
Andreas Krause
Stabilizing and destabilizing speculation
NEW YORK STOCK EXCHANGE
LIVERMORE

- Speculation is the short-term exploitation of price differences in assets over time. Thus a speculator might buy an asset if he believes the asset to increase in value; once the price has increased he would sell the asset again, making a profit. Similarly, a speculator might sell an asset he believes will reduce in price, and then repurchase once the price has actually reduced.
- Often, such activities are seen negatively and have been made responsible for financial markets to become unstable, where this term commonly refers to the volatility to increase.
- We will here investigate under which conditions such speculation becomes destabilizing and will show that in many situation speculation can actually be stabilizing, that is reduce the volatility of financial markets.

Anticipating future demand and supply

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- Having made their assessment of the future demand and supply of the asset, speculators will then seek to predict the future price of the asset based on their assessment of demand and supply. They then will seek to exploit the difference between the current and future price.
- - Let us assume that the speculator believes that in the future less of the asset will be available. The reason for this event is irrelevant, it could be the result of the issuer of the asset reducing it, for example share repurchases, monetary policy, or other decisions.
  - This will reduce the supply of the asset in the market,
  - and standard economic theory then predicts that with a lower supply, the price will increase.
- - If the speculator anticipated such a development, he would buy the asset now while the supply is still high.
  - Once the supply has reduced and the supply is reduced, thus the price has increased, he would sell the asset again.
- - The effect is that by buying the asset now, the speculator increases the current demand. If the demand of a good increases, the price would rise; thus the activities of the speculator increases the current price.
  - When selling the asset in the future, the speculator reduces the demand by selling it. This will lead to a lower price in the future than otherwise anticipated. Thus a higher price now and a lower price in the future due to the activities of speculators changes the current and future prices; the profits of speculators are reduced.

→ The same ideas apply if the speculator assumes that the future supply is higher (lower prices).

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→ We can now consider two possible effects of such speculation, it might be stabilising or destabilising.

- The increase in the current price and reduction of the future price will reduce the change of prices over time and is therefore called 'stabilising'.
- If the increase in the current price and reduction of the future price is such that the overall price change will increase over time, this is called 'destabilising'.
- We will see that if there are few speculators in the market and therefore a low demand by speculators in the first time period, speculation is stabilising.
- We will see that is there are many speculators in the market and therefore a high demand by speculators in the first time period, speculation is destabilising.

→ We will now consider different cases and analyse the impact of speculation not only on the volatility of prices, but also the profits of speculators and welfare implications.

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Profitable stabilizing speculation

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→ We will first consider the case where the speculation is stabilising and speculators make profits.

- We consider the common impact of demand and supply on the price of the asset.
- As is common, we assume that the current demand is reducing in the price of the asset. The negative slope of the demand curve might be the result of different information that investors hold about the value of the asset, the higher the price, the less investors will want to buy the asset as fewer and fewer investors will assess the asset value to be higher than the price.
- We similarly have the initial supply as increasing in the price. This supply might be the willingness of a company issuing new securities.
- The equilibrium will then be where demand and supply intersect, giving us the equilibrium trading demand D_O^* and the equilibrium price P_0^*.
- We now assume that the future supply of the asset is reduced. This might be due to the issuer reducing the supply of the asset.
- This would then gives us a new equilibrium price in the second time period. Thus far no speculators were involved and the equilibria are those that would emerge in the absence of speculators.
- We now assume that speculators anticipate the reduced future supply and as a result will purchase the asset, thus increasing their demand.
- This will change the equilibrium in the initial time period, the price will increase, as will the trading demand.
- In terms of welfare analysis, compared to the absence of speculators, the higher price will increase the welfare of sellers as they now obtain a higher price for their asset. The sellers are those that sell the asset to the speculator; the other trades being conducted for other reasons, the gains of one trader (seller) is exactly offset by the losses of another trader (buyer) as the seller's profits increase from the higher price are reducing the profits of the buyer purchasing at the higher price. The effect on speculators will be considered separately.
- Speculators will sell their assets again in the next time period, reducing the demand in that time period by the same amount they had initially invested into the asset. We here assume that speculators sell their position fully after a single time period.
- This will change the equilibrium in the future time period, the price will decrease, as will the trading demand.
- In terms of welfare analysis, compared to the absence of speculators,the lower price will increase the welfare of buyers as they now pay a lower price for their asset. The buyers are those that purchase the asset from the speculator; those trades being conducted for other reasons, the gains of one trader (buyer) is exactly offset by the losses of another trader (seller) as the buyer's profits increase from the lower price are reducing the profits of the seller obtaining a lower price.
- We see that the price changes less in the presence of speculators and hence, speculation is stabilising.
- The profits of speculators are the difference between the prices in the two time periods, (vertical axis) and the quantity they are trading (horizontal axis).

→ The total welfare gain from speculation is the aggregate of the surpluses and the speculator profits. We thus see that speculation is stabilising, profitable to speculators and welfare-enhancing.

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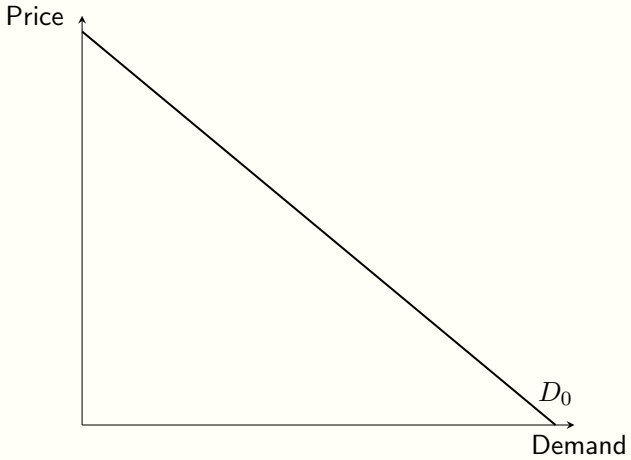

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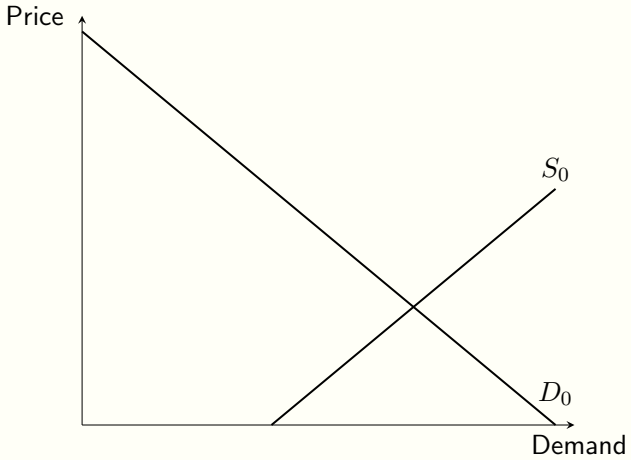

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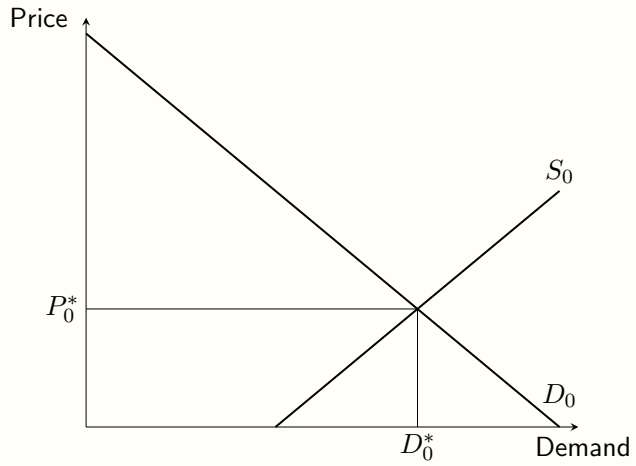

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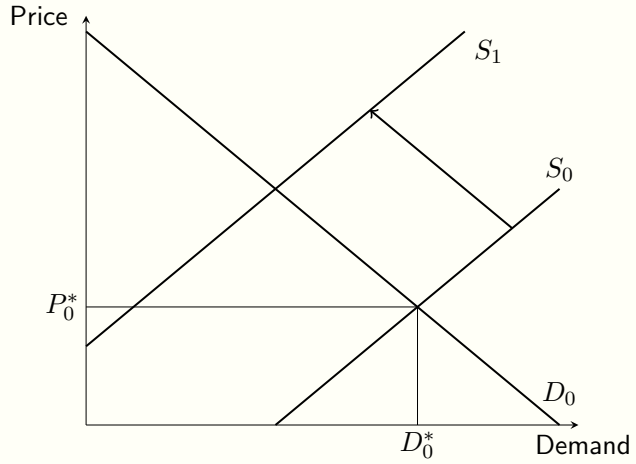

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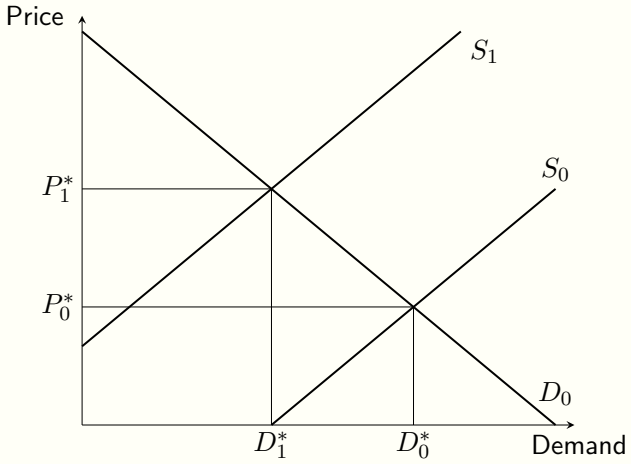

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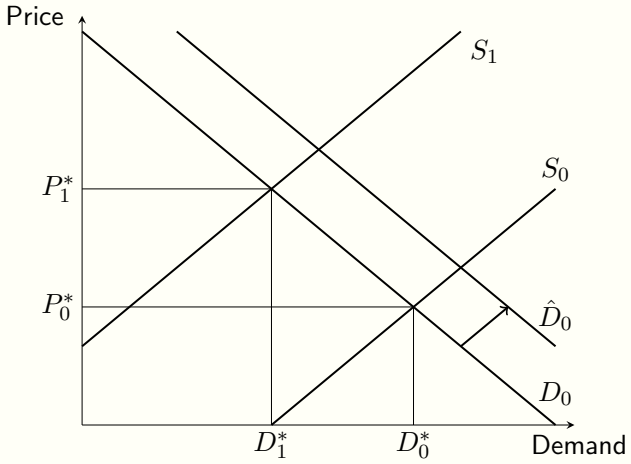

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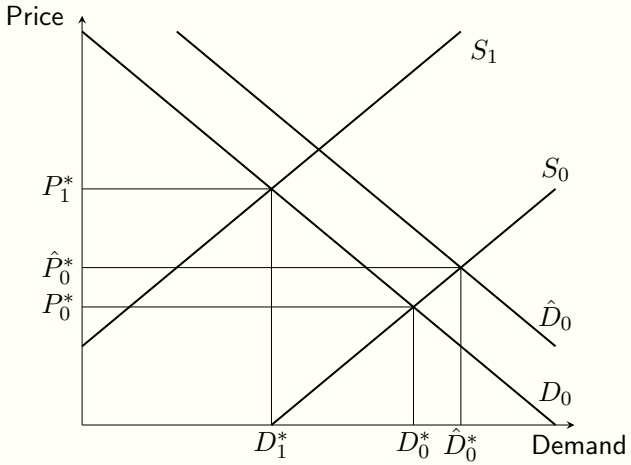

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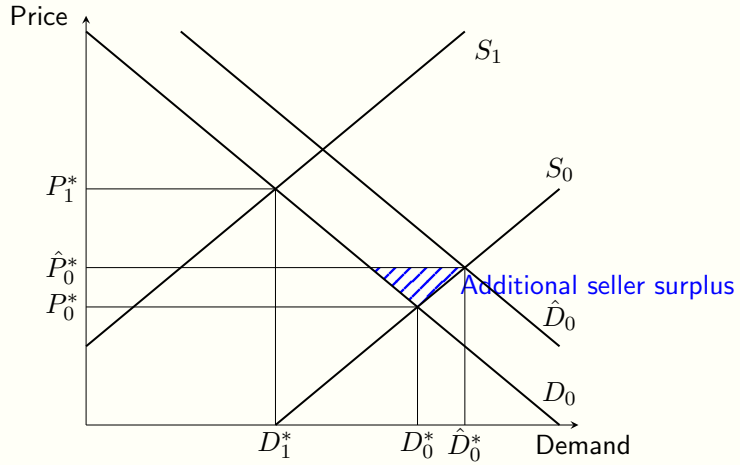

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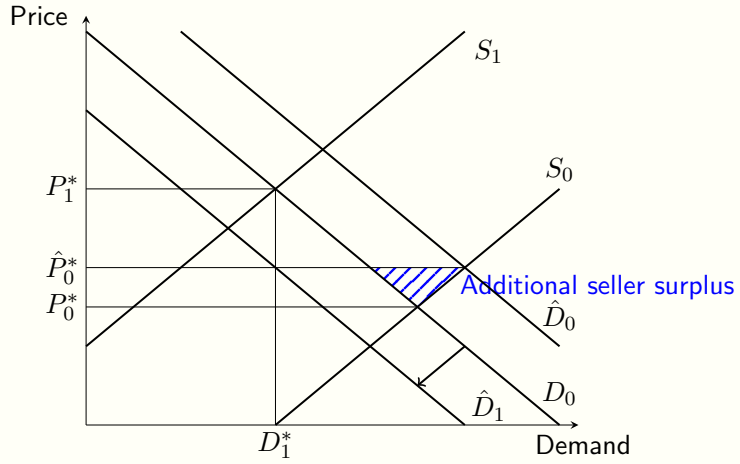

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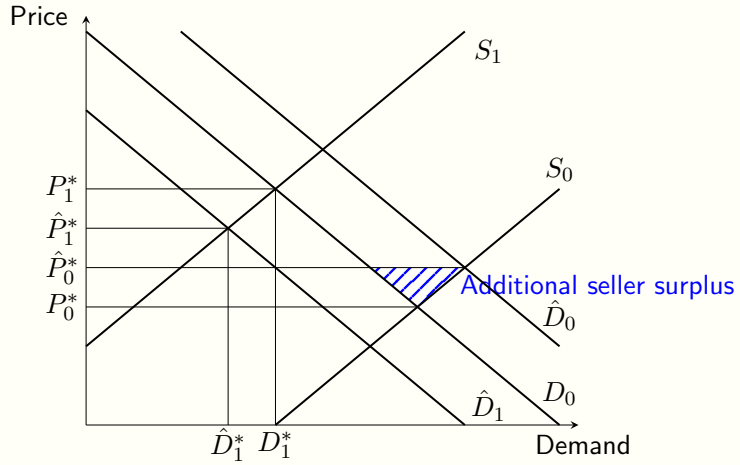

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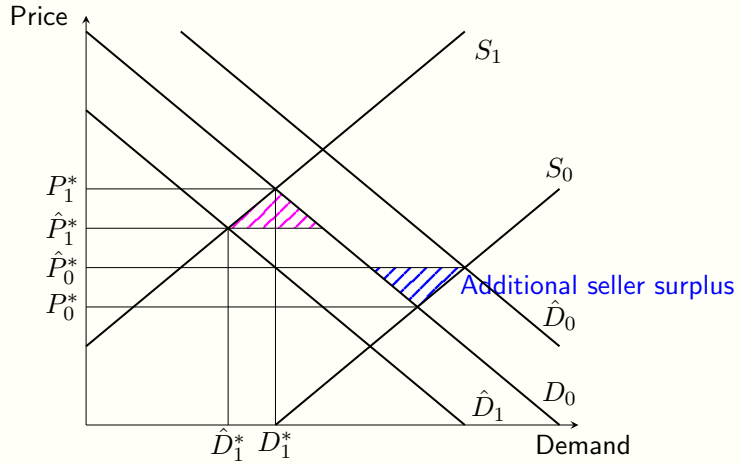

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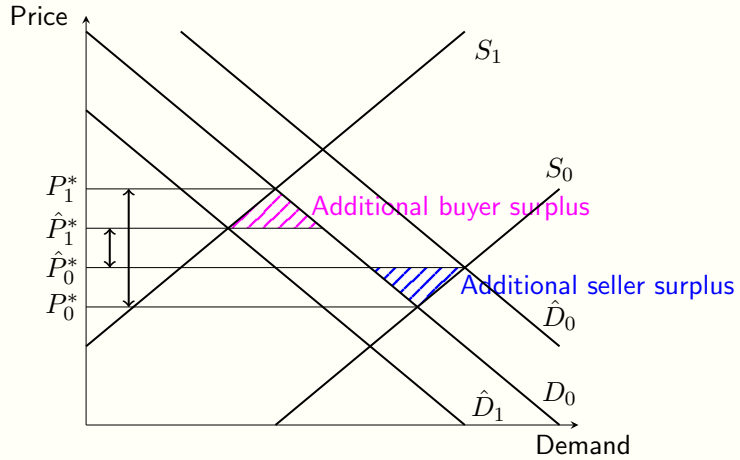

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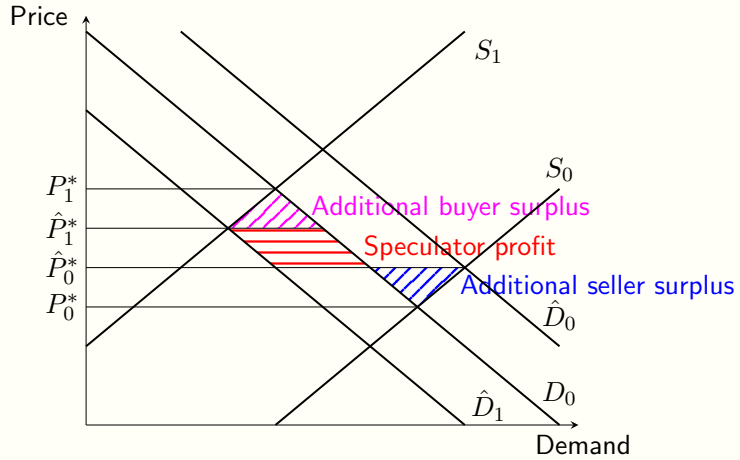

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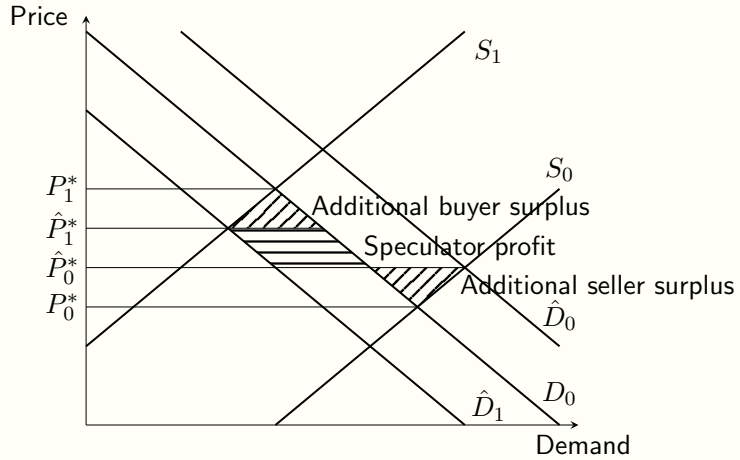

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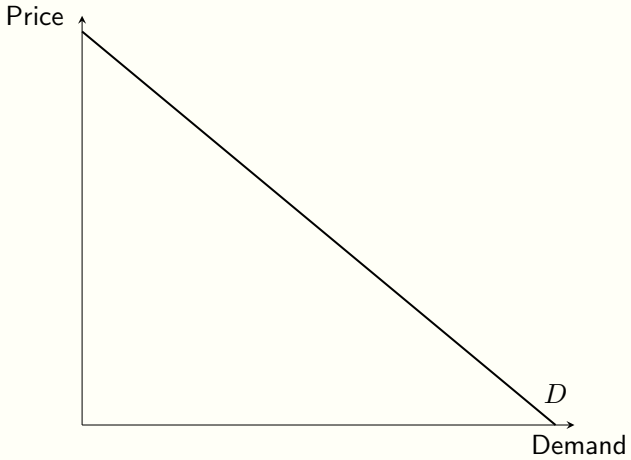

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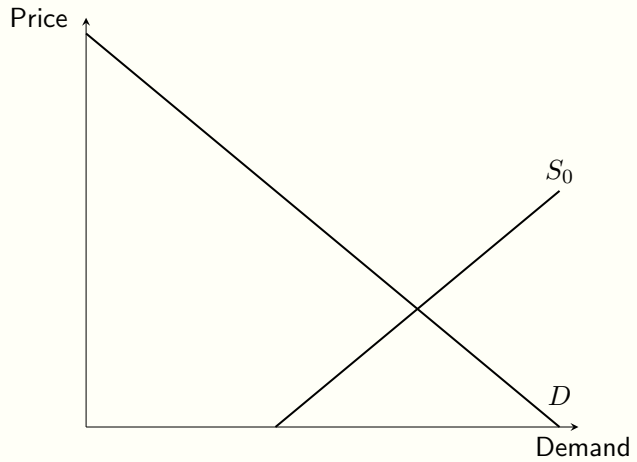

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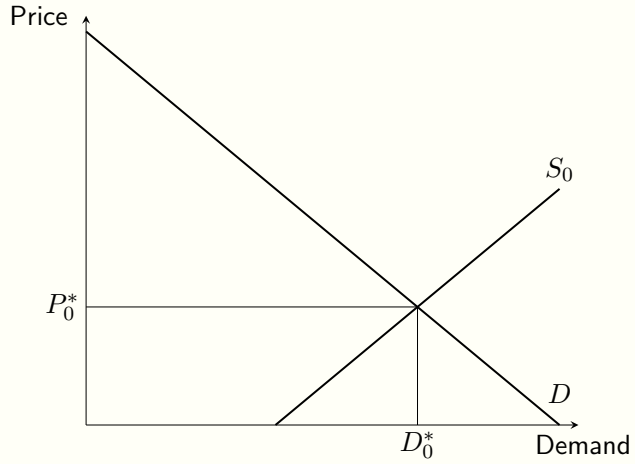

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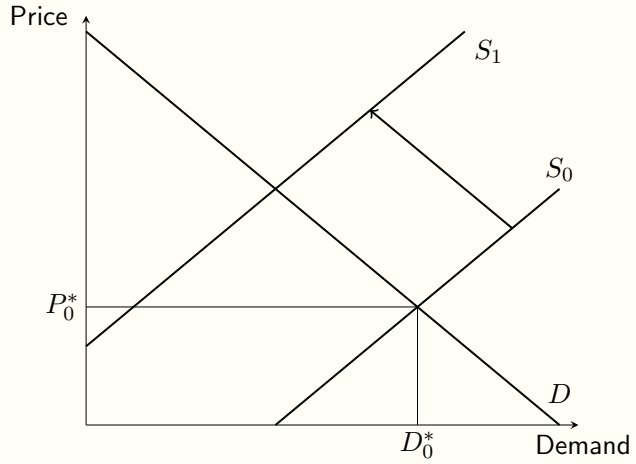

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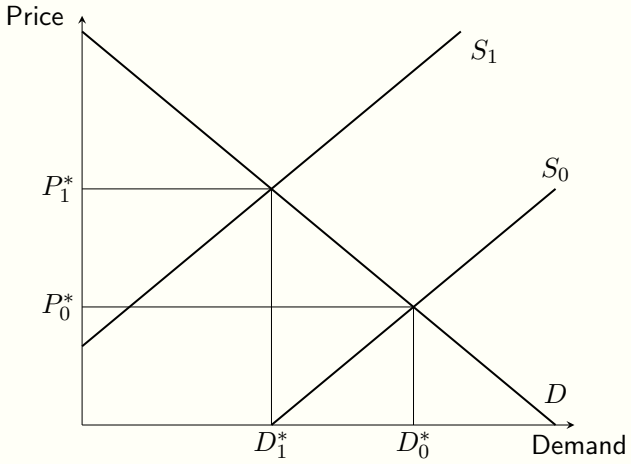

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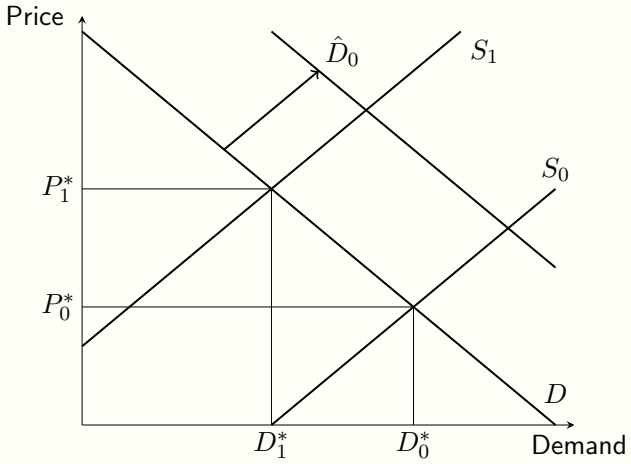

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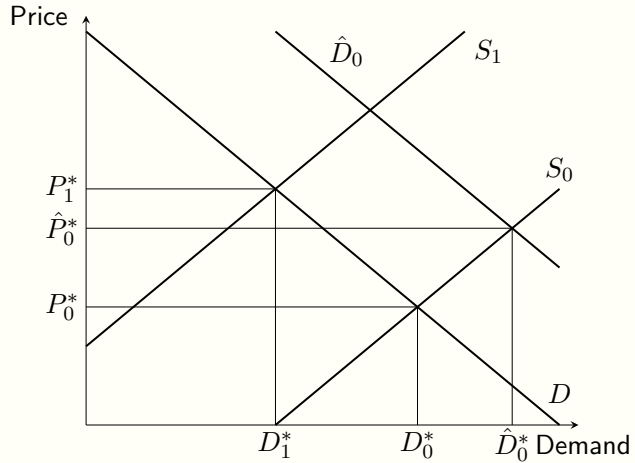

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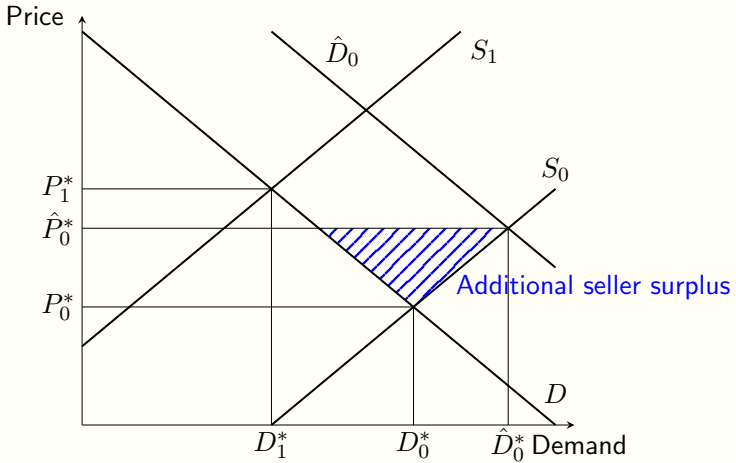

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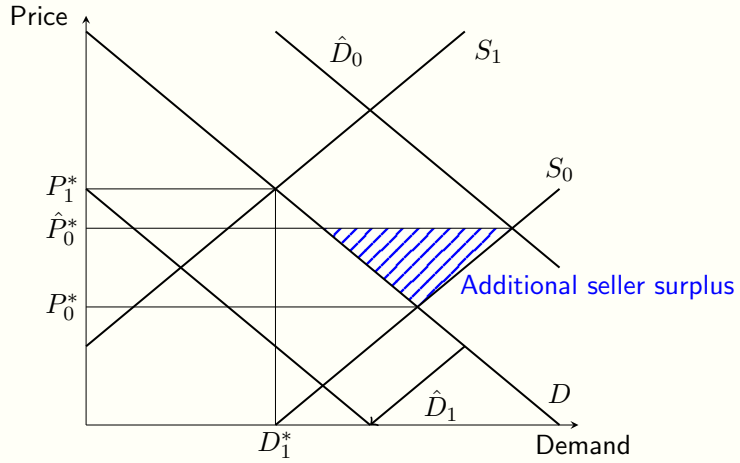

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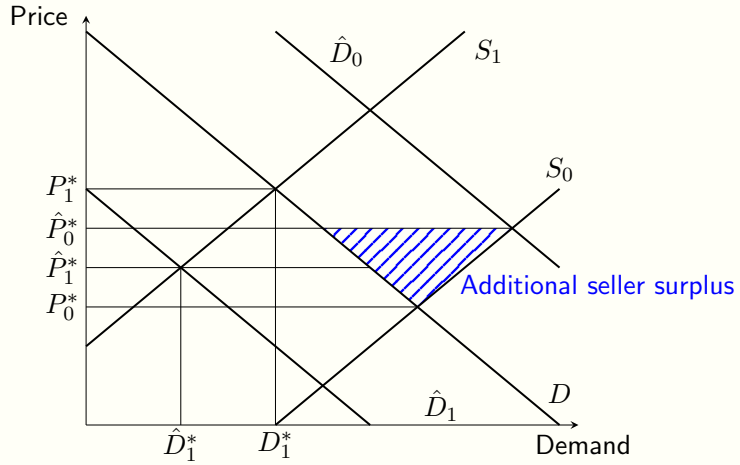

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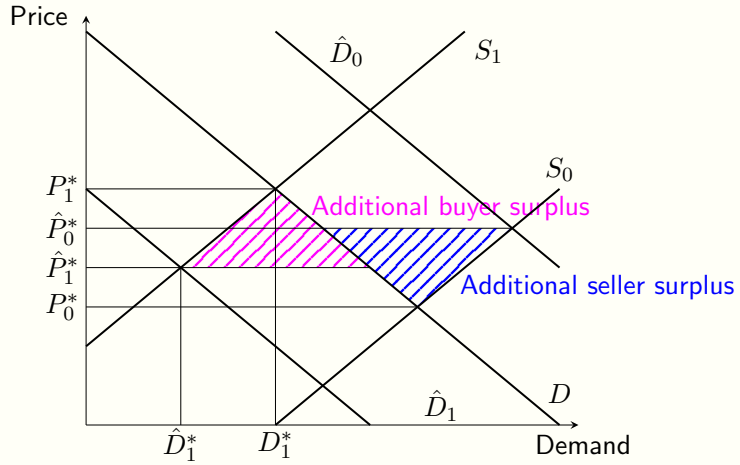

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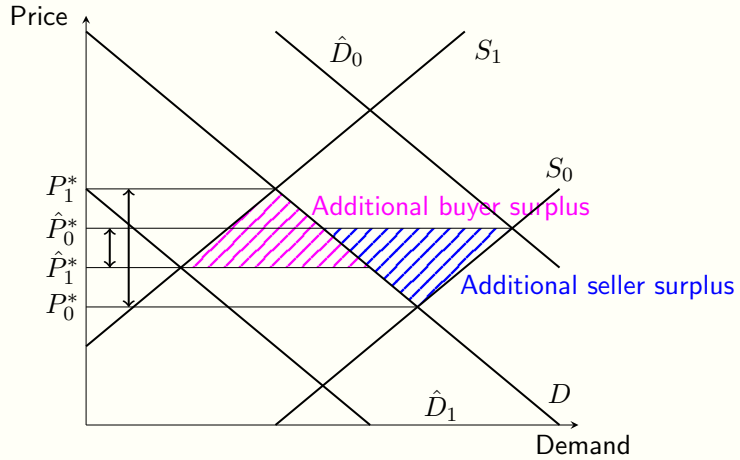

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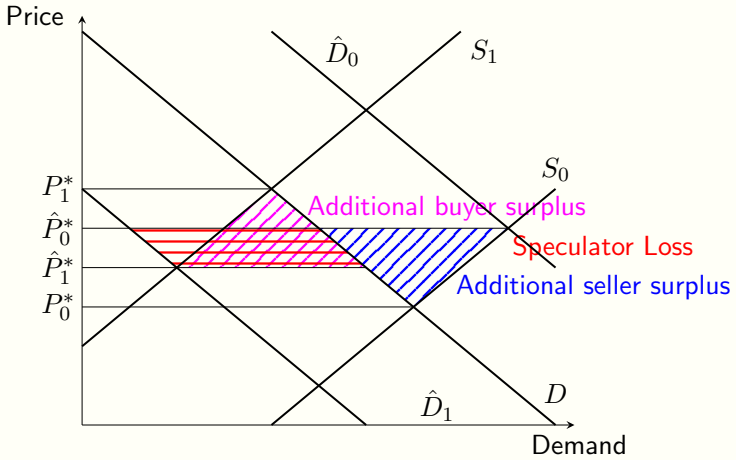

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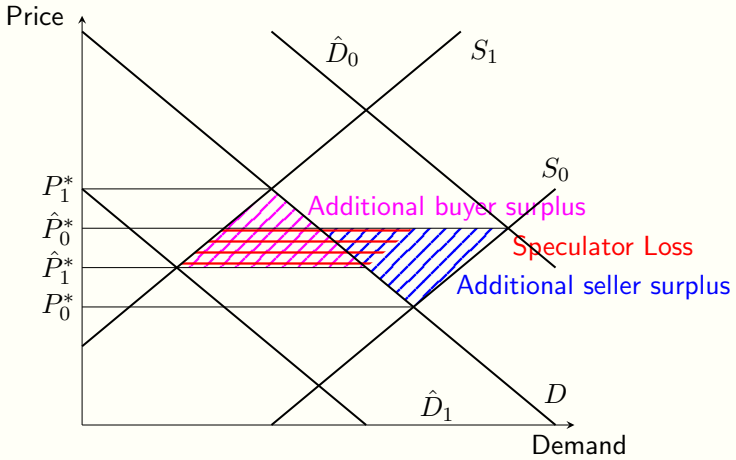

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- We now assume that speculators anticipate the reduced future supply and as a result will purchase the asset, thus increasing their demand. This increase in demand is now higher than in the case before.
- This will change the equilibrium in the initial time period, the price will increase, as will the trading demand; this change will be higher than before.
- In terms of welfare analysis, compared to the absence of speculators, the higher price will increase the welfare of sellers as they now obtain a higher price for their asset. The effect on speculators will once again be considered separately.
- Speculators will sell their assets again in the next time period, reducing the demand in that time period by the same amount they had initially invested into the asset. We here assume that speculators sell their position fully after a single time period.
- This will change the equilibrium in the future time period, the price will decrease, as will the trading demand.
- In terms of welfare analysis, compared to the absence of speculators,the lower price will increase the welfare of buyers as they now pay a lower price for their asset.
- We see that the price changes less in the presence of speculators and hence, speculation is stabilising. It is worth noting here that the price in the initial time period increases so far and that the price reduction in the future time period is such larger that the price is no longer increasing, but decreasing over time. Nevertheless, the price volatility is still reduced.
- The profits of speculators are the difference between the prices in the two time periods, (vertical axis) and the quantity they are trading (horizontal axis). As the price will decrease over time and speculators buy the asset, they will make a loss.
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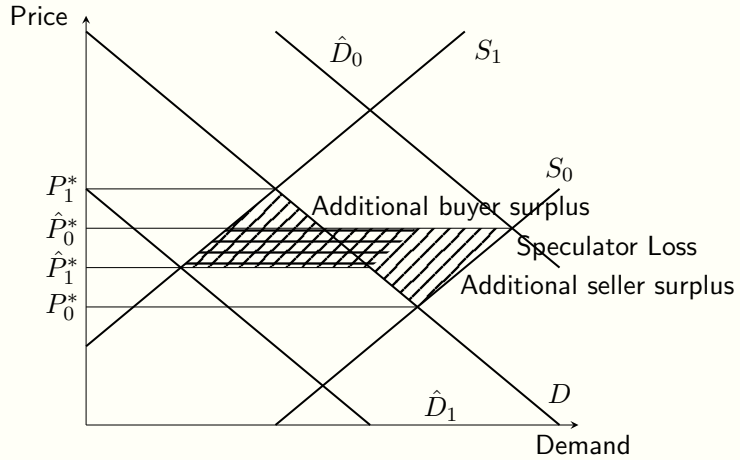

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Welfare increases for all non-speculators

Welfare increases for all non-speculators

→ We can now analyse this case where the welfare increases, speculation is stabilising and speculators make a loss.

- We have considered a case where the demand of speculators reduced the magnitude of price changes, thus the volatility, and hence speculation was stabilising.
- We increased the demand by speculators compared to the previous case and even though this results in an inversion of the sign of the price change, the volatility (magnitude of the price change) did reduce.
- Sellers of the asset are better off in the initial time period as the price they obtain is higher.
- Buyers of the asset are better off in the future time period as the price they have to pay is lower.
- As the price decreases and the speculator buys the assets, he makes a loss.
- These losses by speculators do not outweigh the surplus that has been accrued to buyers and sellers and thus the overall welfare improves.
- We can conclude that stabilising speculation is always welfare-increasing, even if speculators make losses.

→ Speculators will participate in this market if we assume that they correctly assess the change in the supply of the asset, but underestimate the amount of speculation. It is the speculation amount that causes the price change to invert signs and cause the losses; if speculators assumed that speculation demand was lower, they would want to participate.

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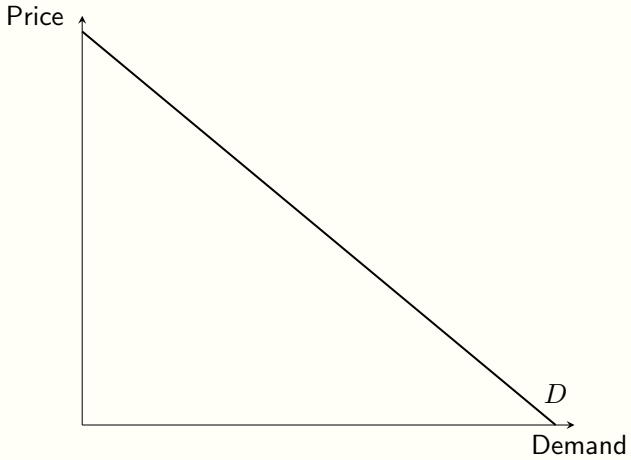

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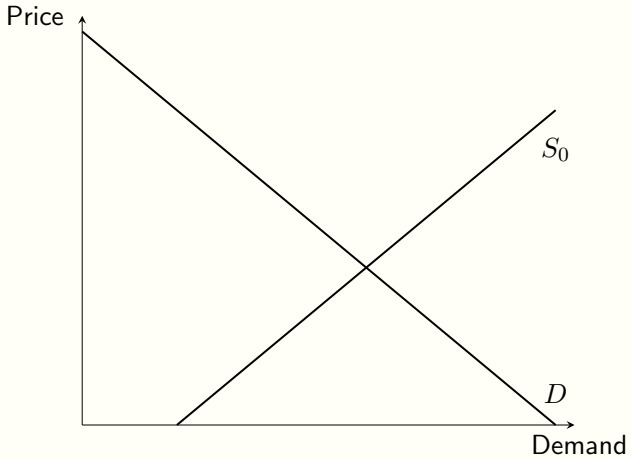

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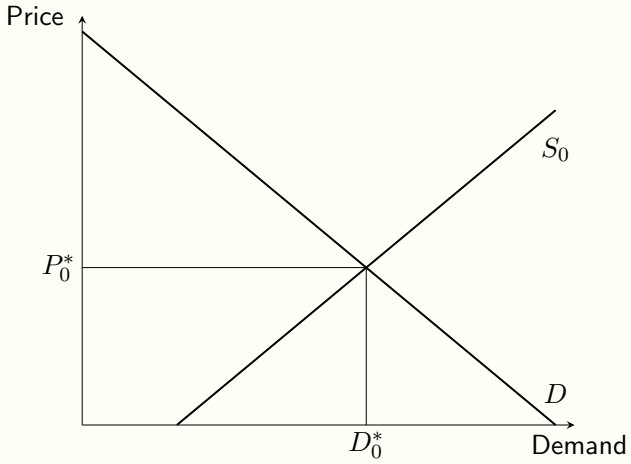

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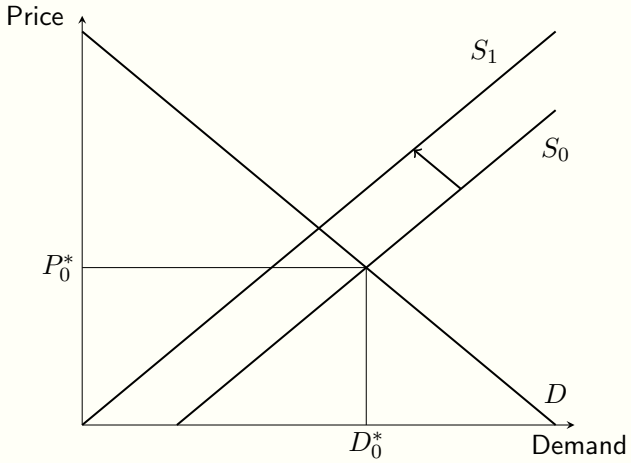

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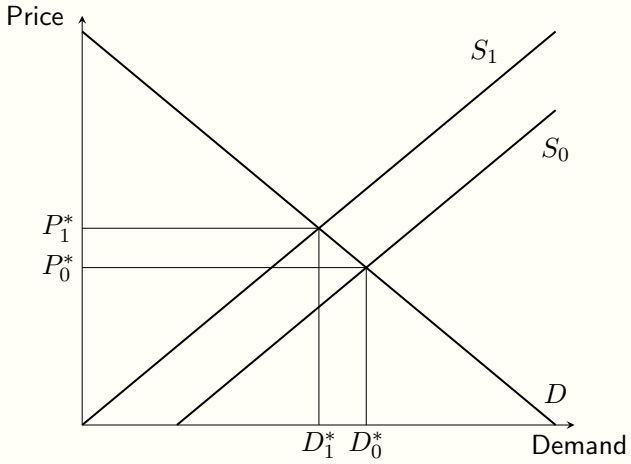

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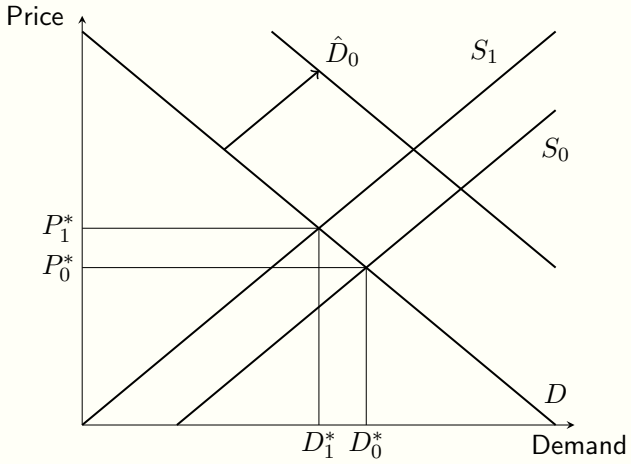

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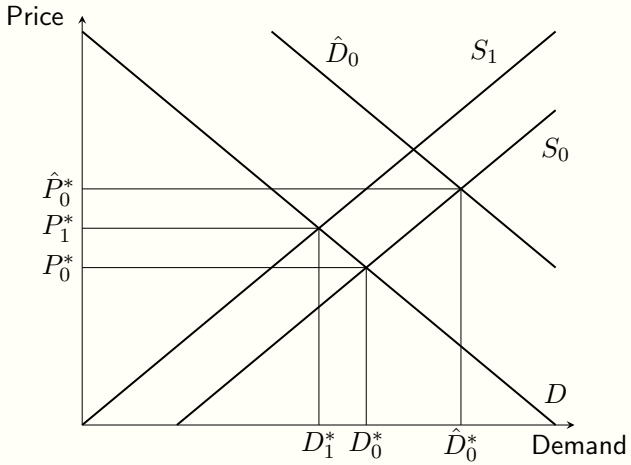

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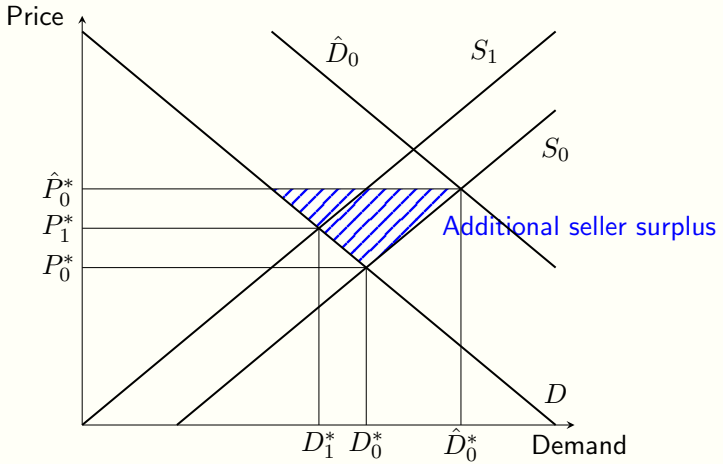

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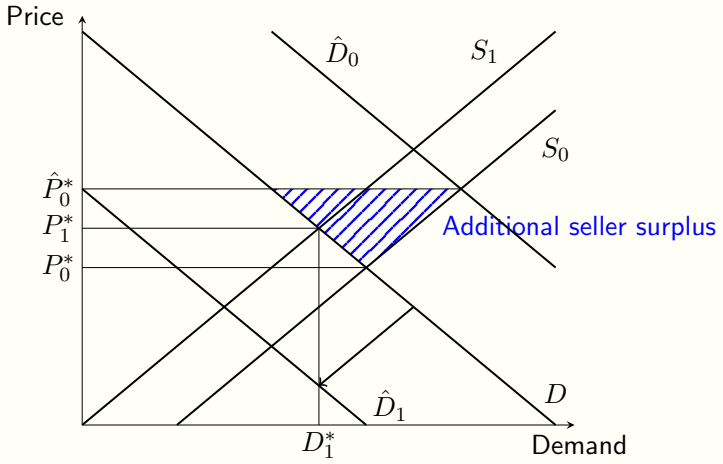

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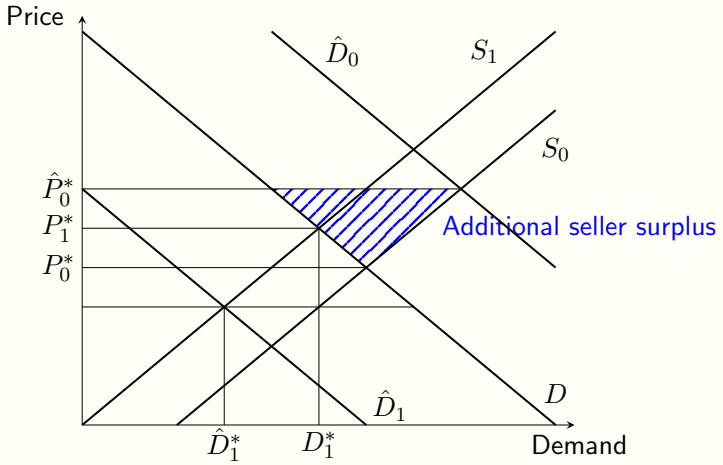

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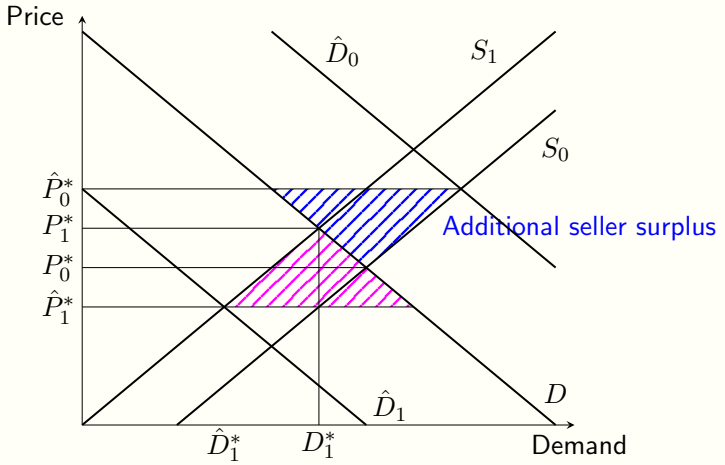

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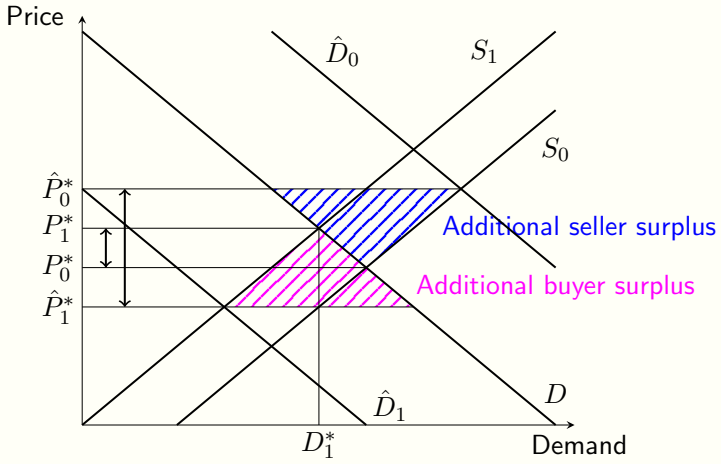

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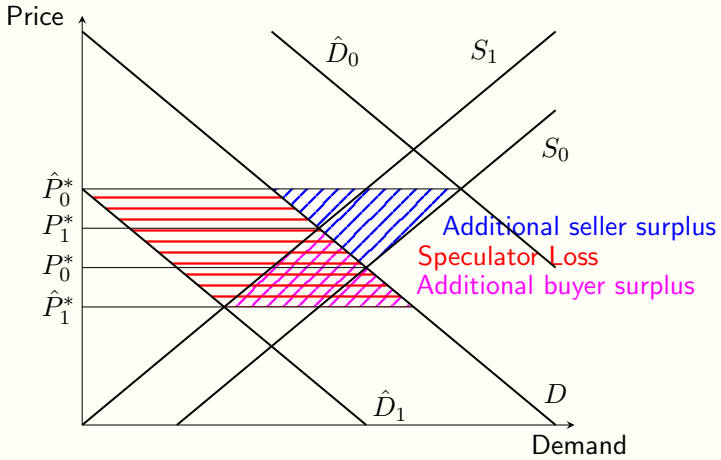

Destabilizing speculation

→ We will now consider the case where the speculation is destabilising.

- Again, we consider the common impact of demand and supply on the price of the asset.
- As before, we assume that the current demand is reducing in the price of the asset.
- We once more have the initial supply as increasing in the price.
- The equilibrium will then be where demand and supply intersect, giving us the equilibrium trading demand D_O^* and the equilibrium price P_0^*. This is identical to before.
- We now assume that the future supply of the asset is reduced by the issuer. This reduction in supply is the same as above (for reasons of presentation it looks smaller).
- This would then gives us a new equilibrium price in the second time period. So far the analysis is identical to the first case.
- We now assume that speculators anticipate the reduced future supply and as a result will purchase the asset, thus increasing their demand. This increase in demand is now even higher than in the case before.
- This will change the equilibrium in the initial time period, the price will increase, as will the trading demand; this change will be higher than in the previous cases.
- In terms of welfare analysis, compared to the absence of speculators, the higher price will increase the welfare of sellers as they now obtain a higher price for their asset. The effect on speculators will once again be considered separately.
- Speculators will sell their assets again in the next time period, reducing the demand in that time period by the same amount they had initially invested into the asset. We here assume that speculators sell their position fully after a single time period.
- This will change the equilibrium in the future time period, the price will decrease, as will the trading demand.
- In terms of welfare analysis, compared to the absence of speculators,the lower price will increase the welfare of buyers as they now pay a lower price for their asset.
- We see that the price changes more in the presence of speculators and hence, speculation is destabilising. It is again that the price in the initial time period increases so far and that the price reduction in the future time period is such larger that the price is no longer increasing, but decreasing over time. The magnitide of the price change is larger (higher volatility) and speculation is destabilising..
- The profits of speculators are the difference between the prices in the two time periods, (vertical axis) and the quantity they are trading (horizontal axis). As the price will decrease over time and speculators buy the asset, they will make a loss.
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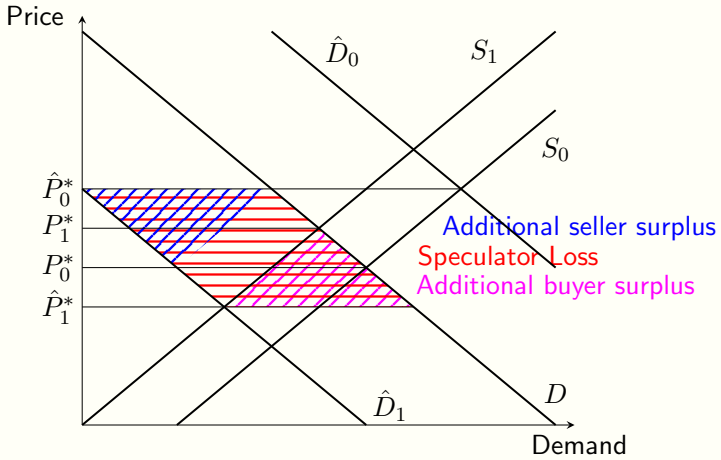

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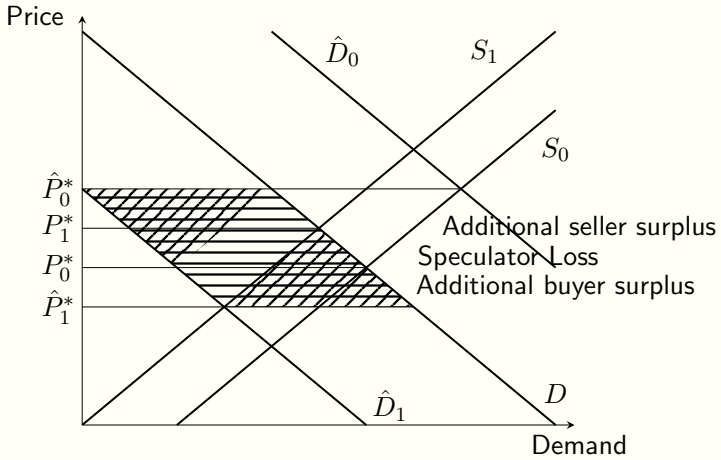

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Welfare increases for all non-speculators

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→ We have now seen that with a high amount of speculation, speculation is destabilising, but welfare still increases for non-speculators.

- We have considered a case where the demand of speculators was so high that is increased the magnitude of price changes, thus the volatility, and hence speculation was destabilising.
- We increased the demand by speculators compared to the previous case further and this lead not only to price changes reversing signs when compared to the case of no speculation, but the price changes were larger, making speculation destabilising.
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- These losses by speculators do outweigh the surplus that has been accrued to buyers and sellers and thus the overall welfare reduces.
- We can conclude that destabilising speculation is always welfare-reducing.

→ Speculators will participate in this market if we assume that they correctly assess the change in the supply of the asset, but underestimate the amount of speculation. It is the speculation amount that causes the price change to invert signs and cause the losses; if speculators assumed that speculation demand was lower, they would want to participate.

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→ We now can summarize our finding in terms of the desirability of speculation.

- If the amount of speculation is sufficiently small, speculation is reducing the volatility of prices and increases the welfare of the economy.
- If the amount of speculation is sufficiently large, speculation is increasing the volatility of prices and reduces the welfare of the economy.

- While speculators may make a loss once there is too much speculation, sellers and buyers are always better off, regardless of whether speculation is stabilising or destabilising.
- If speculation is sufficiently high, then the overall welfare effect is negative due to the losses to speculators, but other traders nevertheless benefit from speculation.

→ We have thus see that low amounts of speculation are beneficial in that prices are stabilised and the volatility of prices are reduced. Once the amount of speculation increases too far, prices become destabilising and the overall welfare of the economy reduces. We could therefore claim that little speculation is beneficial, while a lot of speculation is detrimental to an economy.

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