Bankers' Skin-in-the-game and Bank Risk-Taking: Evidence from Security Issuances

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Monetary & Financial History Conference
Sveriges Riksbank

Introduction

- Banks are risky and bank failures have big negative externalities

- Limited liability provides unlimited upside potential, while limiting downside risk

- After GFC, limited liability for bankers called into question
  - E.g. Goodhart and Lastra (2020)

- And bank failures are not a thing of the past
  - SVB and Credit Suisse (2023)

- No clear counterfactual *today* to explore relation between skin-in-the-game and risk taking

- This paper uses a unique historical setting to shed light on the effect of additional skin-in-the-game for bankers

This paper

- Setting: security issuance underwriting by one of the largest Dutch investment banks, 1919-1930
- Underwriting securities: the bank guarantees their placement in the market
  - Moving the issuance risk away from the firm to the bank
  - Substantial risk: 40% of issuances undersubscribed by at least 10%
- Individual bankers guarantee a part of the security issuance
  - Symmetric pay-off between bank and bankers
  - Skin-in-the-game defined with respect to *specific* risk-taking that can be attributed to bankers *individually*
  - *Exogenous* discontinuities in size of the bankers' guarantees based on the size of the issuance → facilitates causal inference
  - Substantial: in 1918, secretary received 8000 guilders base income, and spent 5000 guilders on a single failed security issuance ▸ Salary and tantièmes

Conceptual Framework

- Agency problem. Bankers may have an incentive to take too much risk in underwriting security issuances:
  - ▶ Tantième (bonus) in good times $+-10x$ base salary: upside potential without downside risk
  - ▶ Private benefits (bankers often involved in other businesses)

- Potential solution:
  - ▶ Additional skin-in-the-game: bankers personally underwrite part of the issuance
  - ▶ Higher underwriting amount (more risk) $\rightarrow$ higher personal guarantees

- The effects of personal guarantees are *ex ante* unclear:
  - ▶ Bankers may be risk-averse and may avoid risk taking anyway
  - ▶ Reputation concerns may limit risk taking directly tied to bankers' personal decisions
  - ▶ Private benefits may be so strong that personal guarantees do little to change incentives

Findings

Bankers' participation in security issuance improves the overall quality of the securities selected by the bank for underwriting

- Quality of security $=$ log(subscription rate at issuance)
- An increase from p50 to p75 in the bankers' guarantee $\rightarrow$ 23 percentage point increase in the subscription rate (median subscription rate of 100%)
- The subscription rate correlates with healthier firm balance sheets

This implies that bankers' skin-in-the-game defined with respect to *specific* risk taking that can be attributed to bankers *personally* can improve incentives

- Improves bank risk management
- Powerful regulatory tool if banks are thought to take too much risk

Related Literature

Executive compensation

- Causal effects of executive pay are important but difficult to estimate
    - E.g. Edmans, Gabaix and Jenter (2017)
- Equity compensation only affects upside of risk-taking (Bolton, Mehran and Shapiro 2015)

$\rightarrow$ We analyze another form of compensation that includes downside exposure

Liability for bankers

- Limited liability increased risk-taking
    - Koudijs et al. (2021); Aldunate et al. (2021)
- Whereas contingent liability reduced risk-taking
    - Mitchener and Richardson, (2013); Esty (1998)

$\rightarrow$ We link skin-in-the-game to specific risk-taking in security issuances, directly under the bankers' control

Dutch financial system in the early 20th century

- Dutch corporate network in the 1920s: interlocking directorates
    - Colvin (2014); Colvin, De Jong and Fliers (2015), De Jong, Fliers and Westerhuis (2021)

Background: underwriting in 1920s

After WWI, securities markets boomed across the US and Europe

- ▶ The Netherlands profited especially: neutral during the war

- Investment banks played a fundamental role by underwriting security issuances: guaranteed the sale of securities at a predetermined price

  - ▶ In the case of success, the bank received an underwriting fee

    - ⋆ Our sample: around 3% of the underwriting amount

  - ▶ In the case of failure, the bank bought the unsold securities

    - ⋆ 40% in our sample is not fully subscribed

    - ⋆ Bank was be liable up to 100% of the underwriting amount

- Outcome to security issuance is uncertain, exposing banks to significant risk

Historical setting

Nederlandsche Handel-Maatschappij (NHM) established by King William I in 1824, to facilitate trade between Netherlands and Dutch East Indies

- 1880 onwards: NHM more focused on banking, including underwriting
  - 1884: bank officially allowed to participate in underwriting
- 1909 - 1934: bankers are participating in underwriting
  - Period of interest: 1919-1930
- 1964: Merger with Twentsche Bank to become Algemene Bank Nederland (1991: ABN AMRO)

The only Dutch bank for which complete and detailed archive is available

Yet bankers participating in underwriting also took place at other banks!

Underwriting practice

The bank would receive underwriting offers for security issuance, which it could either accept or reject

- From both firms and public institutions

- To obtain profits or to maintain relations
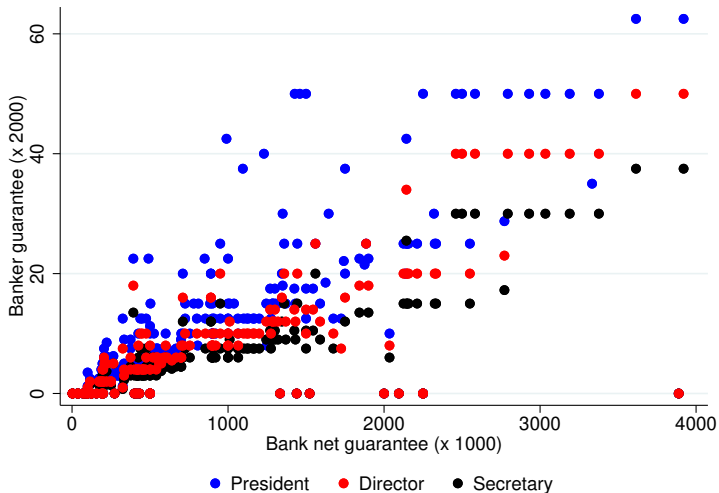
- Directly and indirectly, via syndicates

We focus on the observations where the bank is the lead underwriter

- Larger issuances ▸ Density lead underwriter

- Active decision-making

- Reputation

▸ Example underwriting contract

▸ Mexican Eagle Oil

Underwriting by bank and bankers

Methodology

Bankers' guarantee follow an exogenous rule that we infer from the data (▸ Details)

- Based on the bank's issuance amount
- With discontinuities at certain amounts
- Using fixed ratios between the president, directors and secretary of the bank
    - 100-80-60%
- Different for 2 periods:
    - 1919-1925: includes the banking crisis 1921-1924
    - 1926-1930: until effects of the Great Depression materialized

We exploit the discontinuities of rule of thumb and the deviations to examine the effect of skin-in-the-game

Defining the rule of thumb
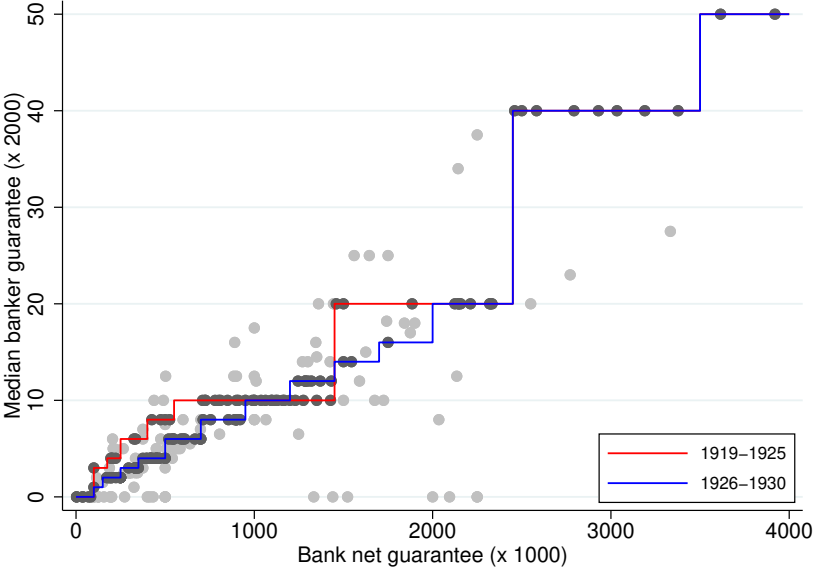
Data

We hand-collected security issuance data from 1919-1930 from the Dutch National Archives & Van Oss' yearbooks

- Minutes from confidential executive director meetings
- Syndicate books
- Yearly reports to the supervisory board
- Firm balance sheets & prospectus

We have data on the date of issuance, issuer, total issuance amount, bank gaurantee, type of security, maturity, coupon rate, underwriting fee, number of banks in the syndicate, bankers' guarantee, success of the issuance, firm leverage, age, profitability, reserves.

- Sample of 558 unique issuances
  - 235 have bankers' guarantees
- We focus on the issuances where the bank is the lead underwriter: 241 cases (1407 observations)
  - 211 have bankers' guarantees

Regression Specification

First Stage

$$D_{i,d} = \beta Z_{i,d} + \Gamma' X_i + \eta_t + \zeta_b + \kappa_d + \tau_g + \epsilon_i \quad (1)$$

Second stage:

$$log(subscription_i) = \beta \hat{D}_{i,d} + \Gamma' X_i + \eta_t + \zeta_b + \kappa_d + \tau_g + \tilde{\epsilon}_i \quad (2)$$

- $log(subscription_i)$: natural log of over-or under-subscription to issuance i

  ▸ Distribution dependent variable

- $D_{i,d}$: key explanatory variable, either
    - ▸ Actual banker's d guarantee for i (thousands)
    - ▸ Log(actual banker's d guarantee + 1)

- $Z_{i,d}$: Instrument, either
    - ▸ Predicted banker's d guarantee for i (thousands)
    - ▸ Log(predicted banker's d guarantee + 1)

- X_i: Control variables: share of bank in total syndicate, dummy for stock/bonds, public/private, foreign/domestic issuer, interlocked directorate, IPO dummy, main bank dummy

- Fixed effects: bin b, banker d, year t and industry g fixed effects

- We cluster standard errors at the issuance level

Within-bin comparison

- Each bin ranges from the exact middle of a lower to the middle of a higher step
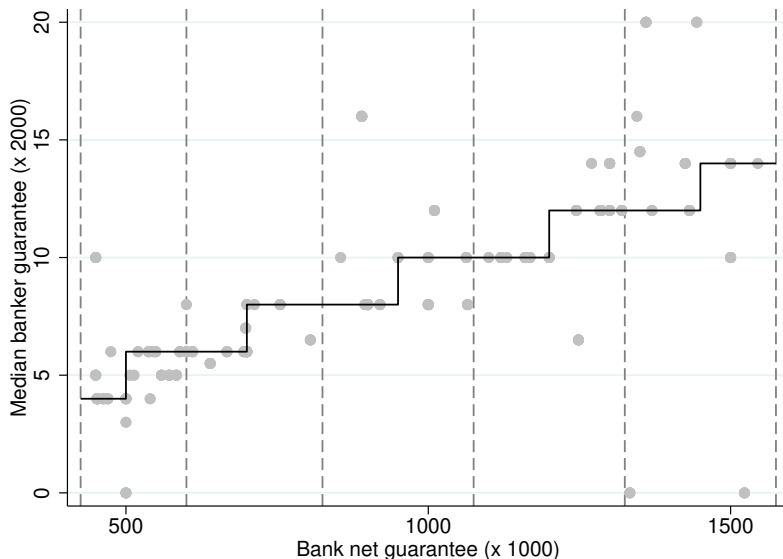
Summary statistics

Clustered by issuance, with bin fixed effects

| Variable	(1) Below discontinuity	(2) Above discontinuity	(1)-(2) Pairwise t-test
Bank issuance guarantee (x1000)	950.581 (86.752)	1024.208 (80.055)	-73.627***
Actual banker guarantee	17.669 (1.791)	22.403 (2.001)	-4.734***
Predicted banker guarantee	17.531 (1.664)	23.417 (2.045)	-5.886***
Log(subscription)	0.145 (0.138)	0.725 (0.190)	-0.580**
Successful issuance dummy	0.508 (0.046)	0.676 (0.042)	-0.168***
Share of bank in syndicate	0.356 (0.023)	0.333 (0.023)	0.024
Public sector dummy	0.374 (0.045)	0.347 (0.043)	0.027
Foreign dummy	0.571 (0.046)	0.611 (0.044)	-0.040
Interlocked directorate dummy	0.140 (0.032)	0.159 (0.034)	-0.019
Equity dummy	0.229 (0.039)	0.216 (0.038)	0.012
IPO dummy	0.026 (0.015)	0.034 (0.017)	-0.008
Main bank dummy	0.177 (0.035)	0.157 (0.033)	0.020
Observations	695	712	1407
Clusters	119	122	241

Skin-in-the-game leads to selecting better issuances

From p50 to p75: +8,000 banker's guarantee implies $8 \times 0.026 = 0.208$ log(subscription) $= 23$ p.p. higher subscription rate

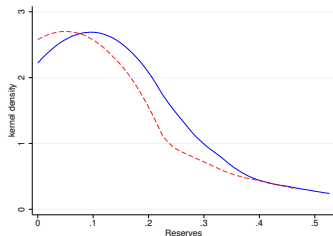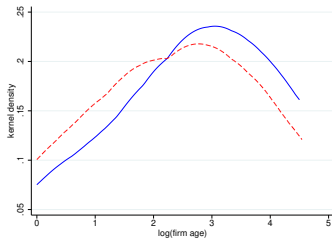| VARIABLES	(1) Log(subscription)	(2) Log(subscription)	(3) Log(subscription)	(4) Log(subscription)
		OLS		
Actual banker guarantee	0.027***	0.029***		
	(0.007)	(0.008)		
Log(actual banker guarantee +1)			0.399***	0.412***
			(0.122)	(0.129)
R^2	0.281	0.308	0.276	0.300
		RF		
Predicted banker guarantee	0.019**	0.023**		
	(0.009)	(0.010)		
Log(predicted banker guarantee + 1)			0.868**	0.784**
			(0.350)	(0.374)
R^2	0.255	0.281	0.262	0.283
		IV 2nd stage		
Actual banker guarantee	0.021**	0.026**		
	(0.011)	(0.011)		
Log(actual banker guarantee +1)			1.081**	0.994**
			(0.489)	(0.498)
R^2	0.039	0.077	-0.067	-0.002
		IV 1st stage		
	Actual banker guarantee		Log(actual banker guarantee + 1)	
Predicted banker guarantee	0.893***	0.883***		
	(0.105)	(0.105)		
Log(predicted banker guarantee + 1)			0.802***	0.788***
			(0.207)	(0.203)
R^2	0.265	0.3026	0.059	0.143
IV F-stat	72.29	71.03	14.96	15.13
Observations	1,407	1,407	1,407	1,407
Clusters	241	241	241	241
Bin FE	Y	Y	Y	Y
Year FE	Y	Y	Y	Y
Director FE	Y	Y	Y	Y
Industry FE	Y	Y	Y	Y
Controls	N	Y	N	Y

Higher subscription rates for less risky firms

Debt/Assets
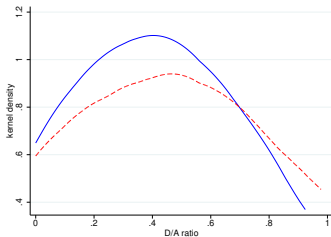
Log(age at issuance)

Reserves/Assets

Skin-in-the-game leads to selecting less risky firms ex ante

VARIABLES	(1) Log(subscription)	(2) Log(age)	(3) Leverage (D/A)	(4) Reserves/total assets
			OLS	
Actual banker guarantee	0.042***	0.009	-0.118	0.092
	(0.015)	(0.007)	(0.138)	(0.094)
R^2	0.428	0.474	0.485	0.477
			RF	
Predicted banker guarantee	0.049***	0.015*	-0.114	0.052
	(0.011)	(0.008)	(0.161)	(0.135)
R^2	0.414	0.474	0.484	0.474
			IV 2nd stage	
Actual banker guarantee	0.056***	0.018*	-0.131	0.060
	(0.013)	(0.009)	(0.183)	(0.155)
R^2	0.066	0.251	0.249	0.118
			IV 1st stage	
Predicted banker guarantee			0.870***	
			(0.080)	
R^2			0.358	
IV F-stat			118.55	
Observations	835	835	835	835
Clusters	144	144	144	144
Bin FE	Y	Y	Y	Y
Year FE	Y	Y	Y	Y
Director FE	Y	Y	Y	Y
Industry FE	Y	Y	Y	Y
Controls	Y	Y	Y	Y

Conclusion

- This paper uses a unique historical setting to analyze the effect additional skin-in-the-game on security issuance outcomes

- Bankers can participate in their bank's security underwriting to limit risk-taking

- Our results show that when bankers commit to an predetermined rule, they select higher quality issuances

  - Higher subscription rates ex post

  - Lower firm risk ex ante

- Findings suggest that skin-in-the-game with immediate exposure to downside risk could improve bank risk management

  - Escrow accounts, clawbacks

  - Directly tied to specific bank activities
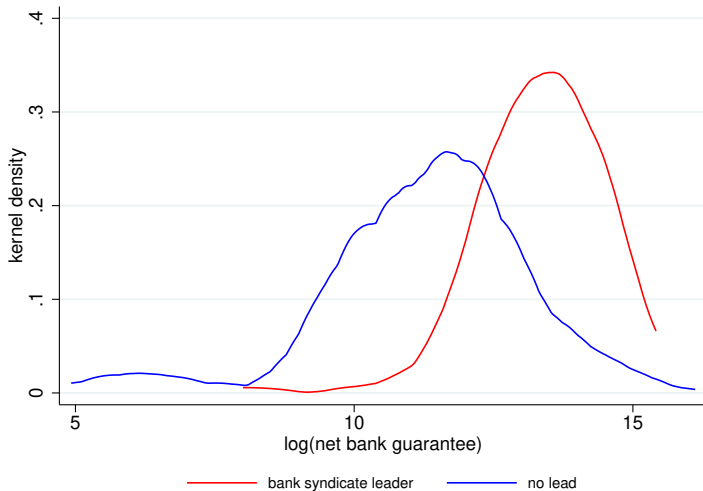
Thank you!

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Appendix

Salary and tantièmes
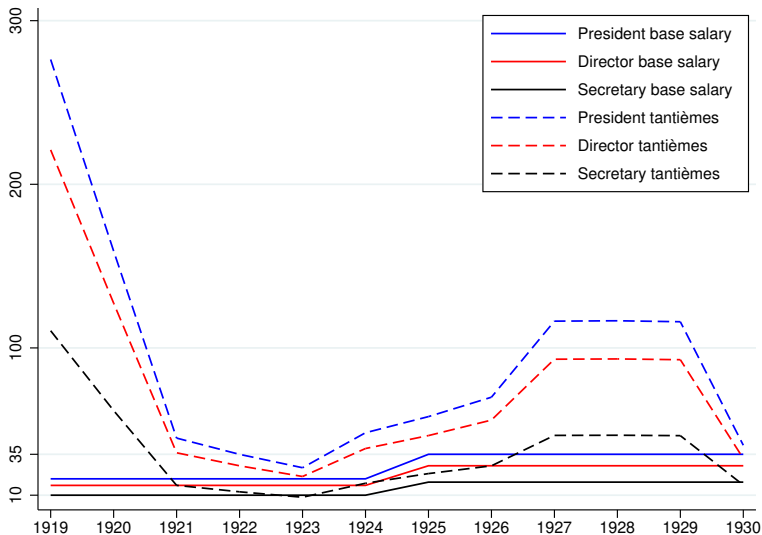
Density lead underwriter

Example underwriting contract

This form to be sent entire, with the deposit of 2s. 6d. per Share on the Shares underwritten, to Messrs. Higginson & Co., 80 Lombard Street, London E.C.3, or to Messrs. Cull & Co., 11 Throgmorton Avenue, London E.C.2.-

No cheques will be cashed unless the Underwriters are called upon to take up Shares.-

THE MEXICAN EAGLE OIL COMPANY.

(Compania Mexicana de Petroleo "El Aguila" S.A.)

Proposed offer for sale of

7,000,000 7 per Cent Cumulative First Preference Shares
of 10 Mexican Gold Pesos each.

FORM OF UNDERWRITING CONTRACT

To Messrs. Higginson & Co.,
80 Lombard Street, E.C.3; and

Messrs. Cull & Co.,
11 Throgmorton Avenue, E.C.2.

Dear Sirs,

I/We undertake for the consideration and on the conditions below stated to purchase or find responsible purchasers to your satisfaction for 10,000 of the above Shares on the terms of the Draft Particulars, which you contemplate issuing and which have been submitted to me/us, and now hand you an Application for the same, together with a cheque being the amount payable on application in respect of the Shares underwritten by me/us.-

If I/we withdraw or do not hand you the above-mentioned application, I/we irrevocably authorise you or any of your partners to sign and put in such application on my/our behalf.-

Mexican Eagle Oil

CONDITIONS.

1. If the whole of the Shares are sold by you in response to applications received on the said public offer within fourteen days of the publication of the offer my/our responsibility is to cease and I am/we are not to be required to take up any of the Shares underwritten by me/us, but if the whole of the said Shares are not so sold, then all sales made by you to the public are to be applied rateably in reduction of my/our liability "pari passu" with all other Underwriters having similar contracts to this, for which purposes you are to be treated as Underwriters for any part of the Offer for which you have not obtained other Underwriters.-

2. I/We undertake to pay on the due date all moneys payable in accordance with the terms of the said public offer in respect of any Shares allotted to me/us hereunder.-

3. You are within 14 days of the closing of the lists of the said public offer to pay me/us an underwriting commission of 1¾ per cent on the nominal amount, taken as 20s. per Share, of the Shares underwritten by me/us, whether I am/we are required to accept an allotment of the Shares or not, but if an allotment is made to me/us no commission is to be payable until the moneys payable on acceptance by me/us have been paid, and you may apply the commission in or towards payment of such moneys.-

4.

Follow the rule
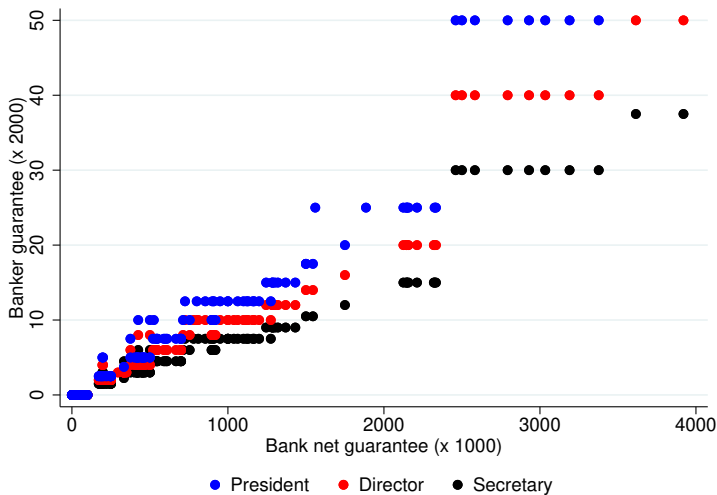
Details

Step function based on following assumptions:

1. Steps within 1 regime (1919-1925/1926-1930) cannot overlap
2. Steps should have the form of 100% president, 80% director, 60% secretary
3. Steps can only become bigger (in terms of net NHM amount), not smaller
4. Board connections should not determine the rule
5. Each step should correspond to higher bank and director amount
6. Each step should contain at least 2 observations
7. No banker's guarantee below 100.000 net NHM position
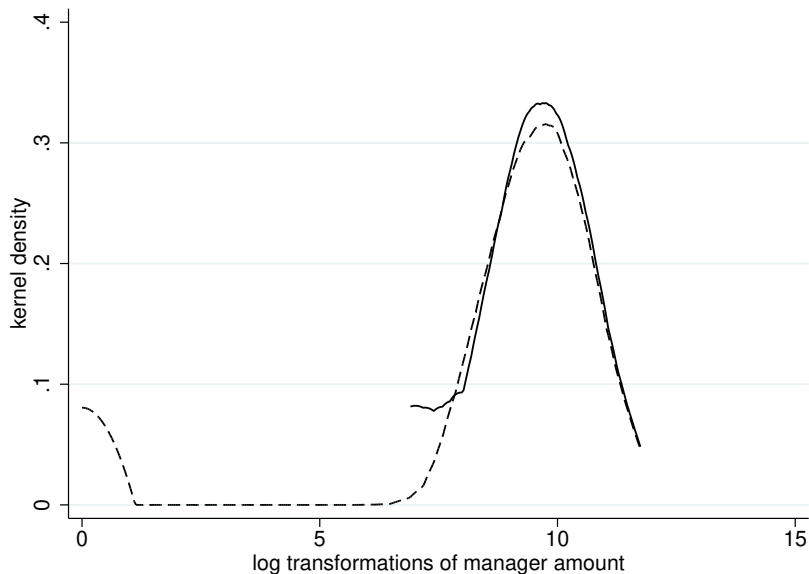
Distribution dependent variable
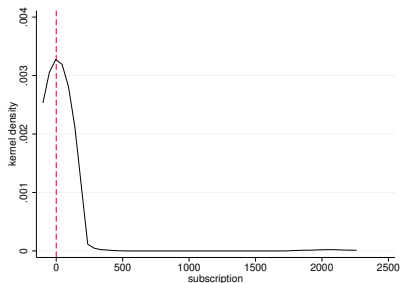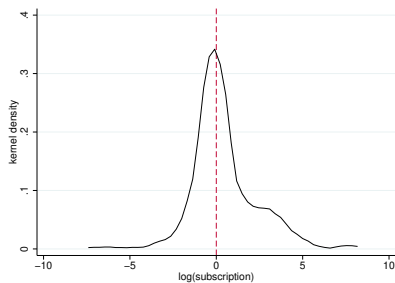
Times subscribed

Log(times subscribed)

Distribution logarithmic transformations

Underwriting example municipality of Amsterdam

Vergadering van DONDERdag, 9 SEPTEMBER 1926.

Present de Heeren:

Dr. C. J. K. VAN AALST, President.
Mr. J. BIERENS DE HAAN, Directeur.
~~F. P. J. VESTER,~~ "
~~Mr. J. C. A. EVERWIJN,~~ "
Mr. D. CRENA DE IONGH, "
Mr. F. H. ABBING, Secretaris.

Wordt aangeteekend, dat besloten is te aanvaarden de door de Heeren Mendelssohn & Co. Amsterdam by missive dd. 8 dezer aangeboden helft hunner participatie ad f 4.500.000.- in de 4½ % leening der Gemeente Amsterdam groot f 9.000.000.-, deel uitmakende van eene uitgifte groot f 15.000.000.-, waarvan door de Gemeente reeds f 6.000.000.- geplaatst, welke leening den Heeren Pierson & Co. is gegund tot den koers van 99 %.

De uitgifte zal plaats hebben op 21 September 1926 tot den koers van 99¾ %.

In deze transactie heeft de Nederlandsche Handel-Maatschappy voor zich gehouden · · · · · · · · f 2,030,000.-
en afgestaan aan de Heeren:

Dr.C.J.K.van Aalst	"	50,000.-
Mr.J.Bierens de Haan	"	40,000.-
F.P.J.Vester	"	40,000.-
Mr.J.C.A.Everwyn	"	40,000.-
Mr.D.Crena de Iongh	"	20,000.-
Mr.F.H.Abbing	"	30,000.-
		f 2,250,000.-

By de 14 September 1926 gehouden inschryving werden slechts f 3,384,000.- obligatiën geplaatst, zoodat het syndicaat f 5,616,000.- moest opnemen.

Het aandeel van de Nederlandsche Handel-Maatschappy daarin bedraagt f 1,404,000.- obligatiën, welke haar kosten 99 %.

Tusschen de Heeren Pierson & Co. en Mendelssohn & Co. Amsterdam is overeengekomen, dat eerstgenoemden de stukken voor gezamenlyke rekening zullen blyven verkoopen.-

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