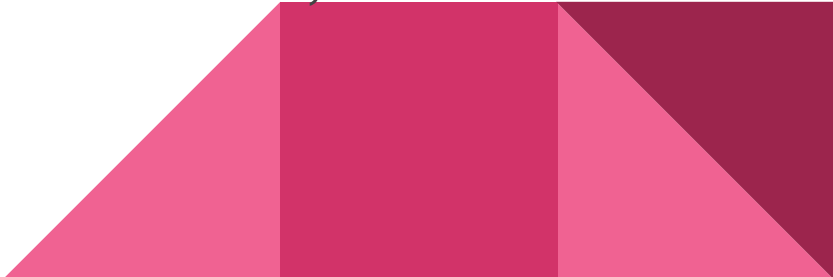


Loanable Funds Market

Chapter 6

Overview

- The importance of saving and investment to economic prosperity.
 - How central banks affect economic activity through changes in the nominal interest rate.
 - The paradox of thrift: when willingness to save leads to less savings.
 - Negative interest rates and their economic impacts.
 - What happens when governments want to borrow from the public?
 - Supply-side and trickle-down economics.
 - Why in poor economies saving matters, and in developed countries, investment.
- 

Components of the loanable funds market

All forms of credit, such as:

- commercial banks' loans,
- corporate and government bonds
- savings deposits.

Private and public borrowing and lending.



Supply and Demand in the LF Market

Supply

- Curve is the equation of national (public and private) saving:
 - Saving is defined as the process by which people accumulate wealth for future consumption.
 - Later it will include foreign saving.

Demand

- Curve is the equation of national (public and private investment):
 - Investment increases the productive capacity of the economy.
 - Later it will include foreign investment.

Saving and Investment

Saving behavior depends on the wealth of individuals (W), expectation of future income and prices (E), changes in personal taxes (T), and measures of risk aversion (RA). It is also (obviously) a function of interest rates (r).

Saving Function:

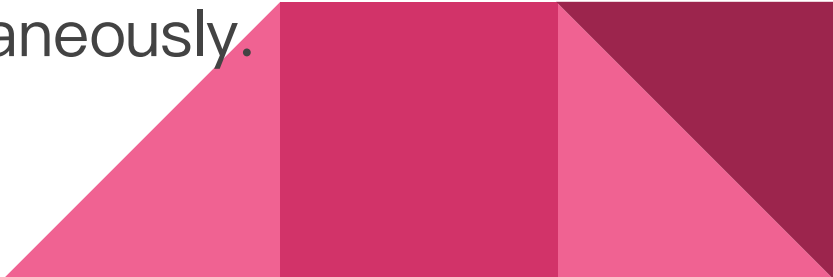
$$S = f(W, T, E, RA, r)$$

Investment is a function of corporate taxes (T), technological change or innovation (I), expectation of business opportunities (E), subsidies (S), and aggregate costs (C). It is also a function (obviously) of interest rates (r).

Investment function:

$$I = f(C, T, E, I, S, r).$$

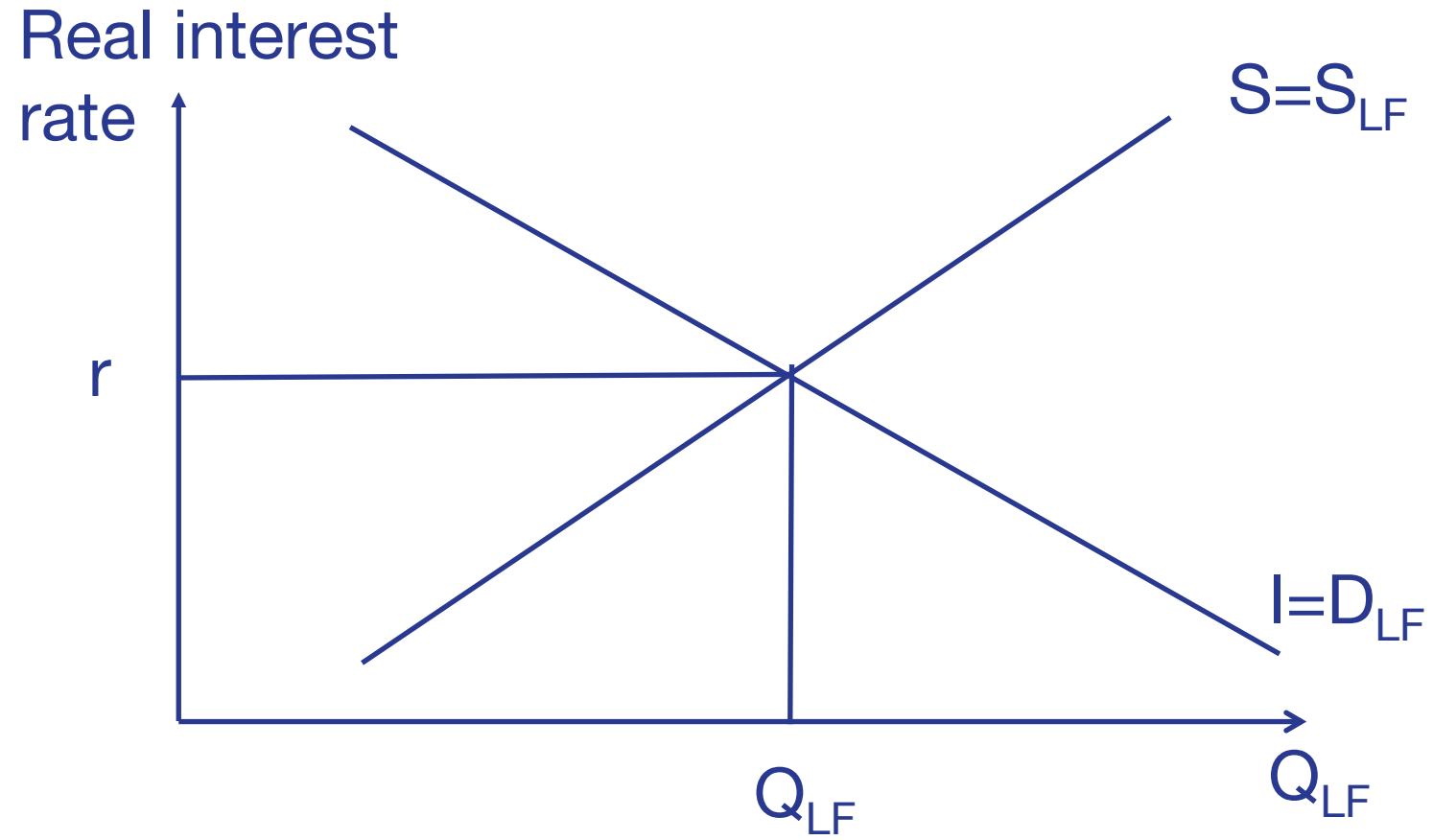
Loanable Funds Market Assumptions

- ❑ Households save but never borrow.
 - ❑ Firms and corporations borrow but never save.
 - ❑ Governments can save (in a budget surplus) and/or borrow (in a budget deficit), or be neutral (in the case of a balanced budget).
 - ❑ In a closed economy, firms and the government must borrow domestically (in an open economy, firms and governments routinely borrow from foreign lenders).
 - ❑ financial markets are complete, liquid and efficient (they often aren't).
 - ❑ Effects in LF market shocks hit MGS and MM simultaneously.
 - ❑ ***Credibility matters for transmission to work.***
- 

Chapter 6.2

The link between the
Monetary and the Credit
Market

Loanable Funds Market Graph



Credit Market

Inextricably linked to the money market.

Deals with real interest rates, not nominal interest rates (Real interest rate = nominal interest rate minus rate of inflation).

Changes in the monetary market affect the market for loanable funds.

In the short-run, policies aimed at lowering nominal interest rates can/will also lower real interest rates.

In the long-run, money is neutral.



Credit Market

- In practice, not all firms borrow at the same rate, or for the same length of time, or from the same places.
 - Larger and more established/credible firms can borrow at lower rates
- Effects from credit market shocks hit Market for Goods and Services and the Money Market simultaneously.



Chapter 6.3

The basic mechanics of
the Loanable Funds
Market

Changes in SLF and DLF

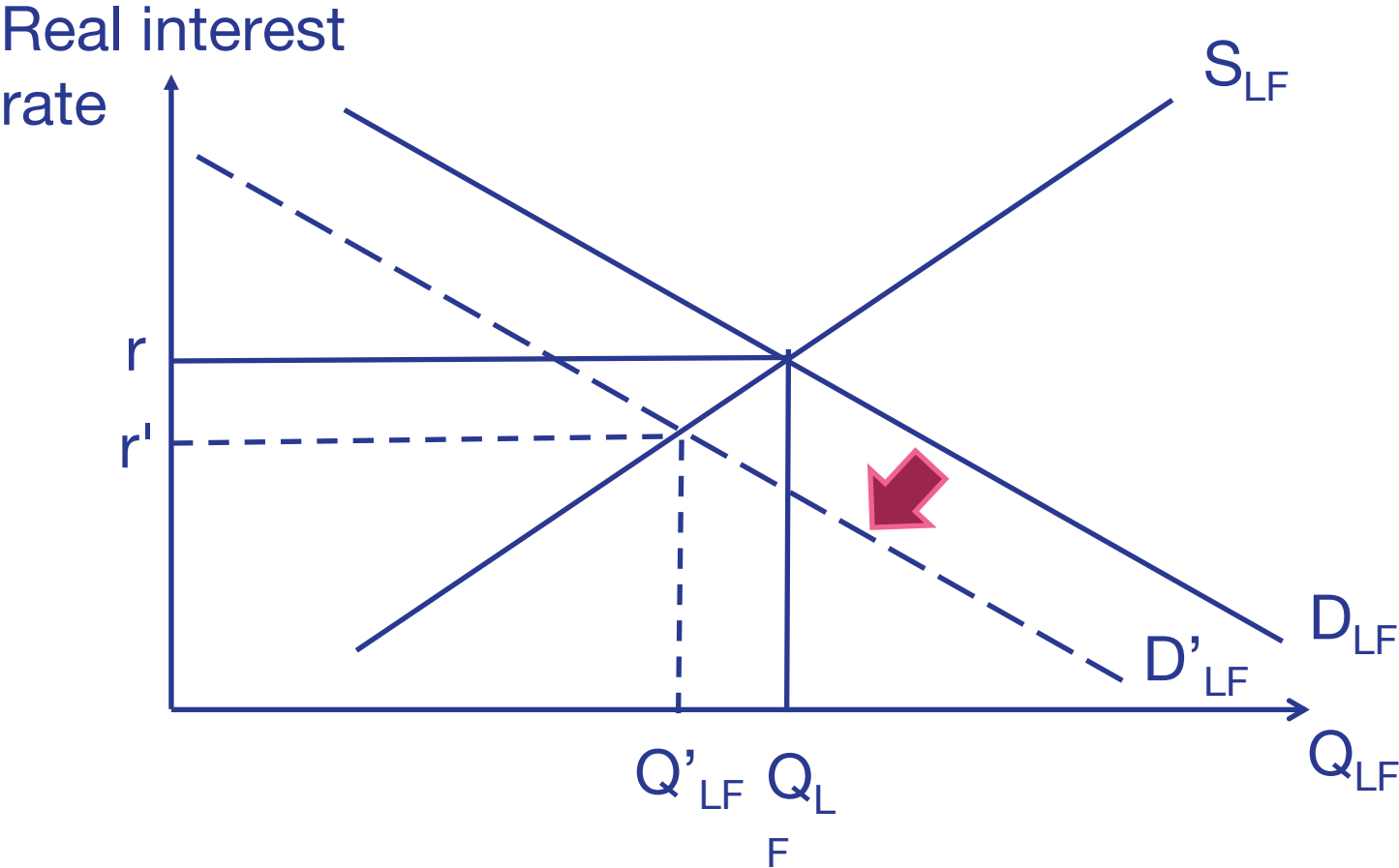
Changes in Supply of Loanable Funds

- Increase in supply
 - Rightward shift in SLF curve
 - Real interest rates decrease
 - Quantity of investment increases.
- Decrease in supply
 - Leftward shift of SLF Curve
 - Real interest rates increase
 - Quantity of investment decreases.

Changes in Demand for Loanable Funds

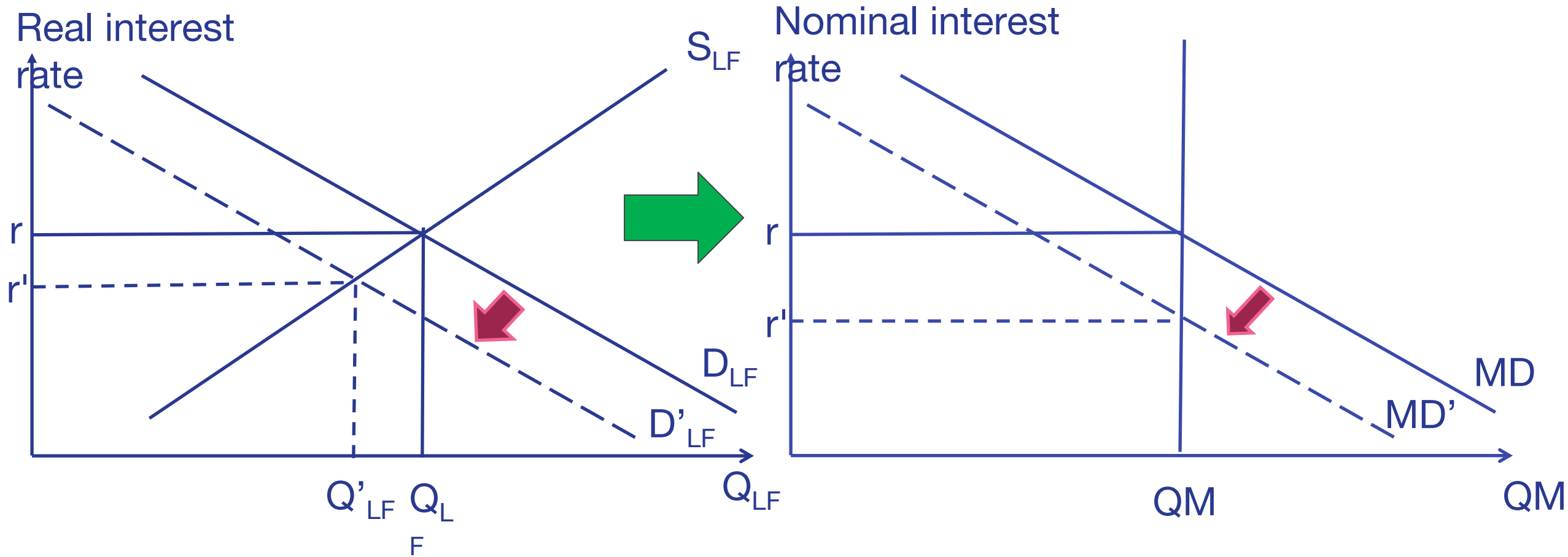
- Increase in Demand
 - Rightward shift of DLF curve
 - Real interest rates increase
 - Quantity of investments increases.
- Decrease in demand
 - Leftward shift of DLF curve
 - Real interest rates decrease
 - Quantity of investments decreases.

Decrease in Demand for Loanable funds



Side by Side: LF shock effects on money market

MS



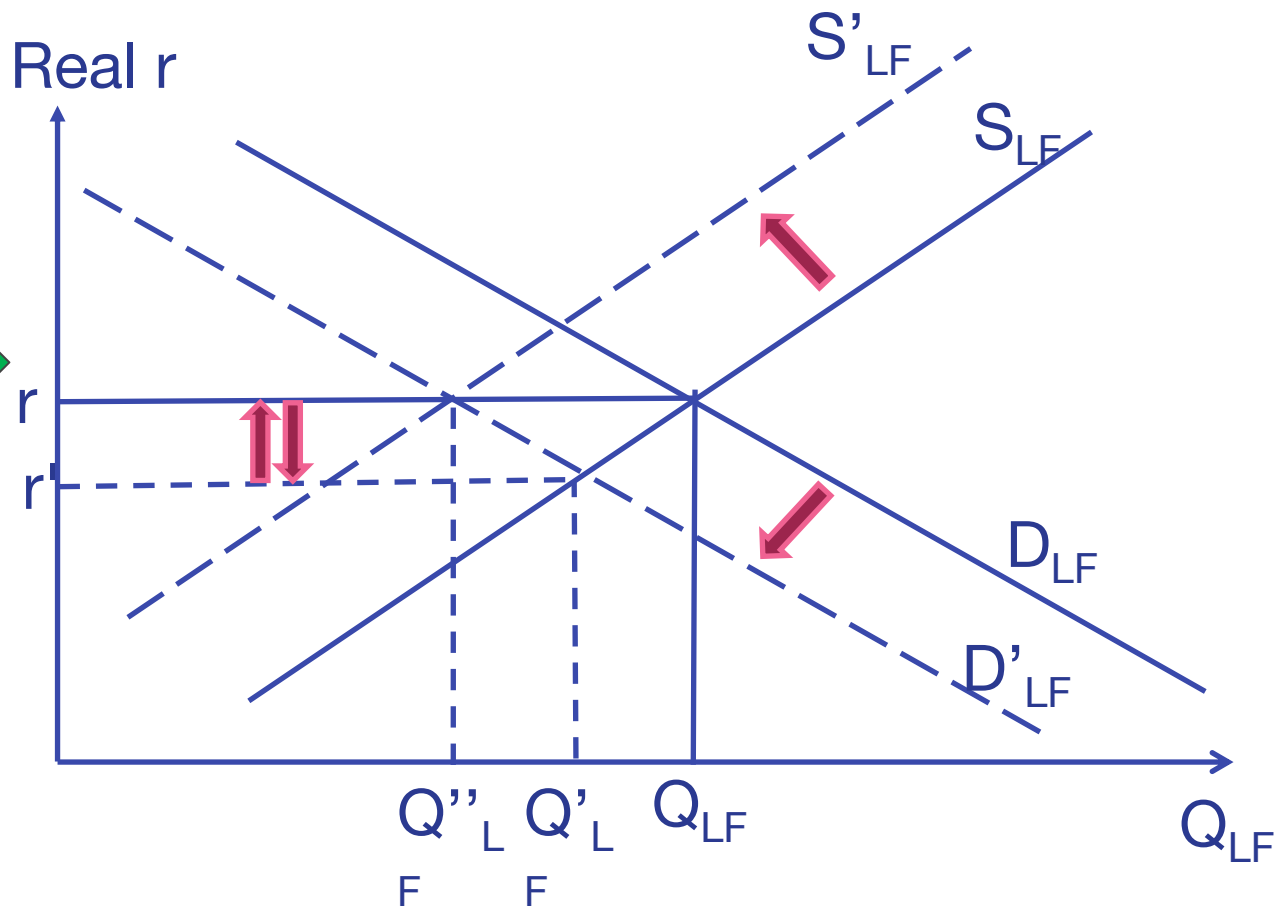
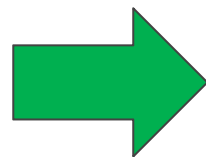
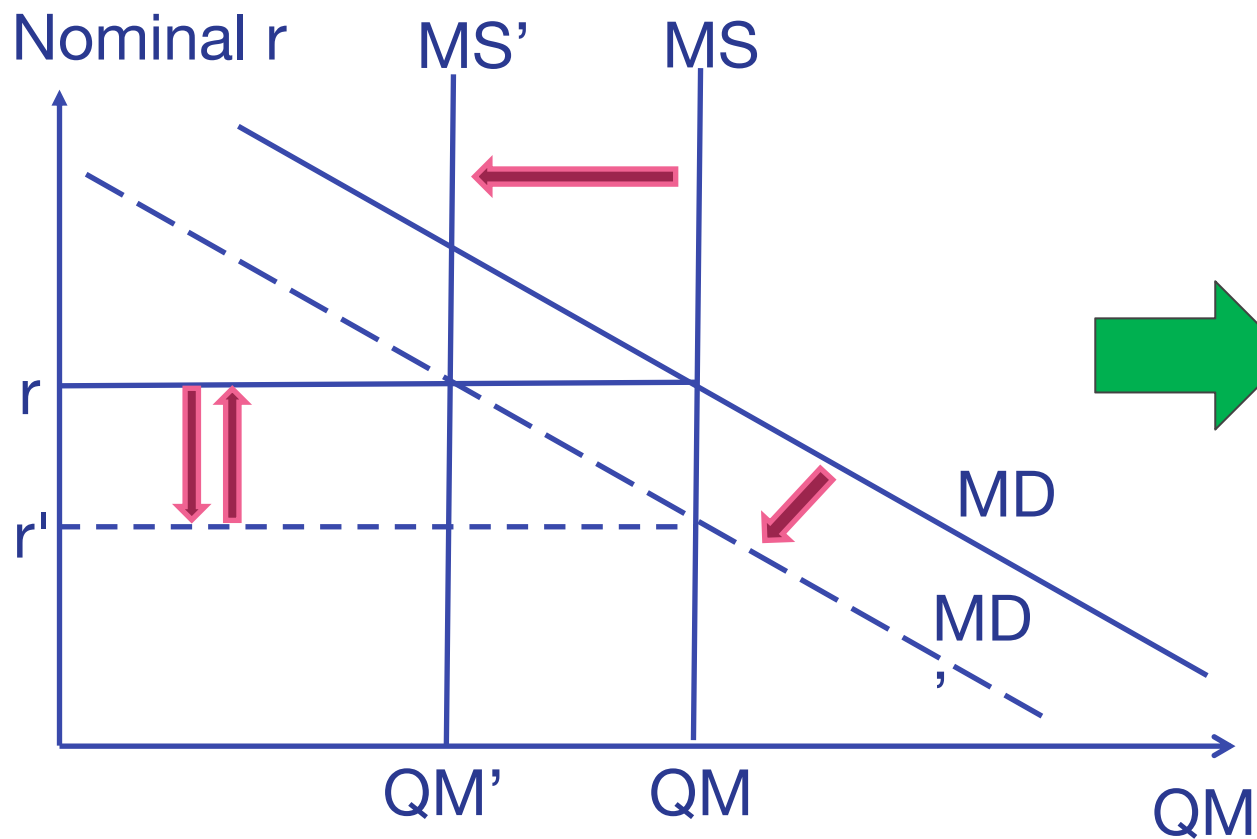
Government Response to Negative LF Demand Shock

Assuming the government and national bank is credible and has the ability to affect the money market, the national bank may engage in open market operations to bring interest rates back up to pre-shock levels.

These actions would be aimed at the money market and would simultaneously impact the market for loanable funds.

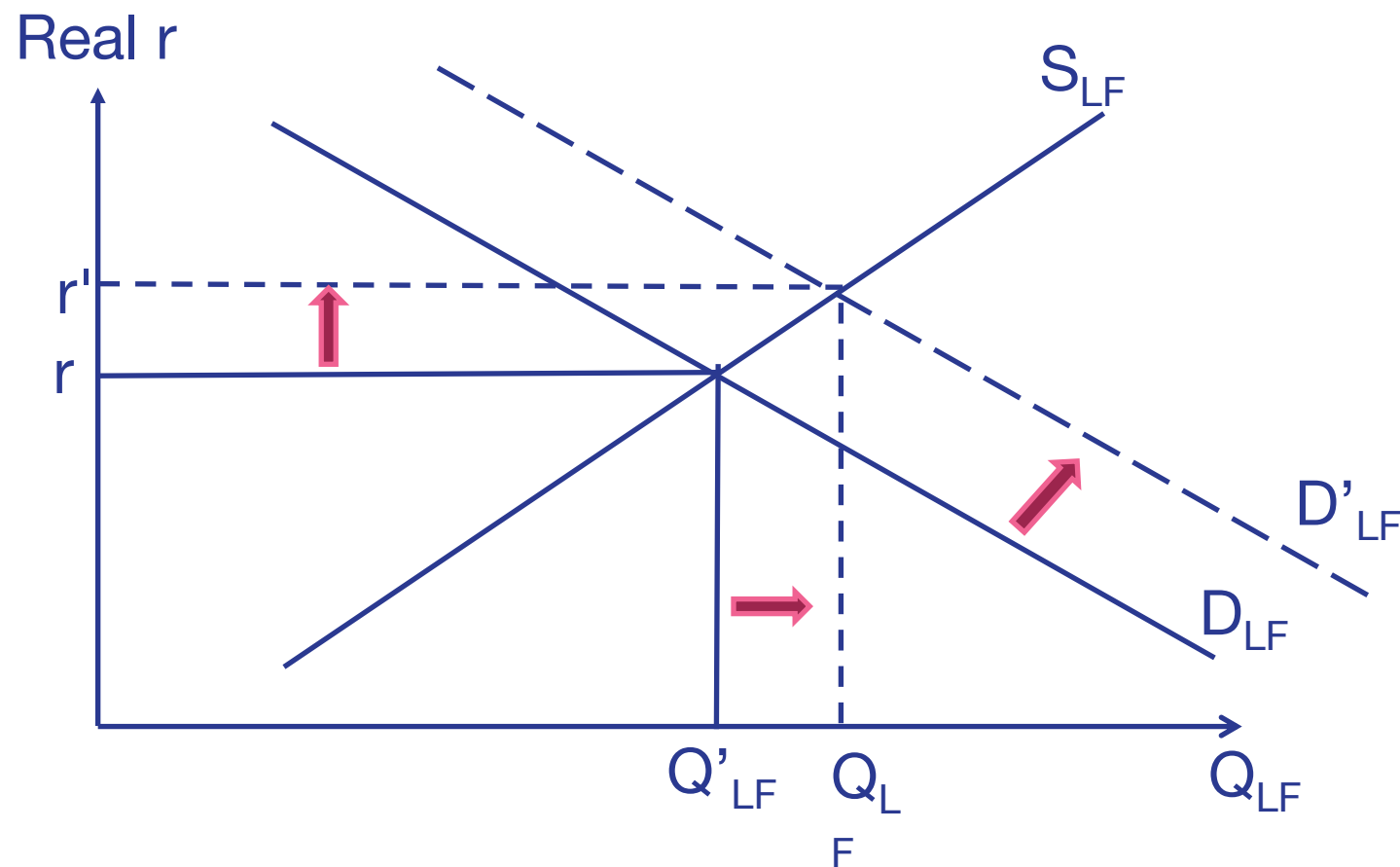
To bring interest rates back up, the government must engage in open market operations to lower the nation's money supply.

Government Response to Negative LF Demand Shock: Illustrated



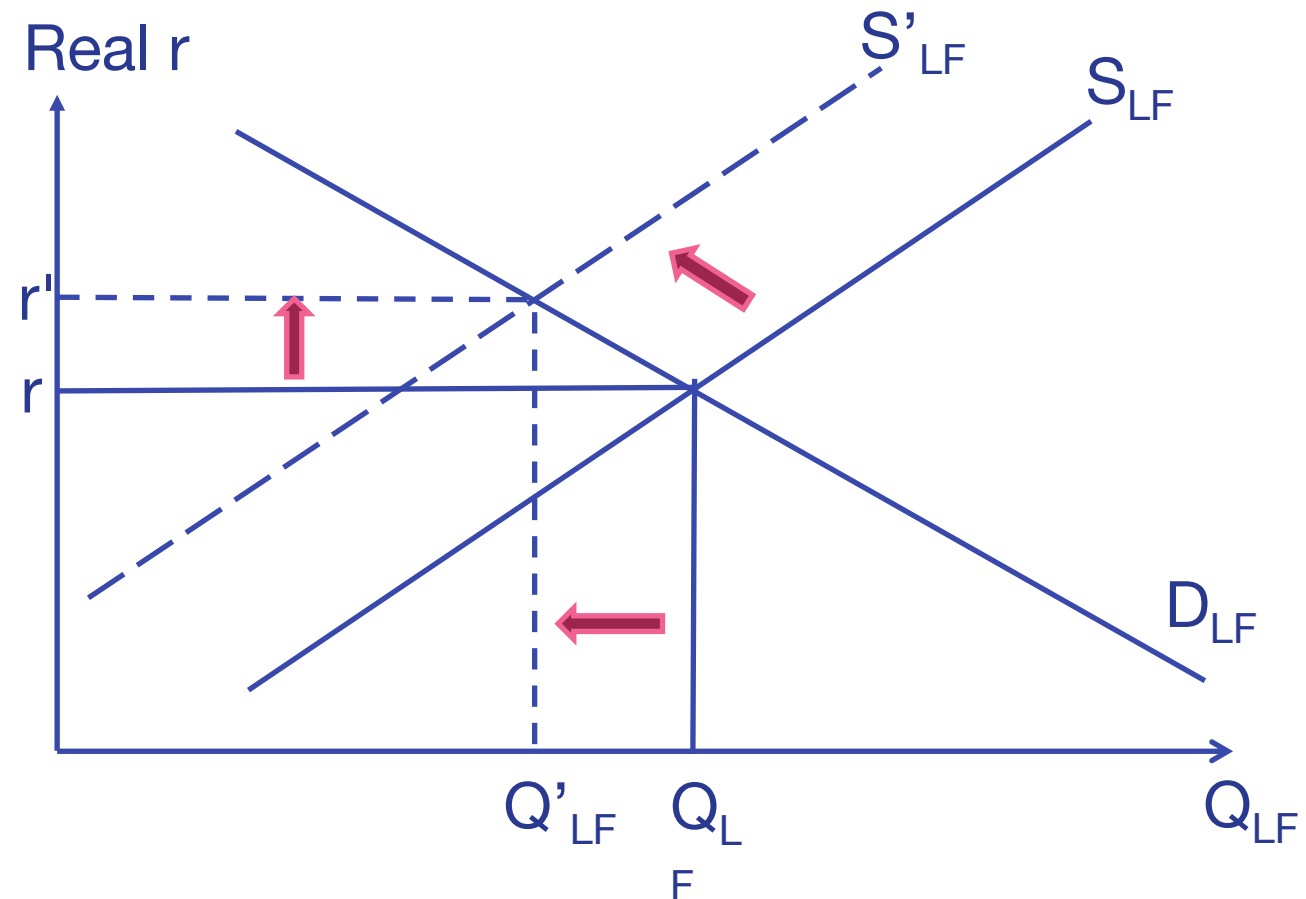
Business Optimism in the Market for Loanable Funds

Changes in technology can spur optimism, particularly among economic firms, and those firms could choose to invest more, which would increase the demand for loanable funds.



Aging Population's Effect on LF Supply

Imagine a nation with an aging population. As more and more of its citizens age out of the workforce, people save less and less, which decreases the national supply of saving. This leads to a leftward shift in the supply of loanable funds, a decrease in total investment, and an increase in real interest rates.

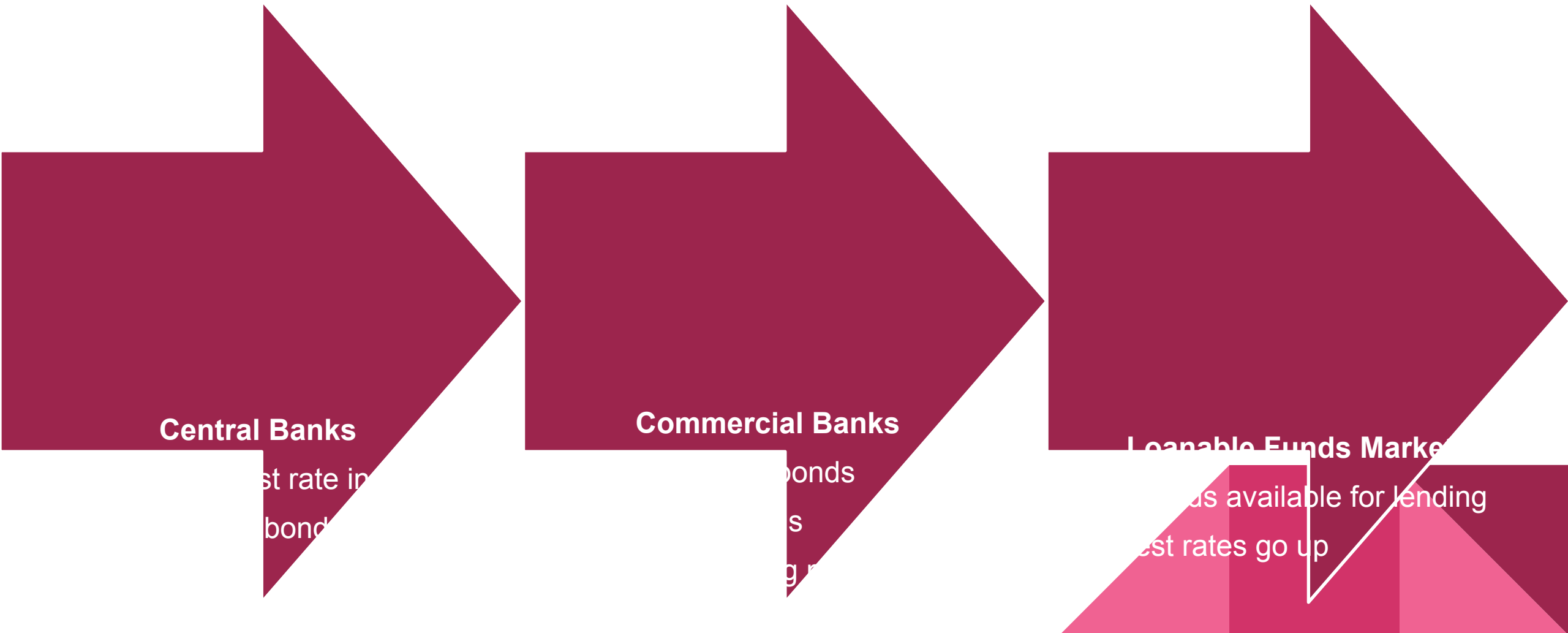


Importance of Credibility in Transmission

- ❑ The monetary and fiscal authorities of a country need to be credible for the transmission mechanisms of economic policy to work:
 - If the population doesn't expect the policy to work, it is less likely to work
 - If the population doesn't expect policy authorities to keep promises, it is less likely that policies have the intended effects.
 - Central banks can, if they have credibility and the transmission mechanisms of monetary policy are working well, influence economic growth and inflation through changes in the nominal interest rate.

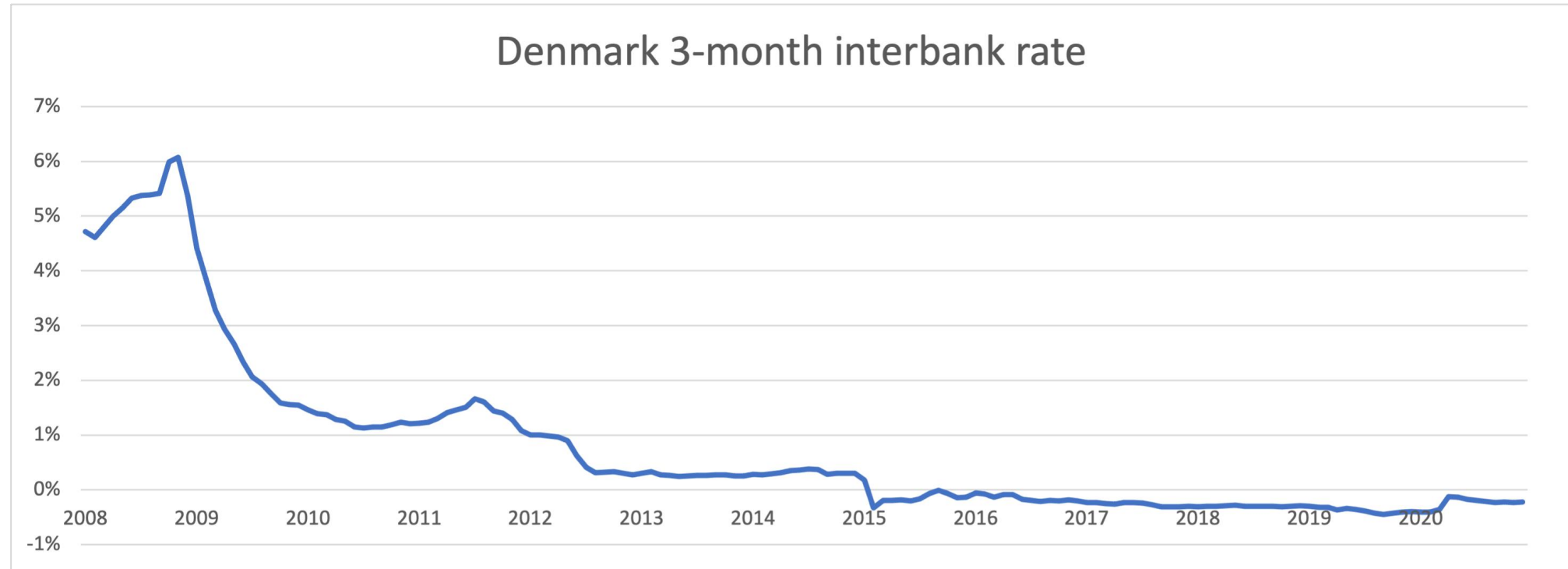


Proper Transmission of Contractionary Monetary Policy



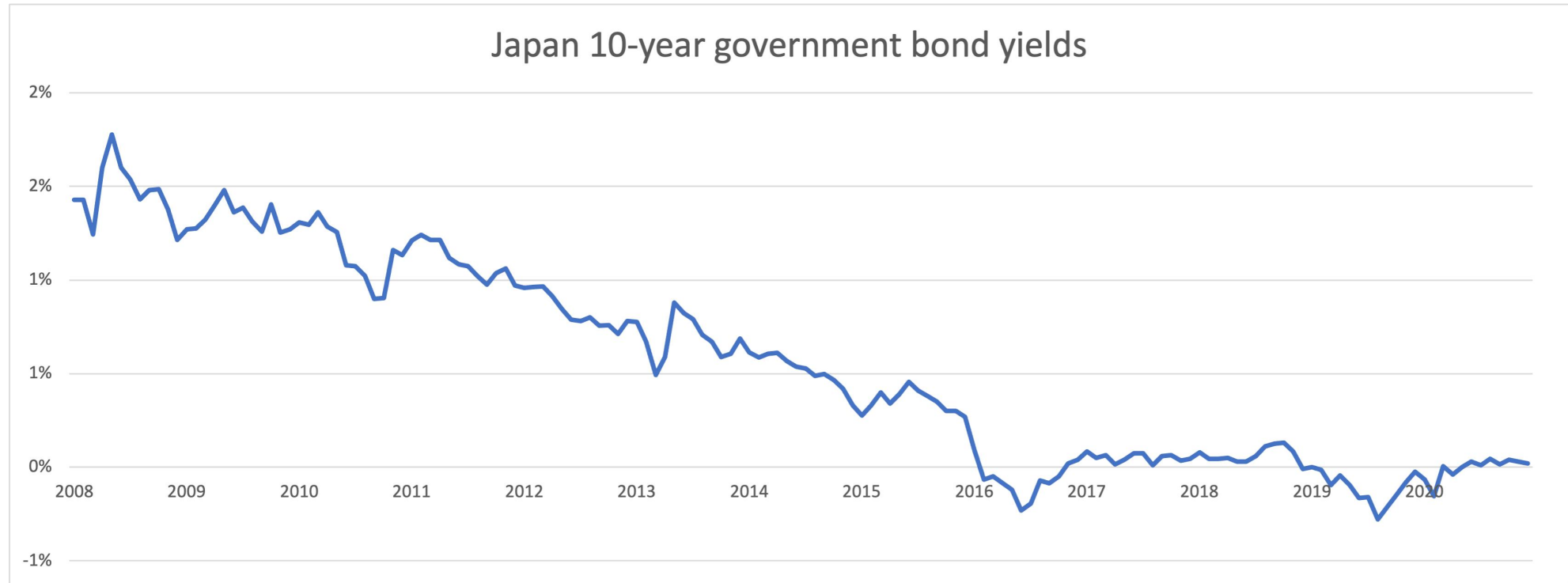
Negative Interest Rates?

Denmark and Japan are two countries with negative interest rates



Negative Interest Rates?

Denmark and Japan are two countries with negative interest rates



What Leads to Negative Interest Rates?

Demand-side

- Interest rates can lower because of decreased demand for investment.
- A serious shaking of investor confidence following the global financial crisis led to exactly that.
- As less firms look to invest, demand for Loanable funds shifts leftward, and real interest rates decrease.

Supply-side

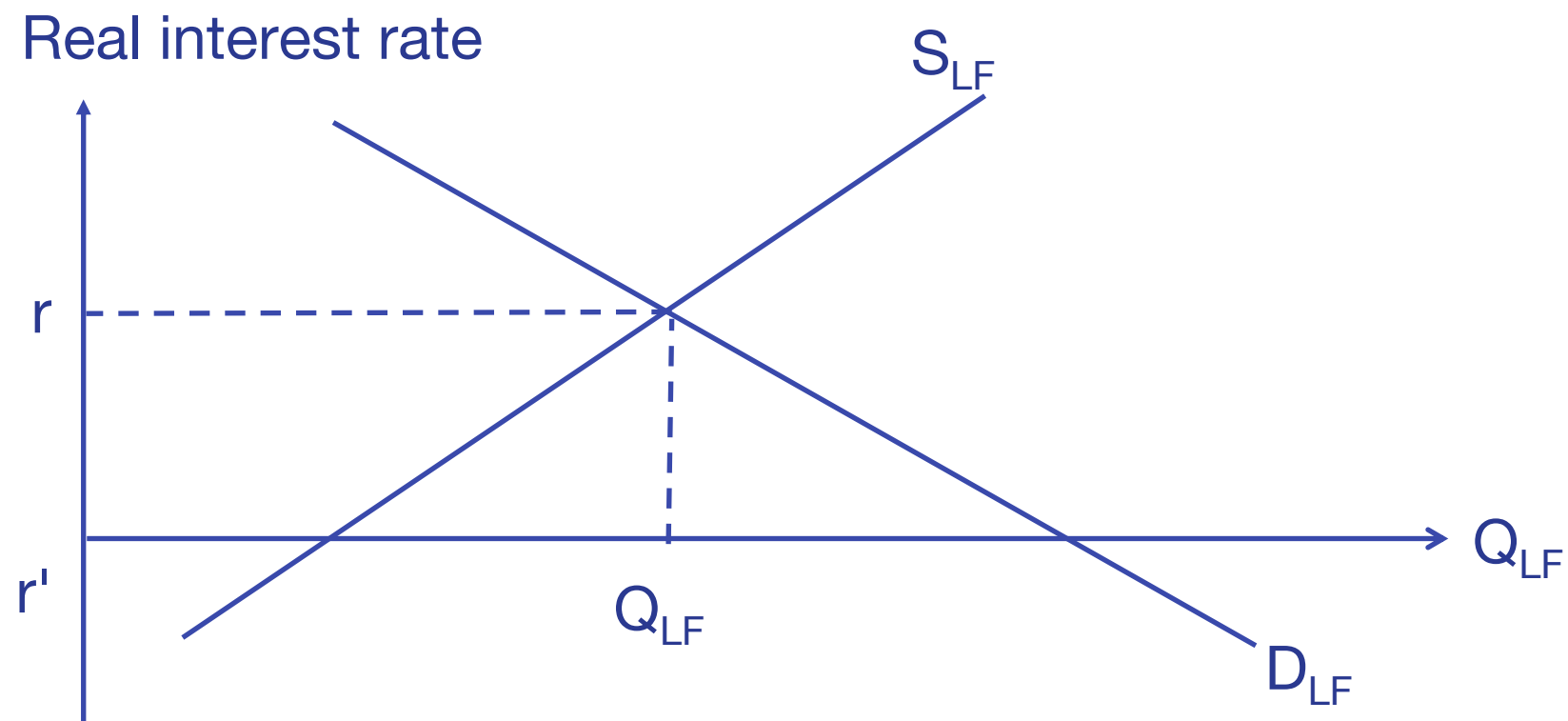
- Countries pursue low interest rates as a way to spur economic growth.
- Countries often increase their money supply (MS), shifting the supply of loanable funds rightward, and increasing investment. This decreases real interest rates.

What caused negative interest rates in Japan and Denmark?

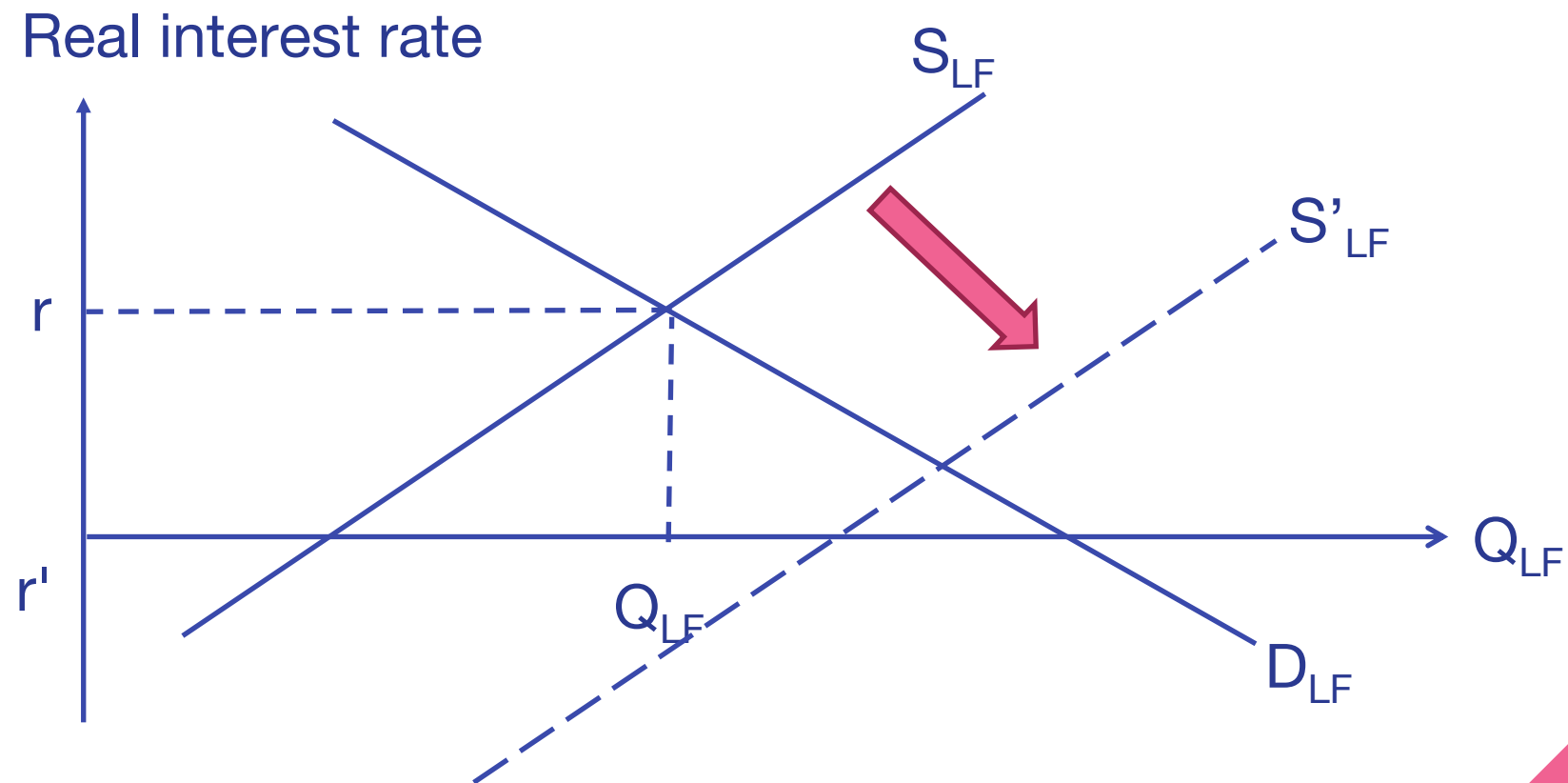
A combination of governmental Quantitative easing (expansionary monetary policy), designed to spur economic growth, and low demand for investment following the financial crisis.



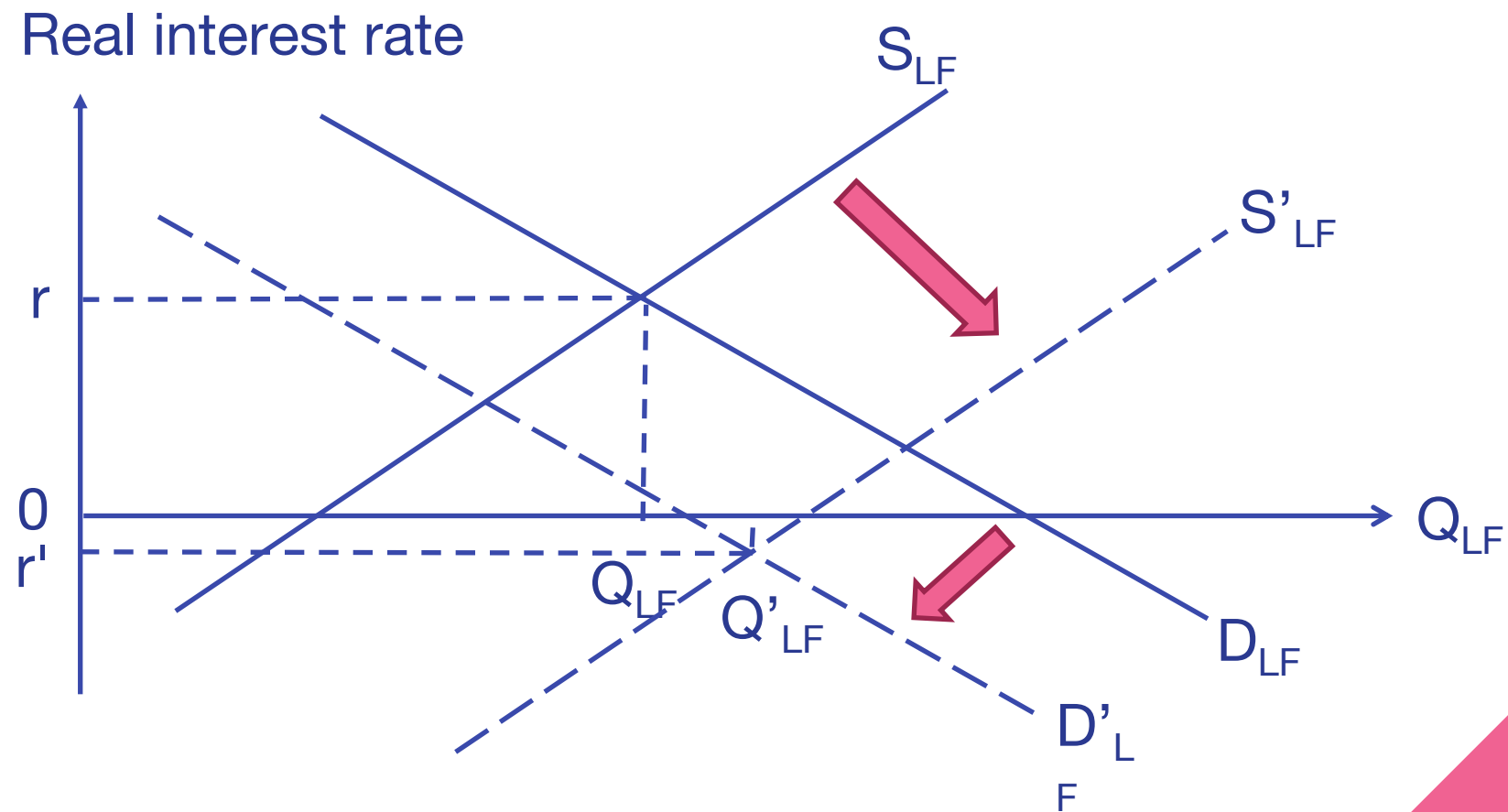
Negative Interest Rates, Graphically



Negative Interest Rates, Graphically



Negative Interest Rates, Graphically



Chapter 6.4


Public Debt and its Effects on the Loanable Funds Market

Central Bank and Open Market Transactions


- ❑ The primary way a central bank controls interest rates is through open market transactions—buying and selling government bonds to affect the money supply and therefore the liquidity of money.
- ❑ If the central bank wishes to decrease the money supply and raise interest rates, they would sell government bonds. Selling government bonds takes the money received from the purchasers of these bonds out of the money market, decreasing the money supply and liquidity.



What if the Government Borrows?

- ❑ What happens in the loanable funds market if the government borrows money is context-dependent.
 - ❑ If people trust the government and trust that the borrowed money will be used productively, the D_{LF} curve moves rightward, and interest rates are raised while total investment increases.
 - ❑ If people don't trust the government will spend the money wisely, the government “crowds out” potential investors by borrowing money that the investors otherwise would be using. Total national investment remains unchanged.
- 

Difficulties of Monetary Policy: Public Debt

- ❑ People's trust in the government's borrowing comes down to credibility and expectations.
 - If the government has a history of borrowing money for irresponsible investment, the additional borrowing will likely have a strong crowding out effect.
 - If the government has a history of selectively borrowing for investment that serve the common good, they can even cause “crowding in”.
 - ❑ Countries with high national debt are often seen as less credible because of how much they've borrowed.
- 

Chapter 6.5


Connecting Money, Credit,
and Real Markets

Important things when integrating economic models

- ❑ The credit market determines aggregate investment and the real interest rate.
- ❑ Aggregate investment affects economic growth and inflation in the market for goods and services.
- ❑ Central banks can try to influence aggregate investment through the nominal interest rate.
- ❑ Governments compete with businesses for aggregate saving.



Things to keep in mind

- ❑ The loanable funds market is a representation of decisions made by households and companies in relation to their lending and borrowing.
 - ❑ In most emerging countries people save little, as they are poor, and saving depend on how high the interest rates are.
 - ❑ In developed countries, people tend to save more, and thus companies have more access to funds.
 - ❑ Behaviors and culture matter
 - Asian countries tend to save more than other countries of similar economic conditions
 - ❑ Credit constraints are a major obstacle for poor countries to climb the prosperity ladder.
- 

Simultaneous Clearing and the Central Bank

- Difficult to analyze the market for loanable funds on its own because of how connected it is with the money market
- Central bank acts as de facto monopolist in the money market
 - Influences saving and investment decisions
- So how does the Central Bank influence decisions?



An increase in interest rates

Lets say the Central Bank wishes to raise interest rates. This is how it's done:

Step 1 —the central bank offers new government bonds.

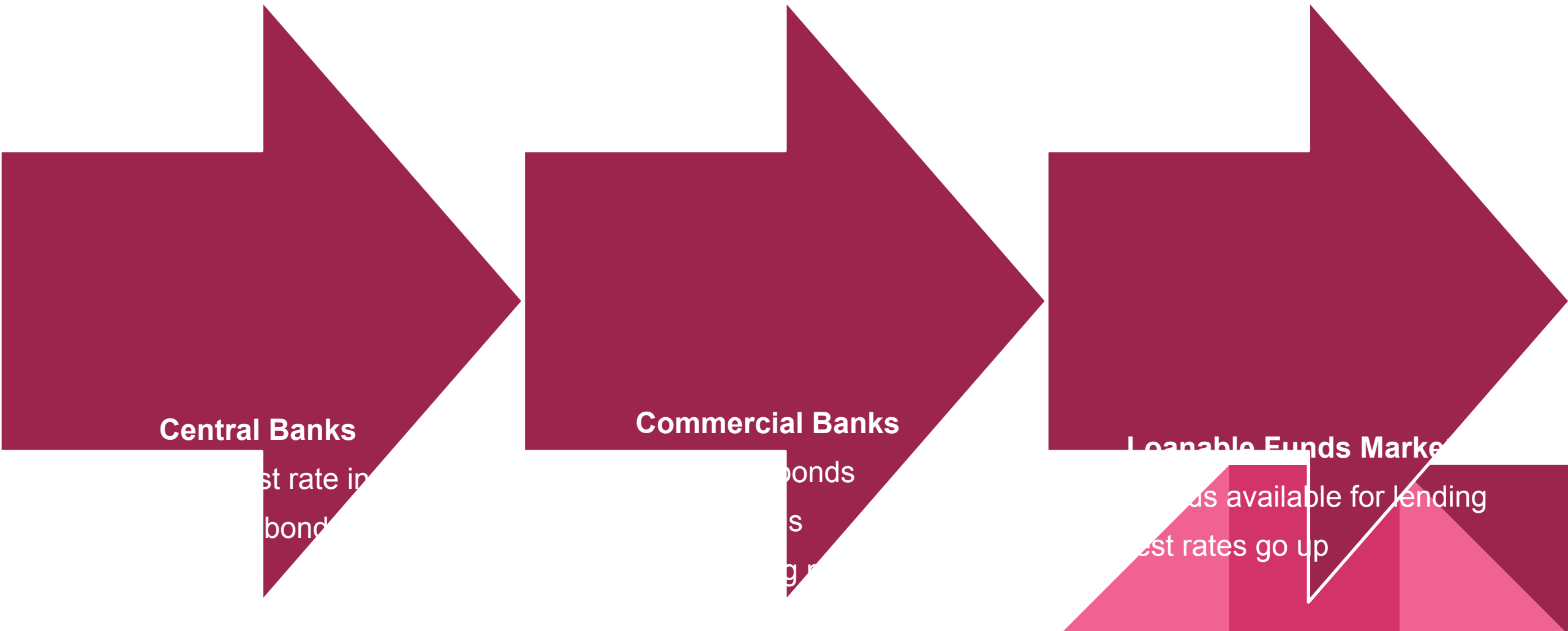
Step 2 —if the central bank has credibility, or in other words, if investors are willing to buy these extra bonds, then as agents buy them, the money supply decreases.

Step 3 —in the loanable funds market, the supply of loanable funds also declines, since agents now have less saving to offer to borrowers.

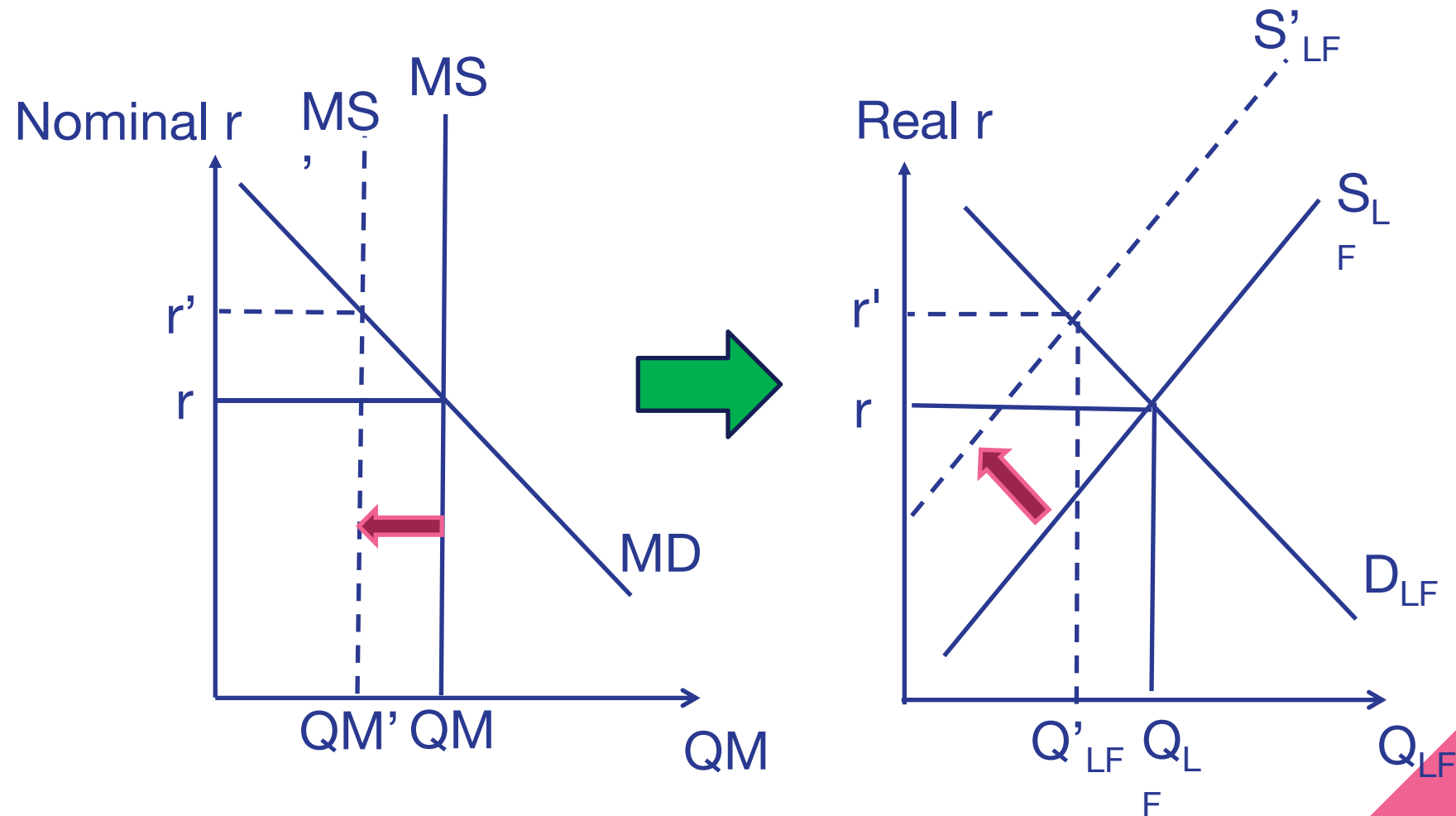
Step 4 —the interest rate goes up in both markets (not by the same amount, after all one is the nominal and the other the real interest rate).



An increase in interest rates.



The transmission of an interest rate hike



The Paradox of Thrift

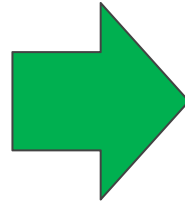
- Popularized by John Maynard Keynes.
- Describes the process by which an increase in national propensity to save can actually lead to lower saving.
- Rarely does it actually occur:
 - Some ascribe it to the issues plaguing Japan in the 1990's
 - Paul Krugman says it is in part to blame for the slow recovery from the global recession
- Important lens through which to analyze select extraordinary economic events.



Paradox of Thrift in Two Graphs

Part 1:

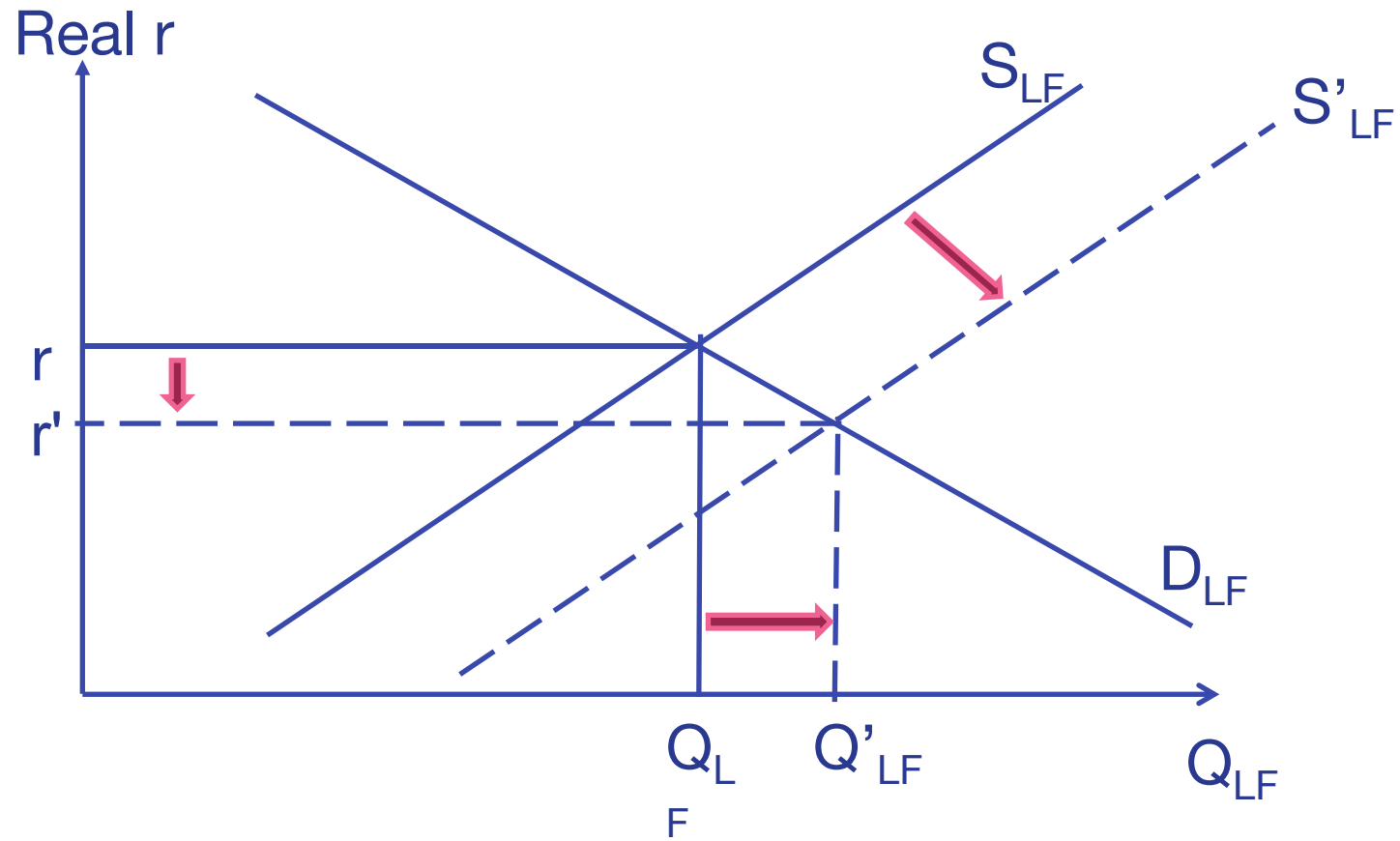
- People decide to save significantly more
- SLF increases substantially
- Aggregate consumption is lowered



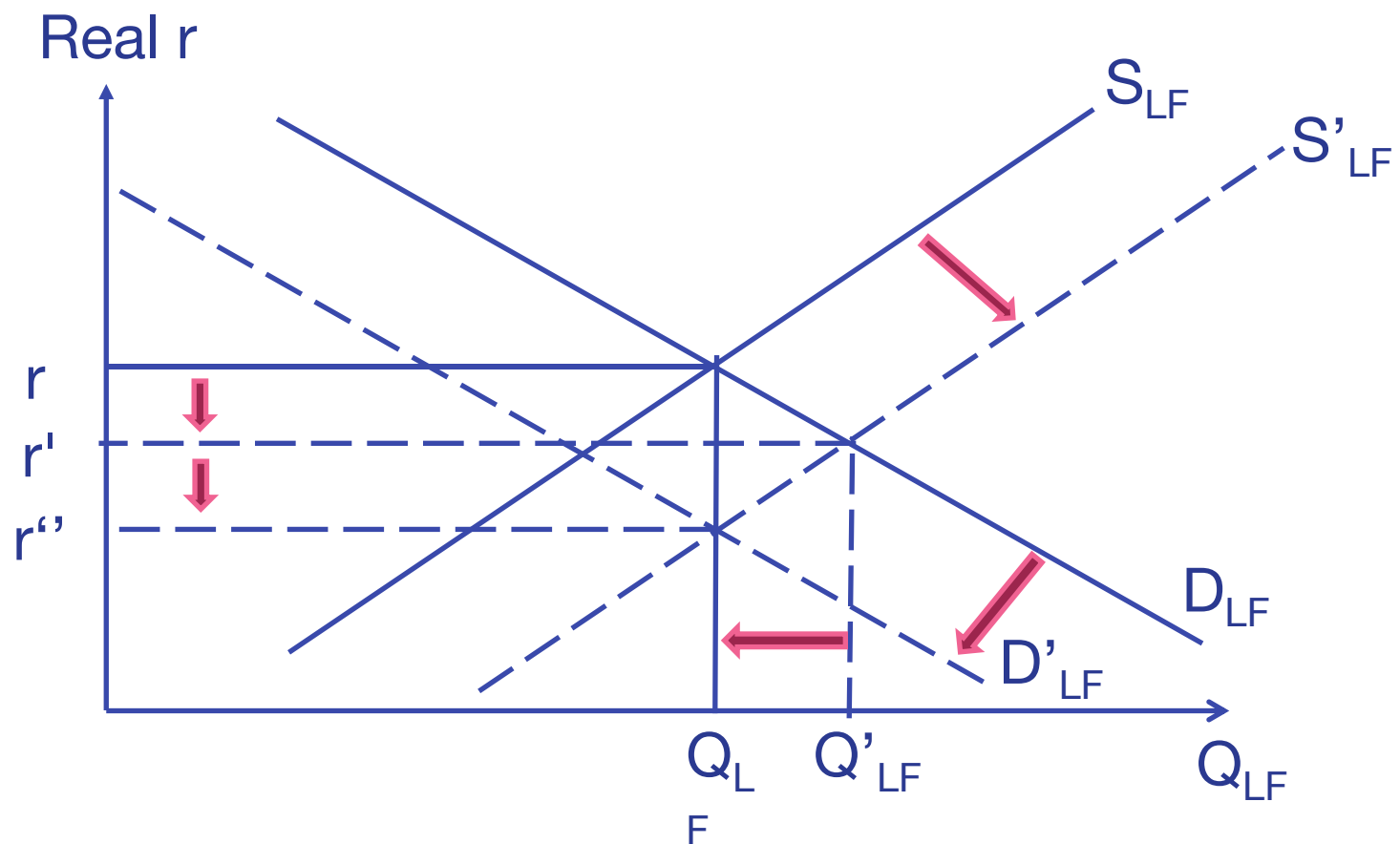
Part 2:

- Lower aggregate consumption means less reason for companies to invest
- Aggregate Investment falls
- Decreasing investment lowers DLF
- End Result: Lower interest rates, but same volume of credit as before initial change

Paradox of Thrift: Step 1



Paradox of Thrift: Step 2



Paul Krugman on “The Paradox of Thrift”

“The story behind the paradox of thrift goes like this. Suppose a large group of people decides to save more. You might think that this would necessarily mean a rise in national saving. But if falling consumption causes the economy to fall into a recession, incomes fall, and so do savings, other things equal. This induced fall in savings can largely or completely offset the initial rise. Which way it goes depends on what happens to investment, since savings are always equal to investment. If the central bank can cut interest rates, investment and hence savings may rise. But if the central bank can't cut rates — say, because they're already zero — investment is likely to fall, not rise, because of lower capacity utilization. And this means that GDP and hence incomes have to fall so much that when people try to save more, the nation actually ends up saving less.”



Chapter 6.6

Investment/Saving Identity

Why Does Saving Equal Investment?

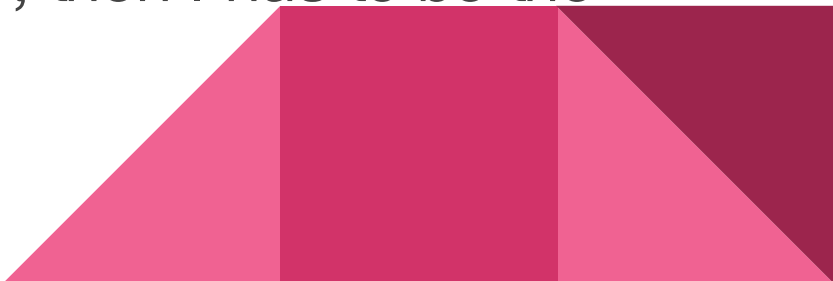
Conceptual Proof

- private investment and saving are determined in the market for loanable funds.
- If there is an imbalance, then the opportunity cost of supplying or demanding funds changes, until the quantity invested (borrowed) is the same as the quantity saved.



Why Does Saving Equal Investment

Algebraic Proof (for Closed economy)

- assume total output = total income = total expenditure = Y .
 - Assume the government has a balanced budget so $G = T$, or government expenditure is equal to taxes.
 - Then, because disposable income can be either saved or consumed, $Y - T = C + S$. So, $Y = C + S$
 - + T . Aggregate demand is $Y = C + I + G$.
 - Then: $Y = C + S + T$; and $Y = C + I + G$. Since, $G = T$, then I has to be the same as S .
- 

Which Came First?

Argument for Saving

- How could anyone have any money to invest if they didn't initially save the money?

Argument for Investment

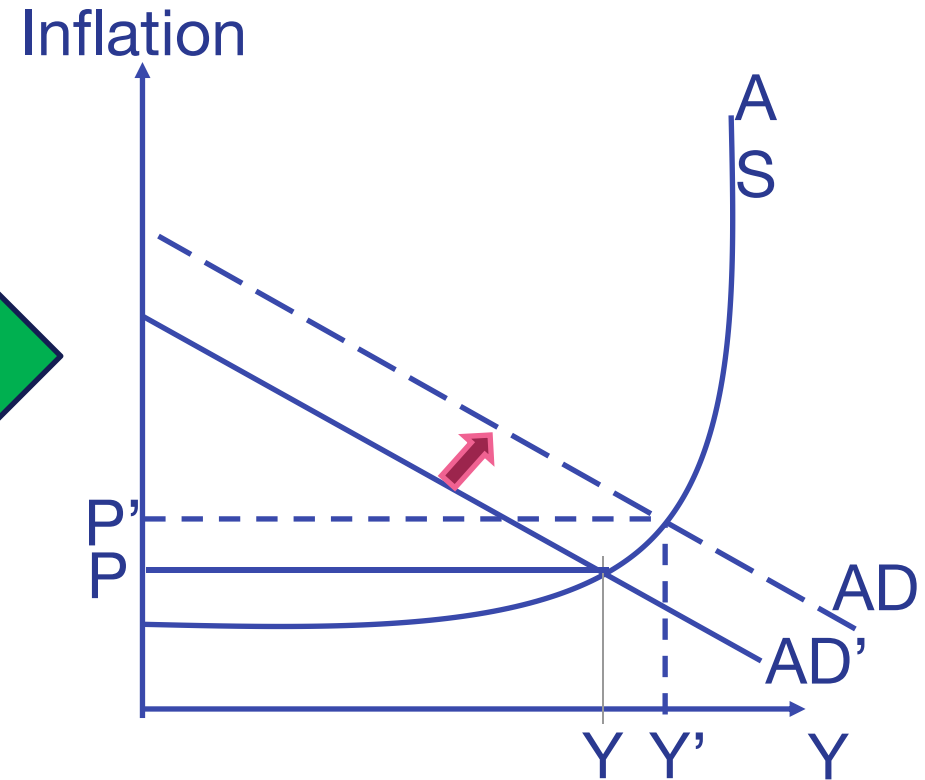
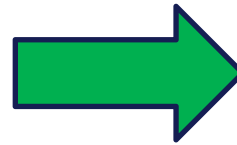
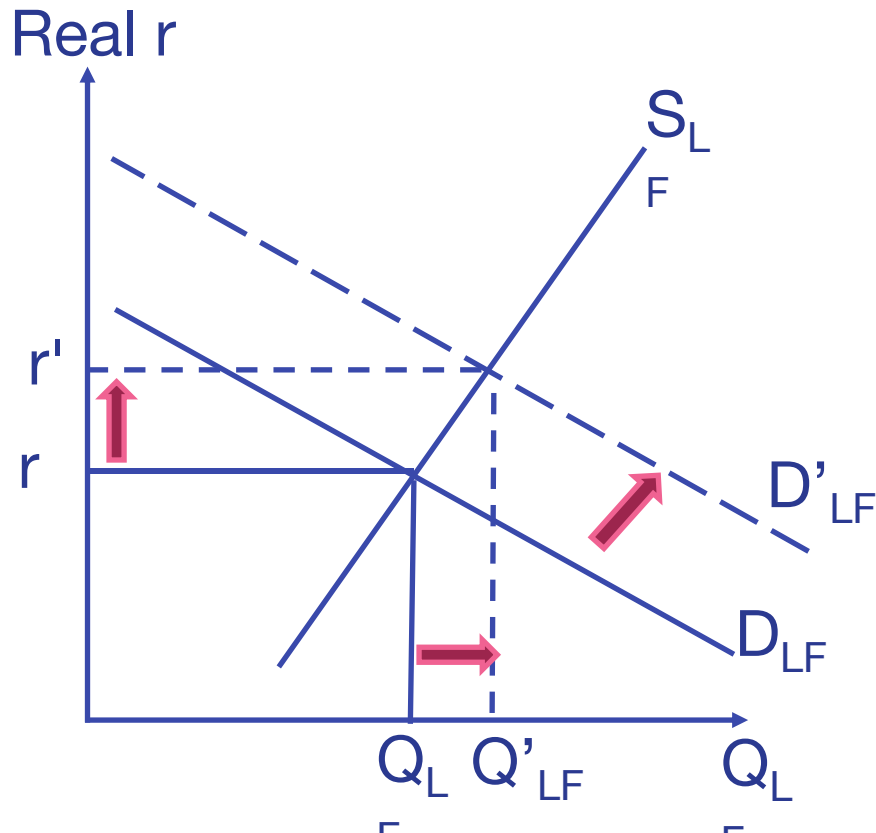
- How could anyone have money to save if it wasn't created through investment?

Keynes and his “Animal Spirit”

- Keynesian Economics claims that investment comes first,
- Humanity’s “animal spirit” (greed) leads to people trying to accumulate wealth through investment.
- Banks then created credit to satisfy the needs of this animal spirit
- Aggregate investment generates income
- A part of this income is saved
- Aggregate saving is used by others for investment
- Cycle starts again

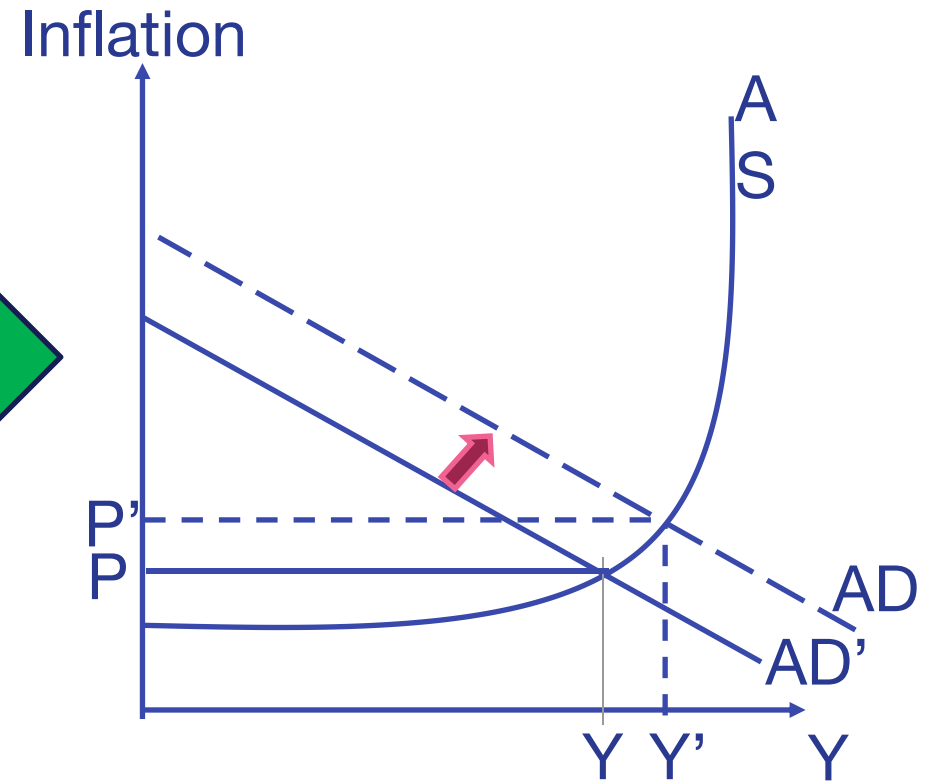
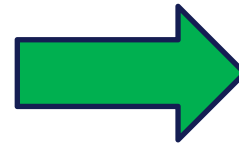
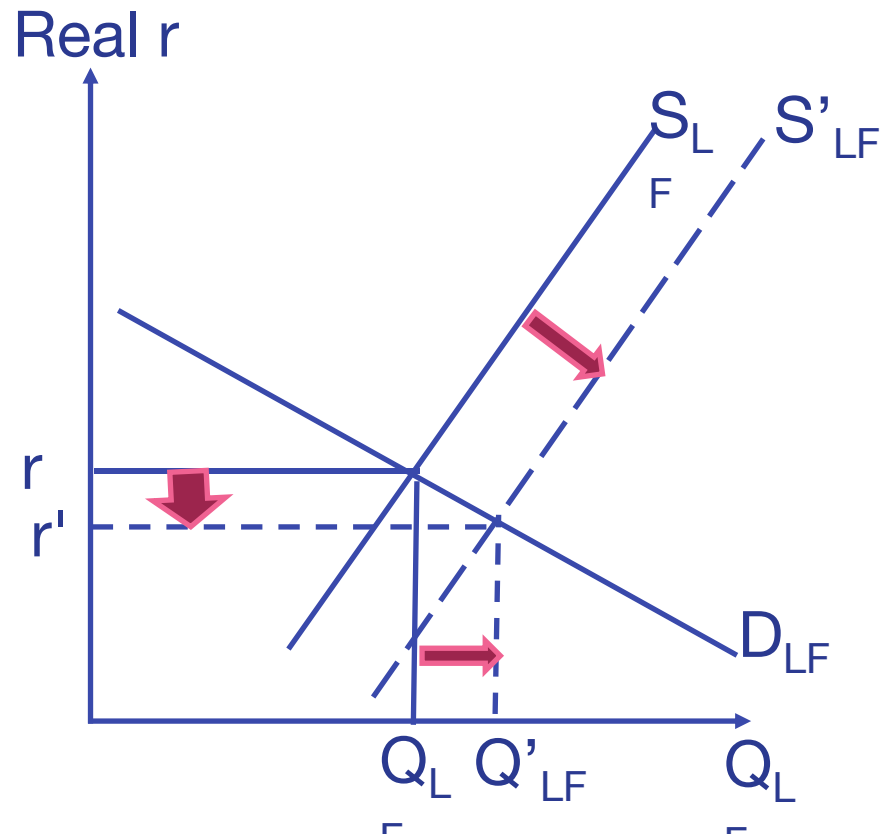
Doesn't Matter what came first as long as they come together

- What's important is that as one increases the other should as well
Investment increases causing more saving



Doesn't Matter what came first as long as they come together

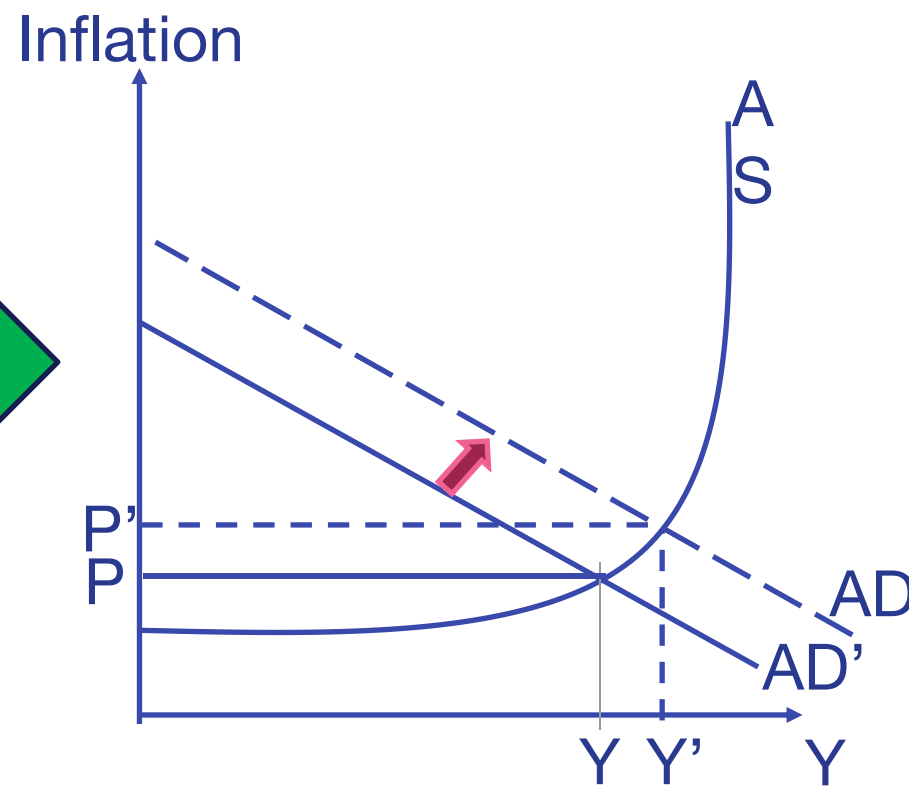
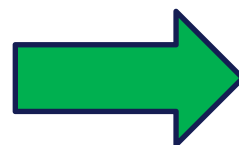
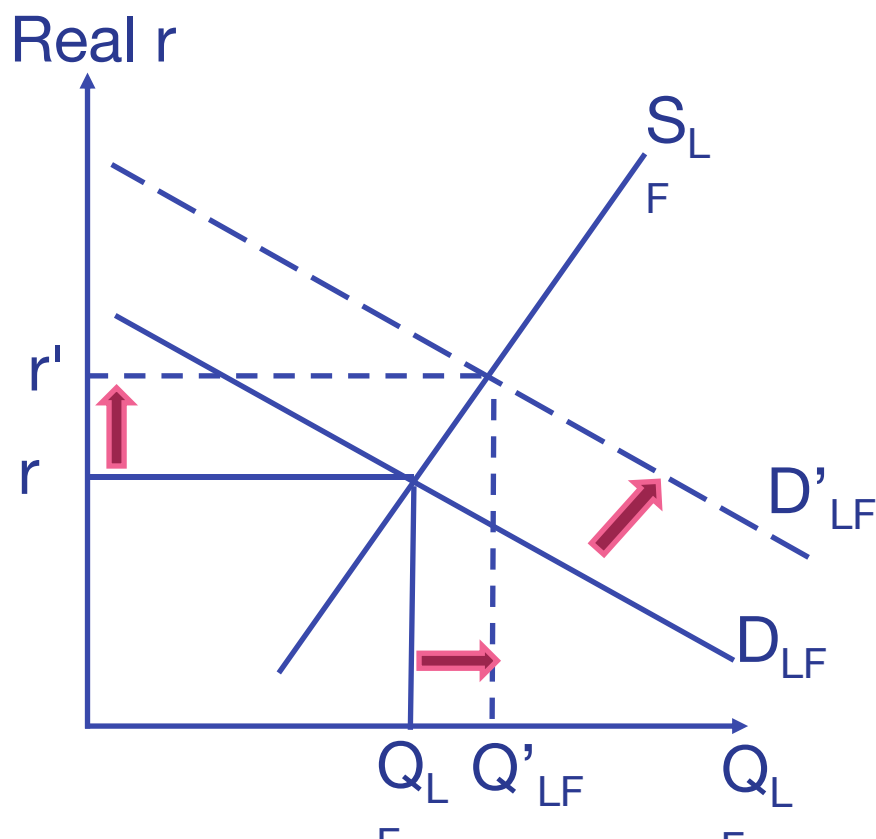
- What's important is that as one increases the other should as well
Saving increases leading to more investment



How Investment Leads to Saving

- Drive for investment causes DLF to shift right.
- DLF rising causes real interest rates to rise, but also higher investment.

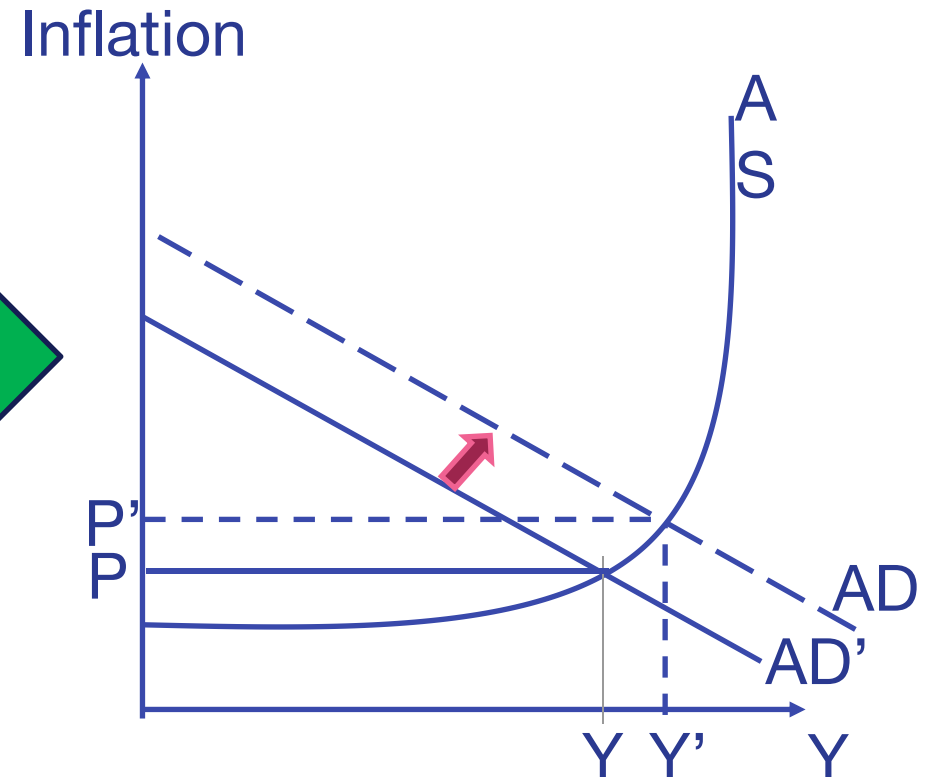
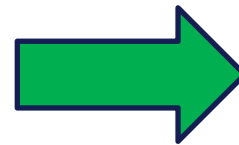
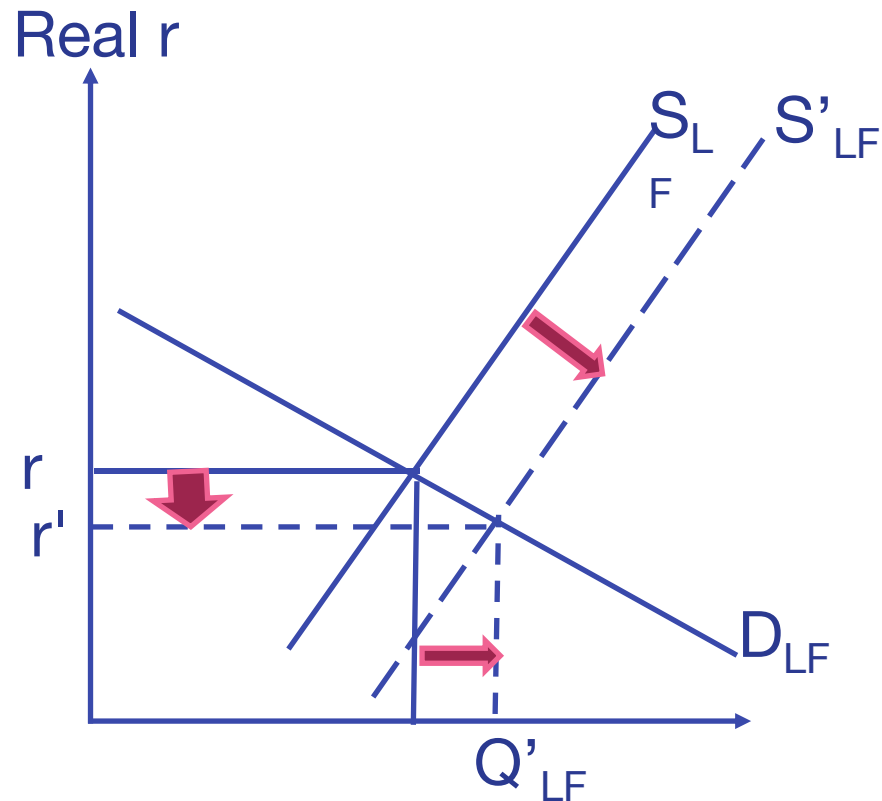
- Increase in I leads to increase in AD .
- Higher AD means higher growth.
- Higher growth brings more income.
- Higher Income means more saving



How Saving Leads to More Investment

- Saving increases, shifting SLF to the right
- Interest rates are lowered, and total Quantity of loanable funds is higher

- Lower interest rates spur more investment
- More investment leads to higher economic growth



Which is More Important?

Aggregate Investment is more important for developed countries.

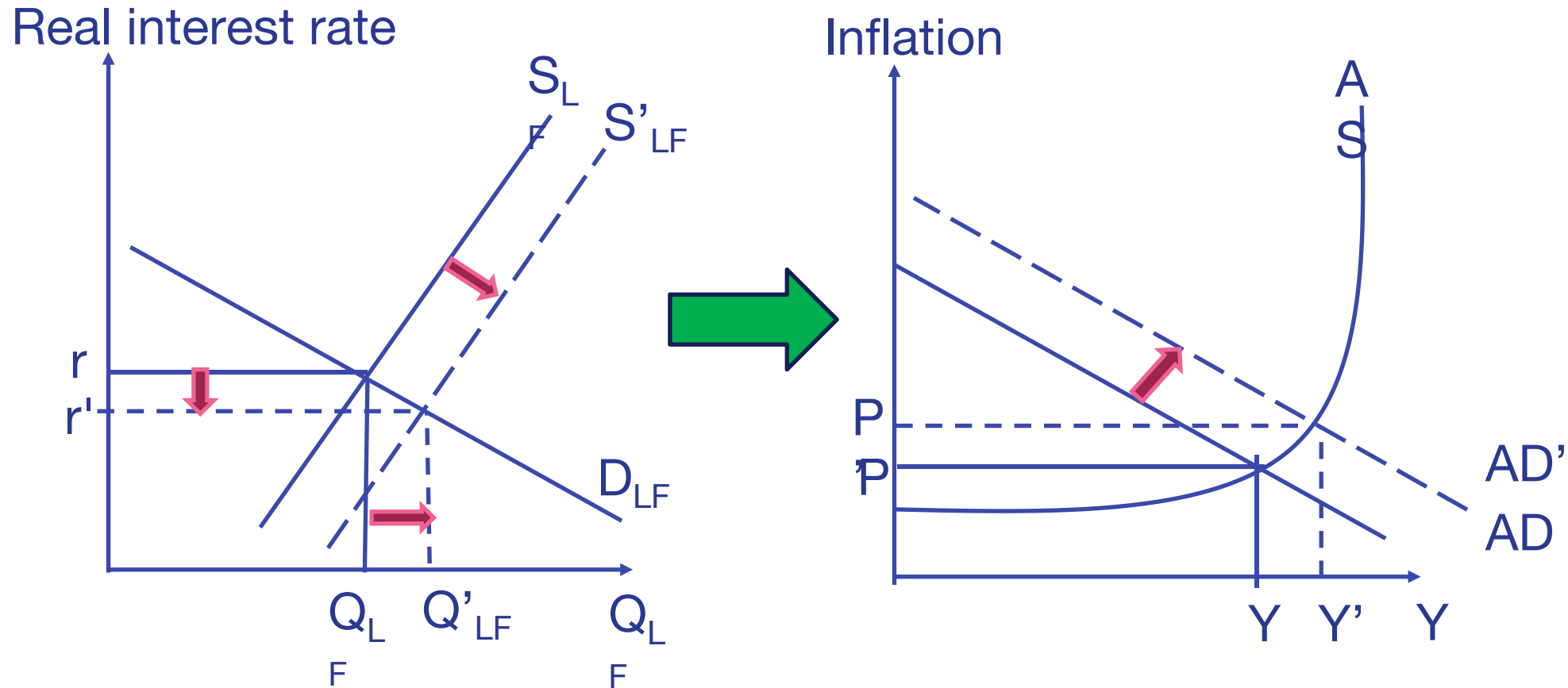
- More wealthy, and thus higher propensities to save.
- Growth more likely from technological improvements, which requires investment to achieve.

Aggregate Saving is more important for developing countries.

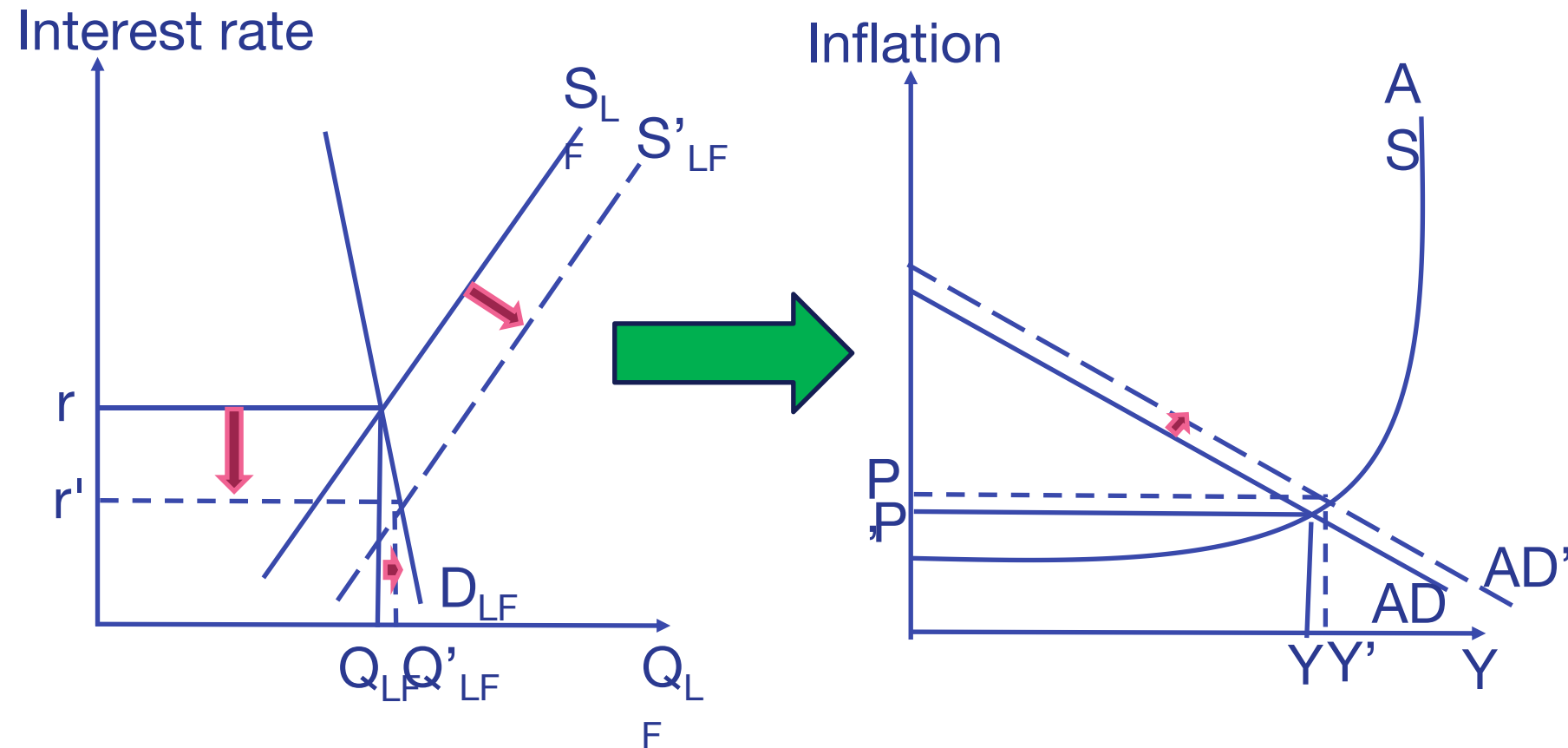
- Don't have access to credit required for significant investment.
- Underdeveloped credit markets, and poor financial institutions play a role.
- Saving relatively inelastic.

Saving in Developing Countries

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Saving in Developed Countries



Supply-Side Economics

- Originated in the 1980s
- Centered on incentivizing investment to spur long-term growth
- Lower barriers for investment (ie. less regulation, lower corporate taxes)
- Requirements for lower corporate taxes to spur growth
 - (a) the elasticity of investment to profits is greater than 1 and
 - (b) corporations in aggregate have a portfolio of good projects, but costs of capital are high –some productive investment has been abandoned.
- If companies do not use their tax savings to invest more, no impact on long run economic growth.
- If lower taxes induce more investment, supply side economics can work.



Trickle-Down Economics

- The idea that letting wealthy people spend more money increases aggregate demand which in turn boosts economic growth.
- Proponents of trickle-down economics see it as similar to supply-side economics.



Trickle-down Economics (Continued)

- In order for trickle-down to work, two things must happen:
 - (a) wealthy people use tax savings for consumption.
 - (b) consumption would have to engender investment more productive than the ones governments could make with forsaken tax revenue.
- Tax cuts for wealthy individuals are less likely to spur growth than tax cuts for corporations.
 - Wealthy people are more likely to save money than corporations, which are much more likely to invest.
 - Summing up: trickle-down economics doesn't work.

