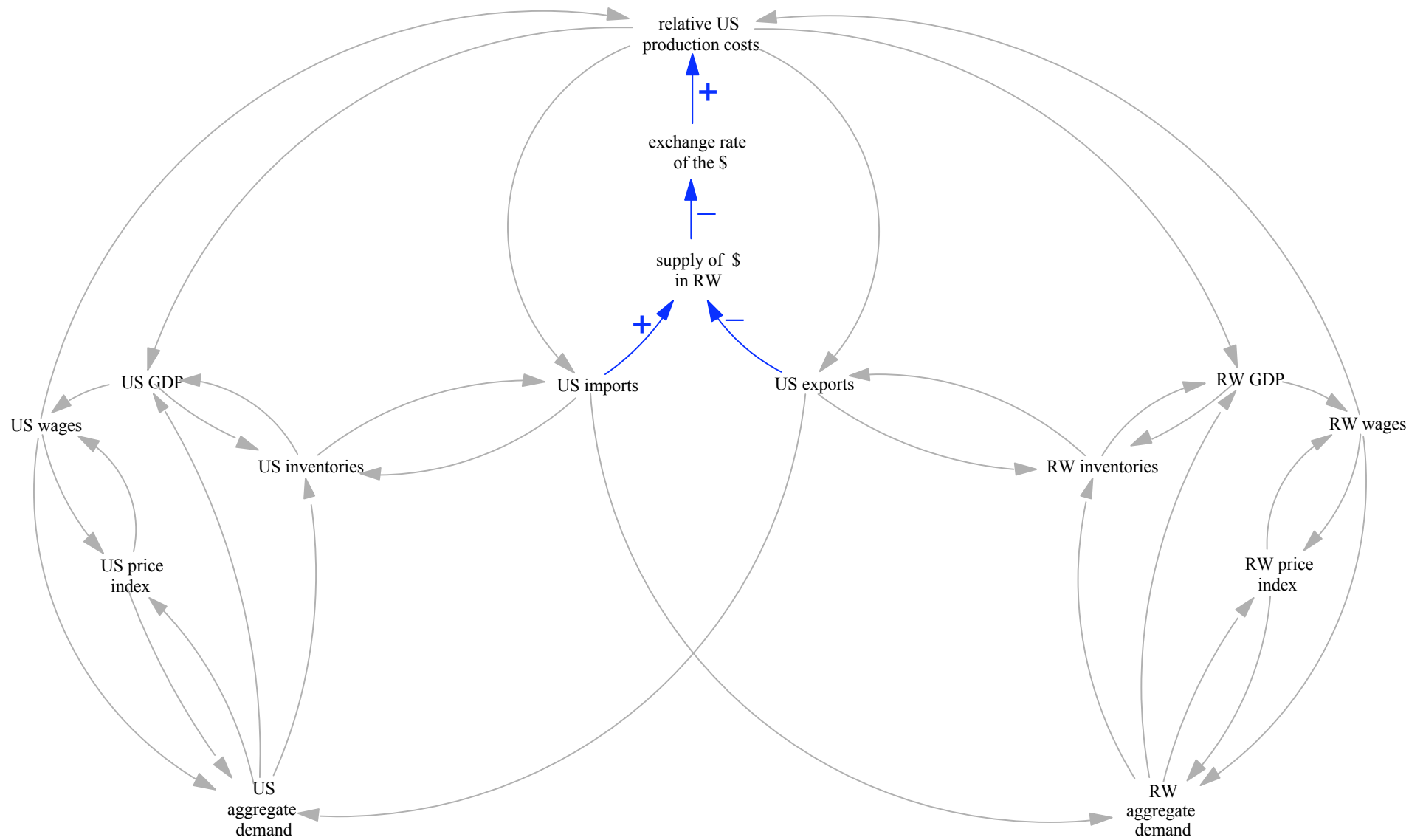


Review

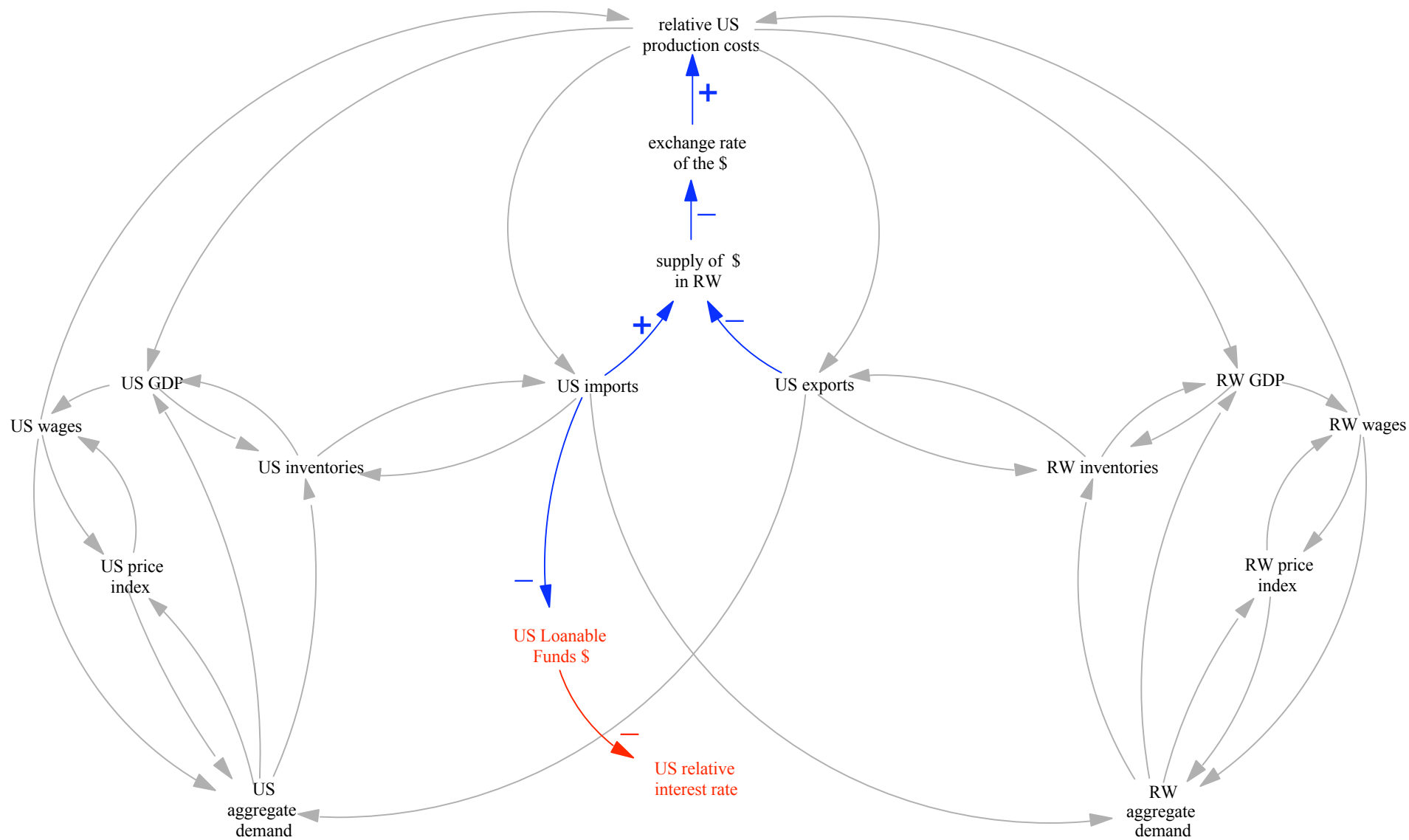
When the value of the dollar falls, that makes US goods & services relatively less expensive in world markets, which increases US exports and reduces US imports. It works the other way, too. Thus, a *third reason for US imports to exceed US exports is a rising value of the dollar in international currency markets.*



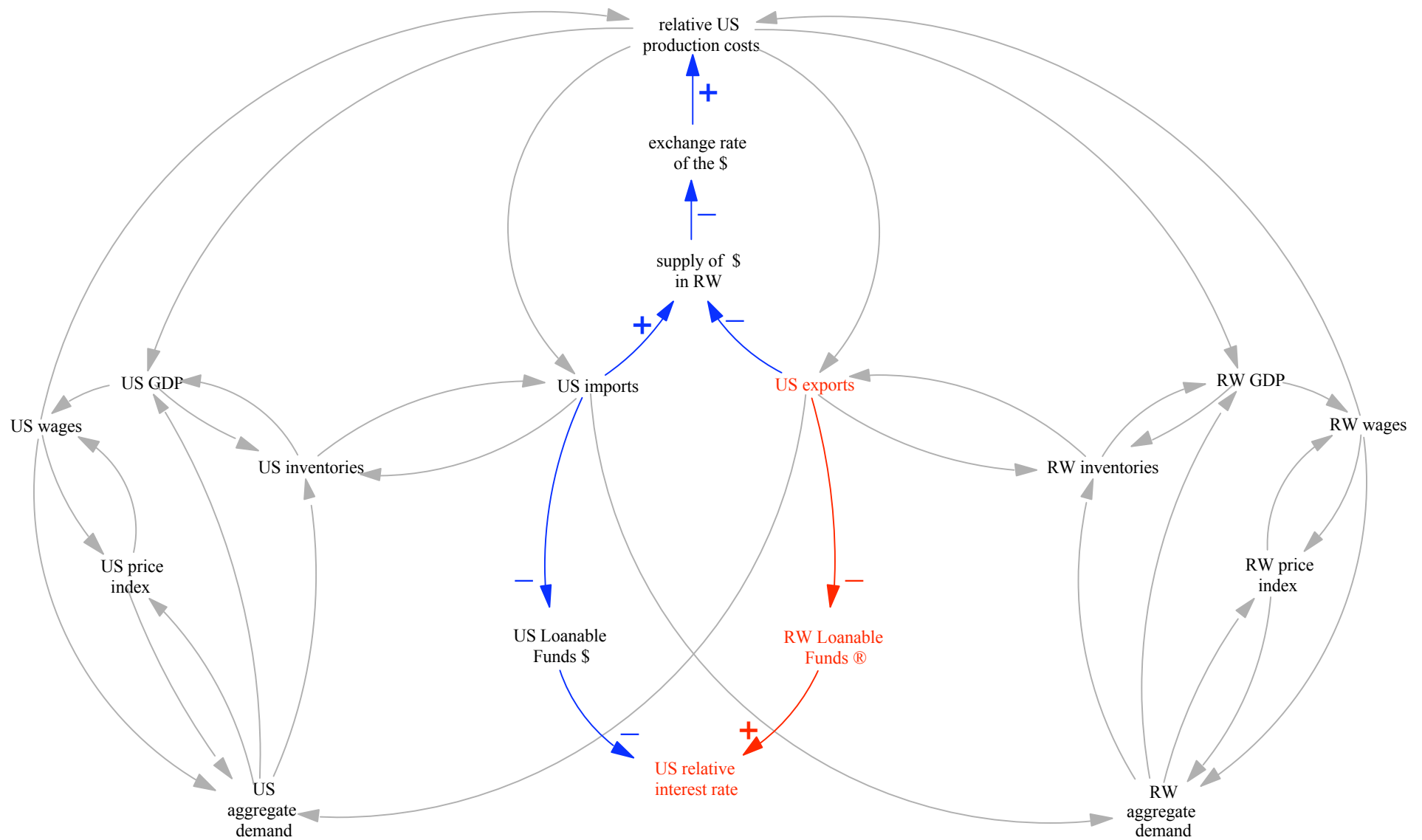
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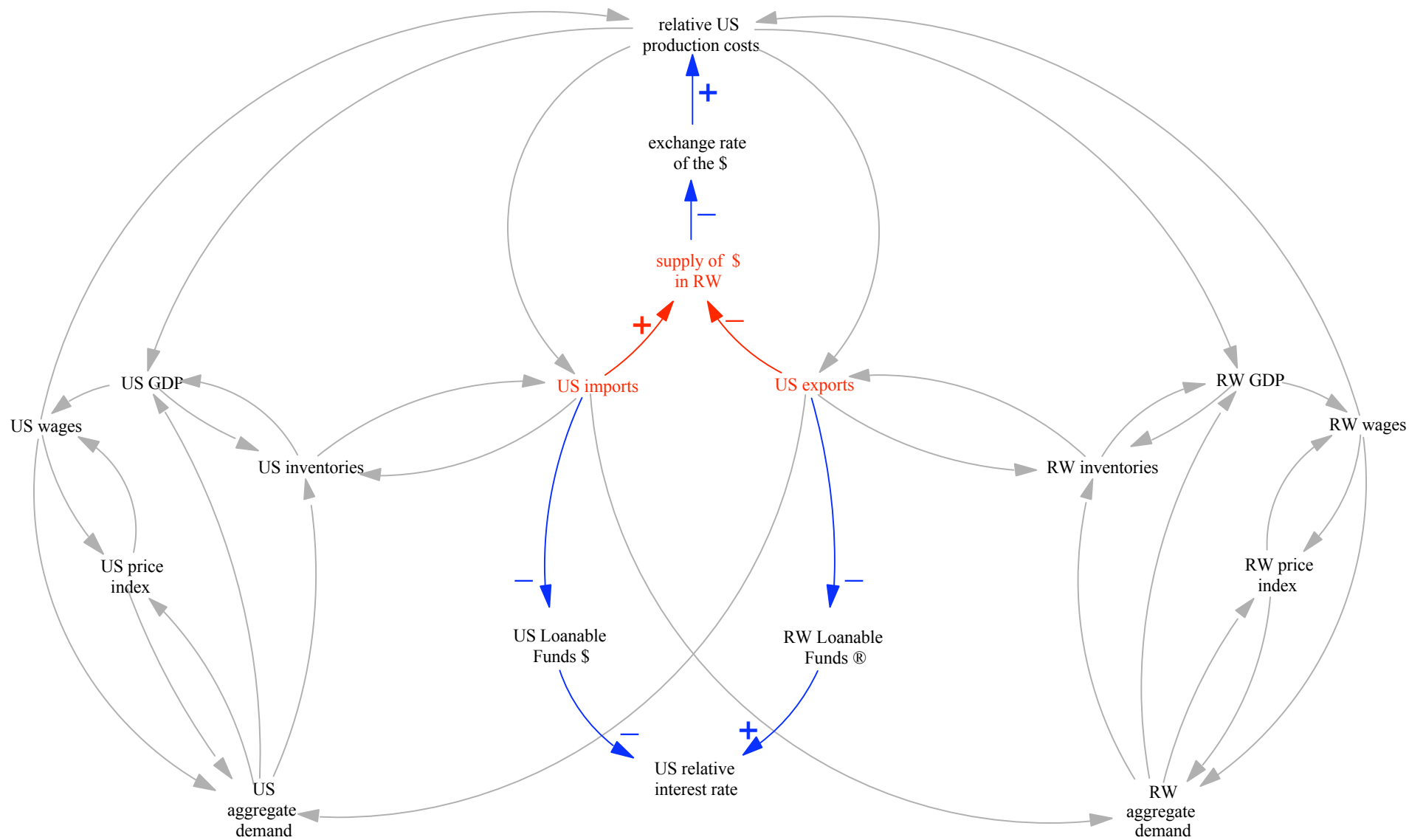
In this tutorial, the previous diagram will be gray and compressed, and most of the link signs will be omitted. That will make it easier to focus on the additions to the diagram. From the previous diagram, only the links involving the exchange rate will retain their links and blue color.



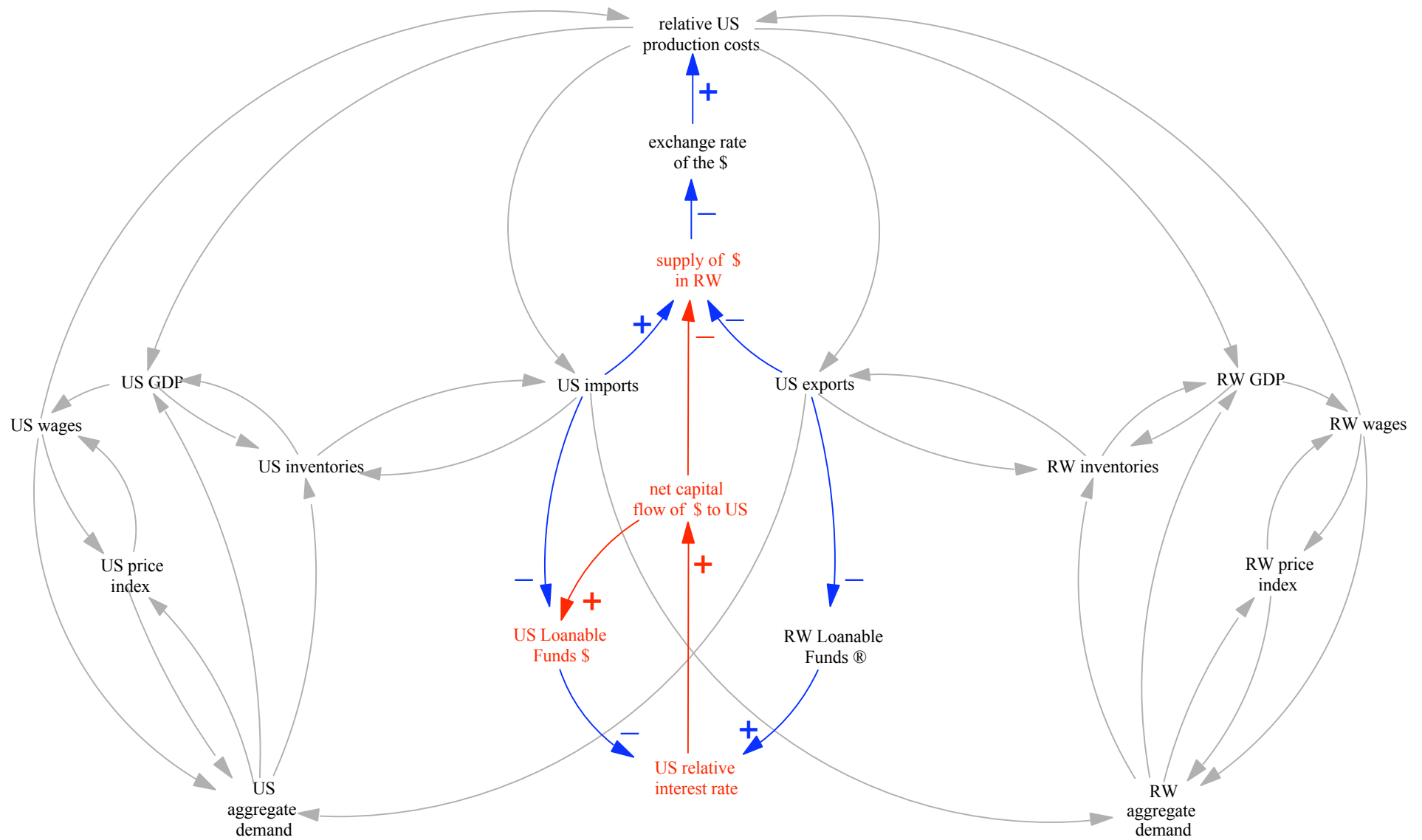
Recall that when the stock of loanable funds changes, interest rates move in the opposite direction. A decrease in US loanable funds would raise US interest rates. If RW interest rates were constant, then US relative interest rates (i.e., compared to RW interest rates) would also rise. Be sure you understand: A rise in imports causes a reduction in loanable funds, which then causes a rise in interest rates.



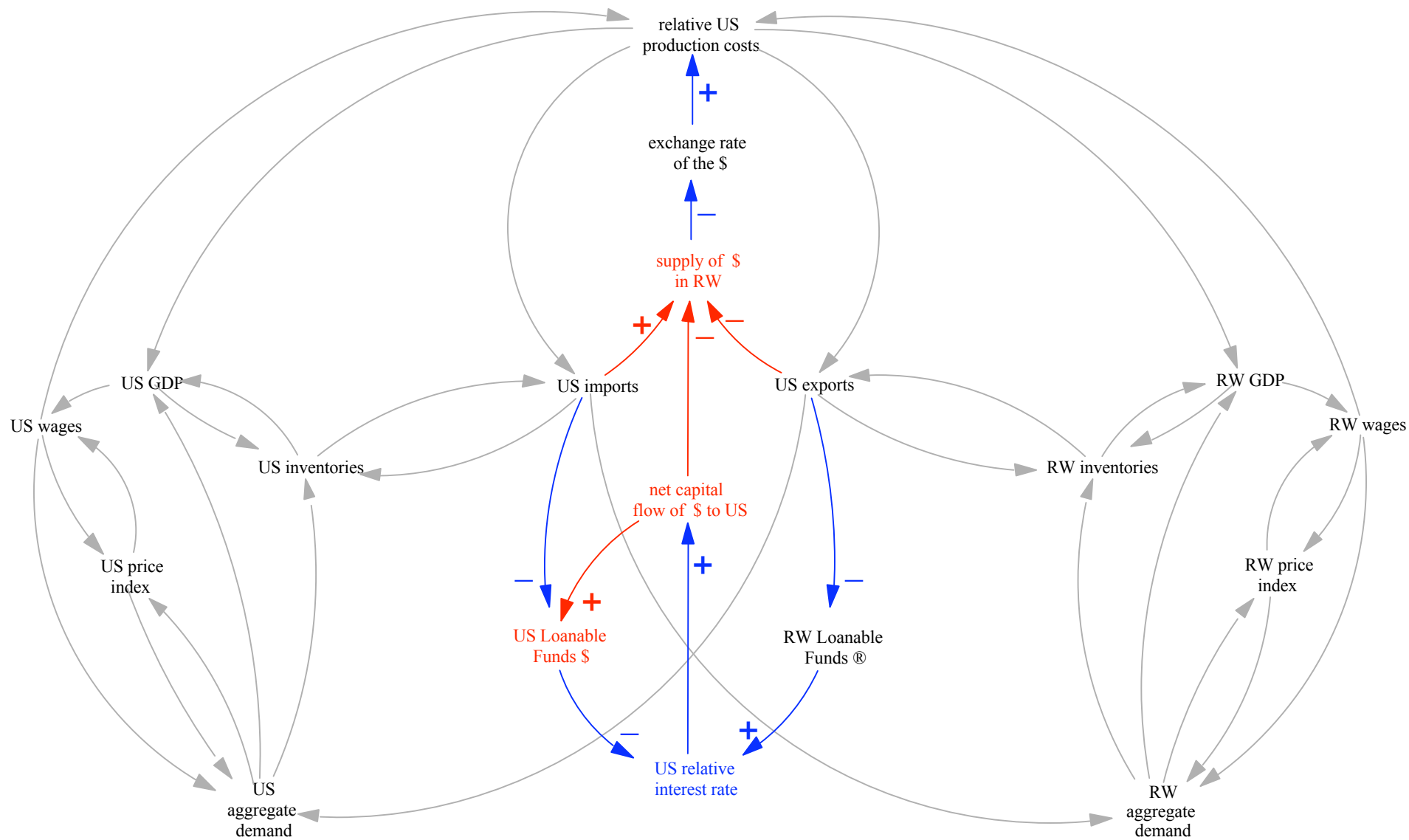
The same process is at work in the RW. To pay for US exports, there is a withdrawal from the stock of loanable funds in the RW. *RW interest rates* move in the *opposite* direction as the change in RW loanable funds. When RW loanable funds fall, RW interest rates rise, and relative US interest rates fall. So, *relative US interest rates* move in the *same* direction as RW loanable funds. Thus, the plus sign.



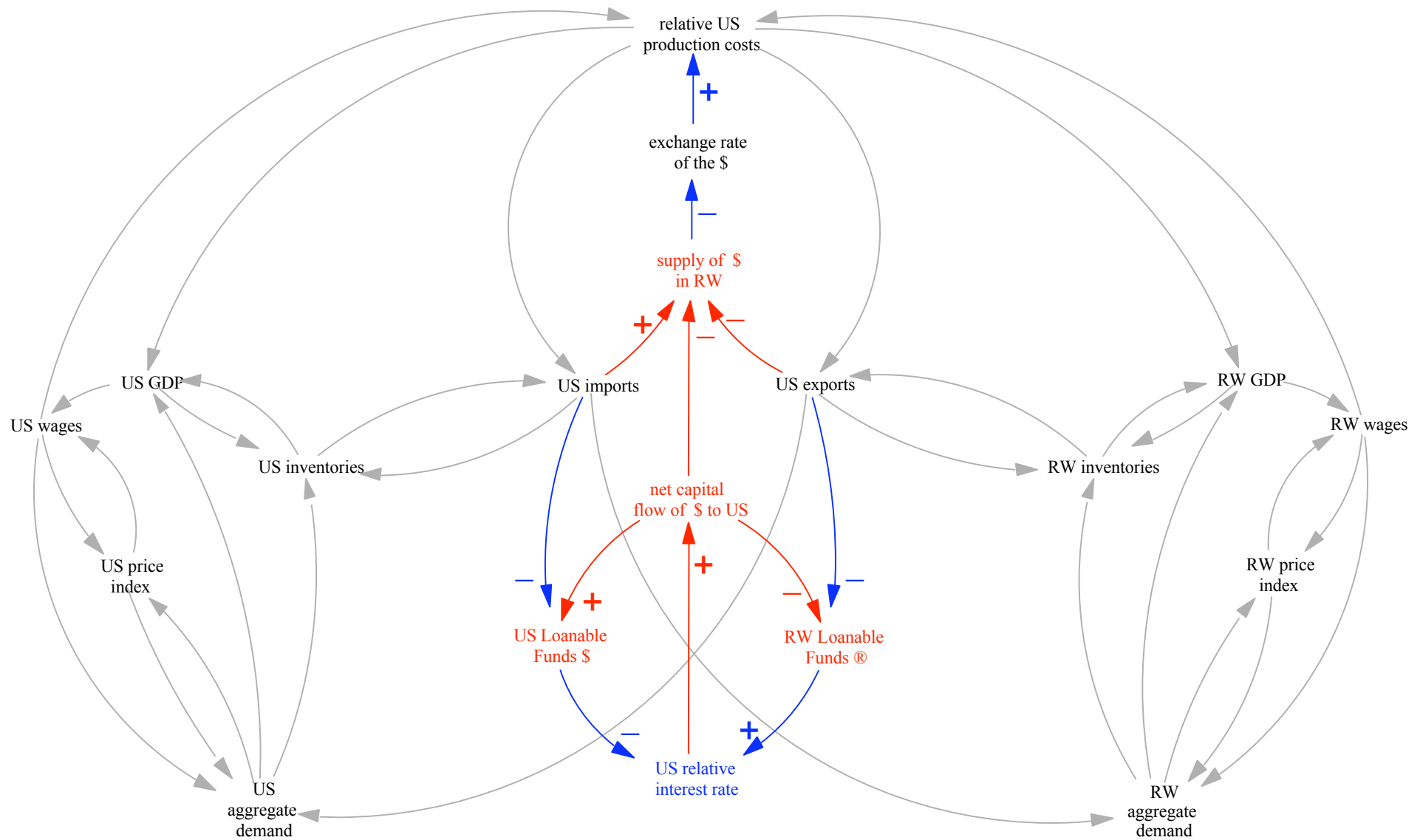
Recall that saving is defined as income received but not spent in the period it was received. The RW receives income in dollars as a result of US imports. Some of that income is then spent on US exports. When US imports exceed US exports, the RW is saving dollars, and the supply (stock) of dollars in the RW increases as we learned in the previous tutorial. Where will those surplus dollars be saved?



If US interest rates are higher than RW interest rates, the surplus dollars in the RW will be used to buy bonds denominated in US dollars (e.g., US Treasury bonds). That will reduce the stock of dollars in the RW and increase the the stock of US loanable funds.



Note carefully the relationship between US net exports and the net capital flow to the US. The surplus dollars resulted when US imports exceeded exports. Net exports was negative. That led to rising US interest rates that attracted those surplus dollars back to the US. Net capital flow to the US was positive. The size of US net exports and net capital flow to the US will be approximately equal in the short run and exactly equal in equilibrium. However, they will have opposite signs because they are dollars moving in opposite directions--one into and the other out of the US.



In the short run, the size of the net capital flow to the US may not be equal in magnitude to the size of US net exports. Suppose, for example, that US interest rates are rising for additional reasons unrelated to trade imbalances. Residents in the RW may wish to buy more US bonds than can be purchased with their surplus dollars. In that case, the net capital flow to the US would be even larger, and the additional dollars for that purpose would be obtained by withdrawing rollovers from RW loanable funds and exchanging them for dollars.

Summary

- **US trade deficits produce a surplus of dollars in international currency markets because RW residents have more dollars than they need to pay for US exports. The rise in the supply of dollars in the RW causes the exchange rate (value of the dollar) to decline.**
- **When US imports exceed US exports, that causes US loanable funds to decline more than RW loanable funds, and the result is a rise in US relative interest rates. RW residents holding dollars are encouraged to recycle them to the US because of the attractive US interest rates. That positive net capital flow into the US will eventually be equal in magnitude to the negative net exports. In equilibrium...**
$$\text{net capital flow to the US} = - \text{US net exports}$$
- **The rising net capital flow to the US reduces the supply of dollars in the RW and pushes the exchange rate (value of the dollar) back up again.**
- **The fluctuation in the exchange rate causes fluctuations in the cost of US imports and exports, the balance of trade, and aggregate demand in the US and the RW.**

