Andreas Krause

Underpricing security issues

- A common observation is that shortly after trading of a security commences, its market price is significantly above the offer price.
- The fact that over pricing, where the offer price is above the initial market price, is hardly ever observed, suggests that investment banks underprice issues on purpose.
- We will look at reasons why investment banks underprice issues.

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Reduced revenue from issuing securities

- A common observation is that the offer price of securities is below the first market prices.
- This underpricing is especially prevalent in Initial Public Offerings.
- Issuers are receiving less for their security than the market price, before any fees are considered.

Reduced revenue from issuing securities

→ As investment banks are charging a fee in proportion to the proceeds the issuer obtains, investment banks receive less income with underpricing. But of course it primarily affects the issuer as the issuer can adjust their revenue by charing a higher underwriting spread.

- The offer price should reflect the information available at the time and with only a few days between the determination of the offer price and the commencement of trading, the market price should not move significantly. In reality, nearly always the market price is above the offer price.
- This is referred to as underpricing and particularly prevalent in IPOs, where underpricing of over 10% is the norm and higher underpricing not uncommon. Underpricing is less strong in fixed income securities.
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  - Through underpricing, the issuer of the security obtains less proceeds from the sale than they would have received if they sold the security at the market price.
  - Of course, this reduced revenue does not take into account the underwriting spread.

→ Clearly underpricing is costly to issuers, but it is widespread and a well-known feature of issuing securities. For issuers to accept underpricing and it not having been eliminated through competition between investment banks, suggests that there are benefits of underpricing accruing to issuers.

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Benefits of underpricing

- It is often asserted that investment banks underprice securities to benefit investors they are allocating the security to
- Such benefits might be given as a reward for choosing the investment banks as advisor in other transactions
- We will see how issuers may be able to benefit from underpricing as it ensures the success of their security issue
- Investment banks may also directly benefit from underpricing by obtaining additional revenue from trading

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→ Underpricing imposes a cost on issuers, but as it is so widespread and in the case of IPOs significant, there have to be benefits of underpricing.

- Investment banks can benefit from underpricing as the excess demand allows them to allocate the securities to selected investors, for example those investors that have revealed positive information in the book-building process.
- They may also want to benefit other investors that have provided them with other investment banking business or hopefully will do so in the future; this might include senior managers at companies the investment bank seeks to advice in mergers and acquisitions, or in other business lines.
- However, there are also benefits to the issuer of underpricing as we will see that this prevents the market for new securities to break down; it therefore allow the issuer to sell its securities in the first place.
- Further, investment banks might not only benefit from future revenue through rewarded investors, but underpricing might generate revenue directly through the trading activity that emerges due to the underpricing.

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Winner's curse

- Uninformed investors will obtain a large allocation of the security if it is of low value as informed investors will not pay a high price
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- Overall, uninformed investors cannot make profits and will not demand securities
- We will see how underpricing addresses this problem and induces uninformed investors to demand securities

Winner's curse

→ As some investors are better informed than others, the better informed investors might be at an advantage over the less-well informed investors. One consequence of this asymmetric information is what is referred to as the winner's curse.

- We argue that uninformed investors will suffer large losses in one case, but are only to obtain small profits in the other case.
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  - If a security has a high value, relative to its offer price, informed investors will realise this and their demand for the security will be high, such that they will be allocated a large proportion of the security.
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  - If uninformed investors obtain a large allocation ('win'), they make large losses.
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  - This implies that on average uninformed investors would not make any profits when seeking to participate in security offerings. This is the winner's curse, where uniformed investors make losses if the obtain the securities, but miss out on being allocated securities if they could make profits.
  - If uninformed investors make no profits on average, they would not participate in security offerings.
- By using underpricing, we will see that this winner's curse can be addressed. This primarily by ensuring that for high-value securities the profits are sufficiently large such that despite the small allocation, uninformed investors participate in the security offering.

→ Uniformed investors face adverse selection in security offerings which could lead to a breakdown of the market if they do not participate and informed investors are not sufficient to purchase the entire issue.

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  - Uninformed investors might not be aware of the low value of the security and therefore not reduce their demand, implying that they will be allocated a large proportion of the security. Informed investors will make small losses while uninformed investors will make large losses.
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  - If uninformed investors obtain a large allocation ('win'), they make large losses.
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  - If uninformed investors make no profits on average, they would not participate in security offerings.
- By using underpricing, we will see that this winner's curse can be addressed. This primarily by ensuring that for high-value securities the profits are sufficiently large such that despite the small allocation, uninformed investors participate in the security offering.

→ Uniformed investors face adverse selection in security offerings which could lead to a breakdown of the market if they do not participate and informed investors are not sufficient to purchase the entire issue.

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Winner's curse

- Uninformed investors will obtain a large allocation of the security if it is of low value as informed investors will not pay a high price
- A highly-valued security will be in demand by informed investors and uninformed investors will only obtain a low allocation of the security
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- If obtaining a large allocation, the uninformed investor will make a large loss and if obtaining a small allocation the security, the uninformed investor will make a small profit
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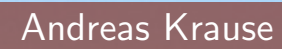

Chapter 7.3.1

Preventing adverse selection

→ The model we are going to discuss is based on Chapter 7.3.1 of the book 'Theoretical Foundations of Investment Banking'. A more detailed description of the model, additional steps for its solution, and a more in-depth discussion of results can be found there.

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Discussion of the model results

- Underpricing is used to induce uninformed investors to demand securities as they will make a profit in successful issues
- This will allow securities with low demand to be issued successfully

? Why would a company issuing securities successfully, accept such underpricing?

! At the outset of the process, companies will not know whether their security issue will be a success; given that failing to sell securities might jeopardize future investment, accepting underpricing might be the best solution

Discussion of the model results

→ Now that we have derived the main results of the model, as far as relevant for us, we will briefly discuss some implications as well as limitations of this model. This will allow us to interpret the model in its context of the initial problem and enables us to apply it appropriately in a realistic context.

- The high profits due to underpricing from high-valued securities compensate uninformed investors for the losses they make from low-valued securities. This induces uninformed investors to demand securities and ensures all securities can successfully be sold.
- In particular does this ensure that securities with a low value can be sold and the offer does not have to be withdrawn if it emerges that the securities are not valued highly enough. This retains the reputation of the issuer and also of the investment bank underwriting the issue; as the low value would only be discovered late in the process, such as the book-building phase, the plans to underwrite the securities will be public knowledge.
- [?] Companies that issue high-value securities will face significant underpricing, thereby subsidizing those issuers with low-value securities. At the point the offer price is set, the company would know that its securities are highly valued, why would the accept this arrangement anyway?
- [!] The key is that when considering issuing securities they do not know that their securities are of high value. By accepting, often through an implicit agreement with the investment bank that their securities are underpriced, issuers gain access to the market. By refusing the agreement, investment banks might not agree to the underwriting.

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Trading due to underpricing

- Underpricing is associated with the discretion of investment banks to allocate securities to investors
- This may lead to a situation where investors valuing the security below the market price will be allocated them, they would want to sell their securities
- This may lead to a situation where investors valuing the security above the market price will not be allocated them, they would want to buy securities
- Investors will be trading the security and investment banks benefit through brokerage commission
- Lower offer prices also reduce the income from the underwriting spread to investment banks, requiring these two aspects to be balanced

Trading due to underpricing

→ If an issue is underpriced, this will induce trading between investors from which the investment bank can benefit.

- If an issue is underpriced, this implies that there is excess demand for the security at the offer price; investment banks then have discretion on who to allocate the security to as not all investors seeking securities can obtain their full demand. Thus investment bank have discretion in allocating securities.
- - This allocation will generally not be done according to the value investors attribute to the security, not least as this is often not known. Consequently some investors will obtain the security even though they value the security below its market price, but above the offer price.
  - As the price reaches the market price, these investors would want to sell the securities as they believe they are overvalued. The more the security is underpriced the more the excess demand and the more such investors would be found.
- - Some investors will not obtain the security even though they value the security above its market price.
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- Trading between investors would ensue and the investment bank acting as broker would earn a fee from facilitating these trades. The more the security is underpriced the more the excess demand and the investors would be trading.
- - Having a higher underpricing reduces fee income from the underwriting spread, while increasing trades and brokerage fee income.
  - An investment bank would set underpricing optimally to maximize their joint revenue.

→ We will investigate how investment banks would set underpricing optimally to maximize their own revenue.

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Trading due to underpricing

- Underpricing is associated with the discretion of investment banks to allocate securities to investors
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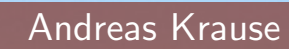

Chapter 7.3.4

Security flipping

→ The model we are going to discuss is based on Chapter 7.3.4 of the book 'Theoretical Foundations of Investment Banking'. A more detailed description of the model, additional steps for its solution, and a more in-depth discussion of results can be found there.

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Discussion of the model results

- Investment banks will optimally balance revenue from the underwriting spread and brokerage income from trading
- Underpricing only benefits investment banks at the expense of issuers
- ? Is the brokerage income the only benefit investment banks can generate from underpricing?
- ! They may also benefit their asset management if allocating them securities, reward clients for past or prospective business

Discussion of the model results

→ Now that we have derived the main results of the model, as far as relevant for us, we will briefly discuss some implications as well as limitations of this model. This will allow us to interpret the model in its context of the initial problem and enables us to apply it appropriately in a realistic context.

- Investment banks are maximizing their own profits and as such some degree of underpricing is optimal to induce trading of the security and generate additional income through brokerage commission.
- [?] Unlike in the case of overcoming adverse selection or inducing investors to reveal information in book-building, issuers do not benefit from this underpricing. The issuer faces the costs of having lower proceeds from the securities they are selling, while the investment bank obtains larger profits from the resultant trading, without any added benefits to the issuer.
- [!] Trading generates income for investment banks, but can you think of other ways underpricing might benefit investment banks?
- Underpricing is used to reward investors providing information in book-building, but it can also be used to reward other investors if they are given a preferential allocation of the securities. The discretion in allocating securities can be used to benefit their own asset management division by guaranteeing them a high return. Similarly they can provide other investors with high profits by allocating them securities due to the discretion they have, this might include current or prospective clients for other investment banking divisions, such a senior managers seekign merger advice, or as part of attracting future underwriting business, clients for financial innovation, becoming the prime broker of hedge funds, amongst many other possibilities.

→ Investment banks may use underpricing to increase their own profits, either by generating revenue directly, or by attracting future business. The issuer indirectly pays with lower proceeds for increased profits of the investment bank.

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- Underpricing is used to reward investors providing information in book-building, but it can also be used to reward other investors if they are given a preferential allocation of the securities. The discretion in allocating securities can be used to benefit their own asset management division by guaranteeing them a high return. Similarly they can provide other investors with high profits by allocating them securities due to the discretion they have, this might include current or prospective clients for other investment banking divisions, such a senior managers seekign merger advice, or as part of attracting future underwriting business, clients for financial innovation, becoming the prime broker of hedge funds, amongst many other possibilities.

→ Investment banks may use underpricing to increase their own profits, either by generating revenue directly, or by attracting future business. The issuer indirectly pays with lower proceeds for increased profits of the investment bank.

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Discussion of the model results

- Investment banks will optimally balance revenue from the underwriting spread and brokerage income from trading
- Underpricing only benefits investment banks at the expense of issuers

? Is the brokerage income the only benefit investment banks can generate from underpricing?

! They may also benefit their asset management if allocating them securities, reward clients for past or prospective business

Discussion of the model results

→ Now that we have derived the main results of the model, as far as relevant for us, we will briefly discuss some implications as well as limitations of this model. This will allow us to interpret the model in its context of the initial problem and enables us to apply it appropriately in a realistic context.

- Investment banks are maximizing their own profits and as such some degree of underpricing is optimal to induce trading of the security and generate additional income through brokerage commission.
- [?] Unlike in the case of overcoming adverse selection or inducing investors to reveal information in book-building, issuers do not benefit from this underpricing. The issuer faces the costs of having lower proceeds from the securities they are selling, while the investment bank obtains larger profits from the resultant trading, without any added benefits to the issuer.
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Summary of key results

- Underpricing is widespread and might benefit the issuer of securities by ensuring a successful offer
- Underpricing can also benefit the investment bank and be costly to the issuer
- Underpricing may also occur if the initial market price overvalues the security

Summary of key results

→ We can now summarize the key results we have obtained about the underpricing of security issues.

- The lack of information about securities can lead to a situation where uninformed investors are not participating and the issue might not be fully sold. Underpricing gives these investors additional profits to reduce adverse selection. This underpricing benefits investors, but also issuers as they can be assured to complete the security issue successfully.
- Investment banks can also use underpricing to generate income in other parts of their business, such as brokerage commissions, but generally by attracting other business to the investment bank. Here the issuer has no benefit from the underpricing, but effectively is charged a higher fee by the investment bank than the underwriting spread.
- Of course, underpricing can also occur if investors the investment bank initially contacts to determine the offer price in book-building, undervalue the security. Once the whole market demand emerges, the value might be assessed to be higher.

→ Underpricing is a common phenomenon in security underwriting and may be the result of rewarding investors for providing information or to overcome adverse selection, benefitting the issuer, too. It might also be the result of investment banks seeking to maximize their own profits at the expense of issuers or they did not contact the right investors to obtain an accurate value of the security.

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