

# The origins and real effects of the gender gap: Evidence from CEOs' formative years

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DUCHIN, SIMUTIN, AND SOSYURA

DISCUSSION: ED VAN WESEP

# The paper has been presented a few times so I'll try to say something that prior discussants didn't say

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1. The data and question are pretty cool. (Alright. Prior discussants probably said this)
2. The gender imbalance in a CEO's formative years seems to be correlated with something outside the empirical model.
3. The profession needs to stop saying things like "while we don't have statistical significance, the economic significance is large."
4. Something is funny with the t-stats and I have no idea what.

# The data are very cool

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A veritable treasure trove!

The sample size is small, which will be a problem for any study, but you research with the data you have, not the data you want.

It's especially difficult for this one, as there are very few women in the sample.

# Difficulties with observational studies

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We are always concerned with omitted variables:

- Do the right hand side variables correlate with something outside the empirical model?

Are the proxies for sexist upbringings uncorrelated with everything else?

- If not, then even the best identified work, Table 8, is in trouble.

**Panel A: Individual Measures of Gender Imbalance**

Background	Model	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	Model (6)	Model (7)	Model (8)
Measure of CEO gender imbalance	Women								
Female division manager		-0.004** [1.461]	-0.002* [2.268]	-0.004** [2.283]	-0.005** [2.361]	-0.003** [2.089]	-0.004** [2.089]	-0.001** [1.572]	-0.004** [2.298]
CEO gender imbalance		0.002* [1.931]	0.003** [2.096]	0.004** [2.143]	0.003** [1.995]	0.005** [2.087]	0.002** [2.063]	0.003** [2.241]	0.001** [2.075]
Female division manager x CEO gender imbalance		-0.004** [2.106]	-0.002* [1.831]	-0.004** [2.074]	-0.005** [2.146]	-0.003 [1.492]	-0.002 [1.546]	-0.001** [2.197]	-0.002* [1.859]
Controls		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R <sup>2</sup>		0.579	0.573	0.582	0.580	0.579	0.574	0.580	0.576
N_obs		3,904	3,904	3,904	3,904	3,904	3,904	3,904	3,904

Only 7.6% of division managers are women, so the CEO gender imbalance coefficients are not usually offset with the interactions. Therefore, men with imbalanced backgrounds generally allocate more CapEx overall.

**Upshot: CEO Gender Imbalance correlates strongly with something outside the model in the paper.**

**Panel B: Pooled Indexes of Gender Imbalance**

Model	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Female division manager	-0.002 [1.582]	-0.003 [1.473]	-0.002* [1.769]	-0.003* [1.819]	-0.004** [2.114]	-0.004** [2.072]	-0.002 [1.547]	-0.002 [1.320]
CEO family index	0.003** [2.368]	0.004** [2.296]					0.003** [2.574]	0.004** [2.418]
Female division manager x CEO family index	-0.005** [2.215]	-0.004** [2.163]					-0.004** [2.307]	-0.004** [2.226]
CEO education index			0.004** [2.187]	0.003** [2.049]			0.003** [2.017]	0.003* [1.903]
Female division manager x CEO education index			-0.006** [2.409]	-0.004** [2.303]			-0.004** [2.352]	-0.004** [2.447]
CEO community index					0.006* [1.766]	0.004* [1.883]	0.002 [1.395]	0.003 [1.461]
Female division manager x CEO community index					-0.005* [1.837]	-0.004* [1.735]	-0.002 [1.573]	-0.001 [1.466]
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	No	Yes	No	Yes	No	Yes	No	Yes
R <sup>2</sup>	0.336	0.584	0.329	0.580	0.327	0.578	0.346	0.592
N_obs	3,904	3,904	3,904	3,904	3,904	3,904	3,904	3,904

**This seems to be pretty consistent across tables.**

# Suggestion 1

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Instrumenting for, e.g., maternal employment is possible, and the econ literature suggests a few instruments.

But...they are all weak, and given the small sample, probably not going to work.

Maybe Just note the issue and move on.

# Let's talk about significance

## (subtitle: Ed's diatribe about our profession)

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There's a big move in the sciences against "statistical significance", which I applaud.

But...we need to talk about economic significance correctly.

Let me pick on some bigshots who aren't the authors of this paper.

Goldin and Rouse (2000) claim to find that blind orchestra auditions increase the likelihood of women being selected.\* There are two main pieces of evidence.

- The raw data with no controls show that men do better in blind auditions than non-blind auditions.
- The data with lots of controls show that women do better in blind auditions, though there is no statistical significance.

I owe a great debt in this analysis to the blog of Andrew Gelman, a statistician at Columbia (<https://statmodeling.stat.columbia.edu/2019/05/11/did-blind-orchestra-auditions-really-benefit-women/>).



# It's not correct to claim that “economic significance is large even if there's no statistical significance”

Note that I've made this mistake many times before!!

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From the authors:

- “Some of our coefficients of interest...do not pass standard tests of statistical significance and there is, in addition, one persistent result that goes in the opposite direction...The point estimates, moreover, are almost all economically significant.”
- “The impact for all rounds [columns (5) and (6)] [of Table 9] is about 1 percentage point, although the standard errors are large and thus the effect is not statistically significant. Given that the probability of winning an audition is less than 3 percent, we would need more data than we currently have to estimate a statistically significant effect, and even a 1-percentage-point increase is large.”

What do we make of this? The economic significance of the point estimate is large, but we can write their estimates another way. The 95% confidence interval is [-0.15,0.37].

To quote Gelman: “Some fine words but the punchline seems to be that the data are too noisy to form any strong conclusions. And the bit about the point estimates being ‘economically significant’—that doesn’t mean anything at all. That’s just what you get when you have a small sample and noisy data, you get noisy estimates so you can get big numbers.”

# Suggestion 2

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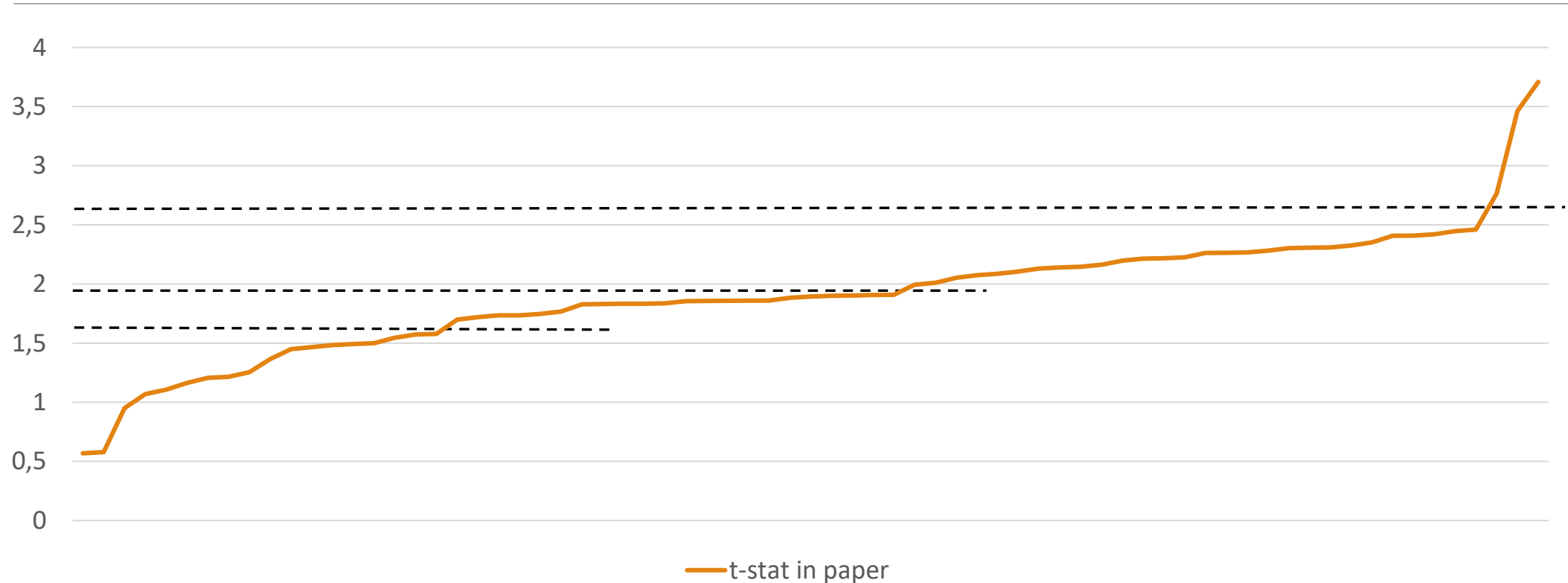
Ideally, weaken language around “economic significance even without statistical significance” since that’s not a meaningful phrase.

But...you have to get the paper past gatekeepers, so maybe this can be weakened later in the editorial process or not at all.

Now let's talk about t-  
stats!

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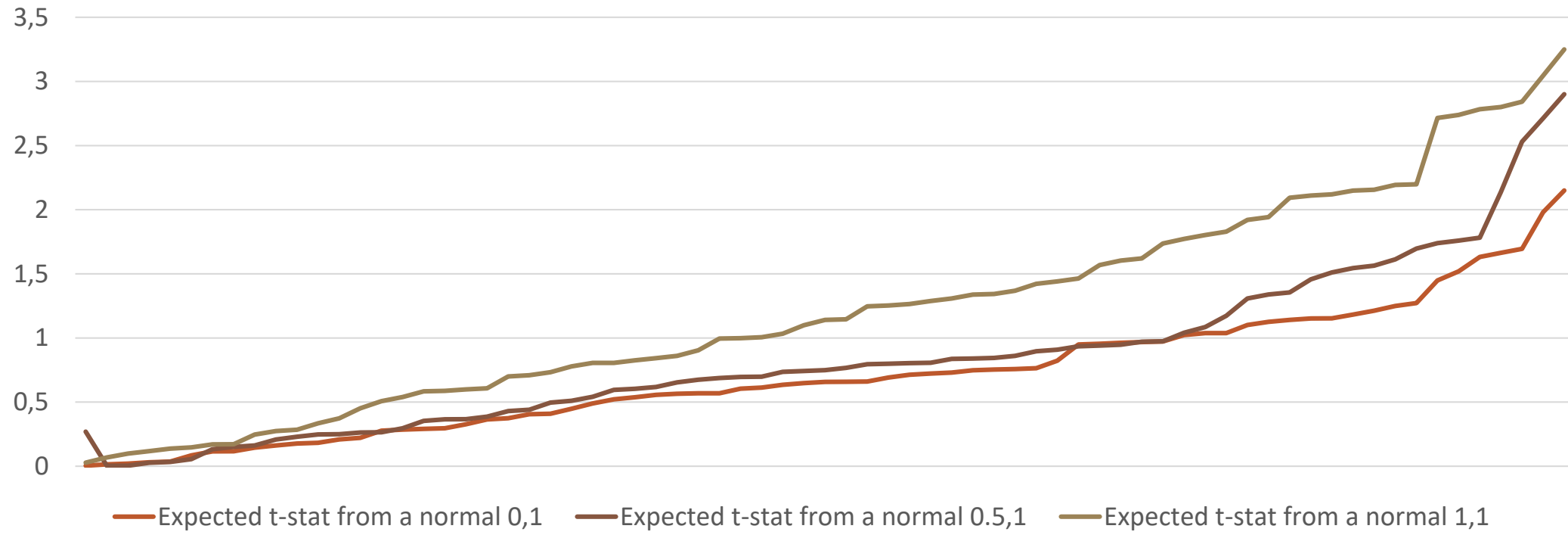
One refreshing fact: the t-stats aren't p-hacked!  
No jumps at traditional significance levels, and a lot of t-stats between 1.8 and 1.9.



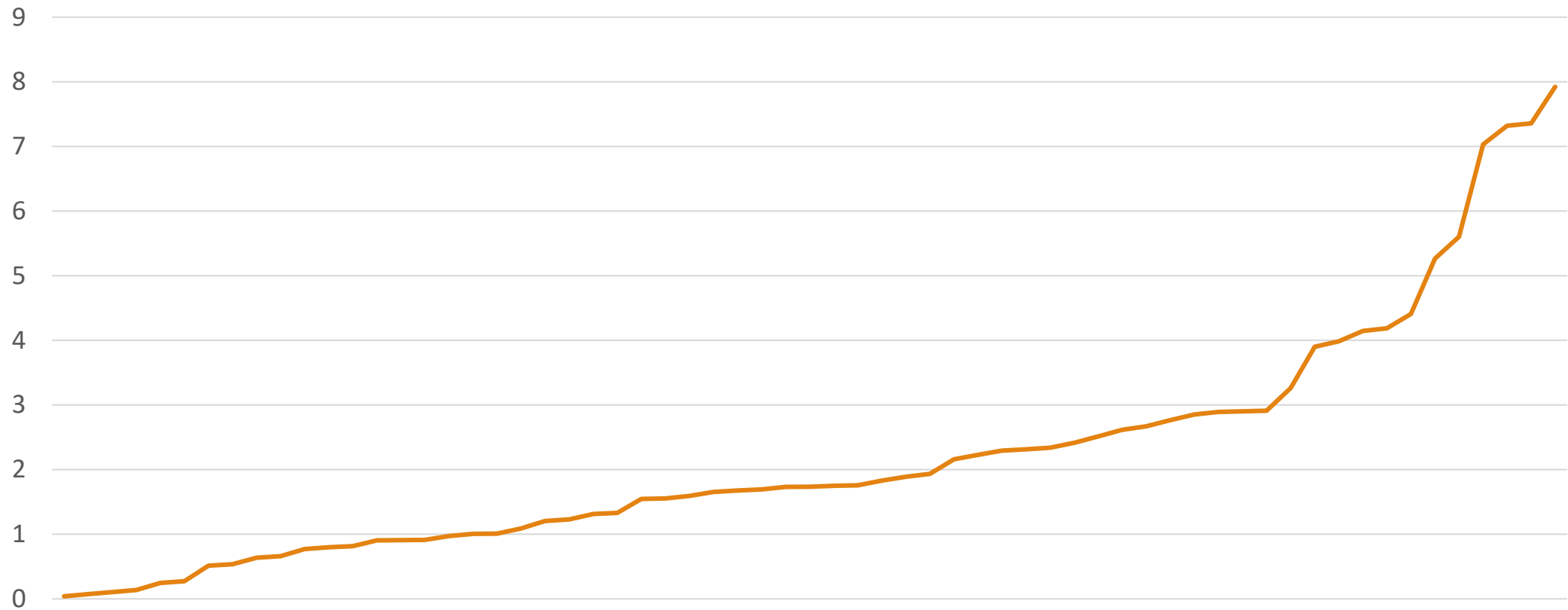
Plotted: Lowest to highest, all t-stats for coefficients of interest in the paper

# The distribution of t-stats is typically convex

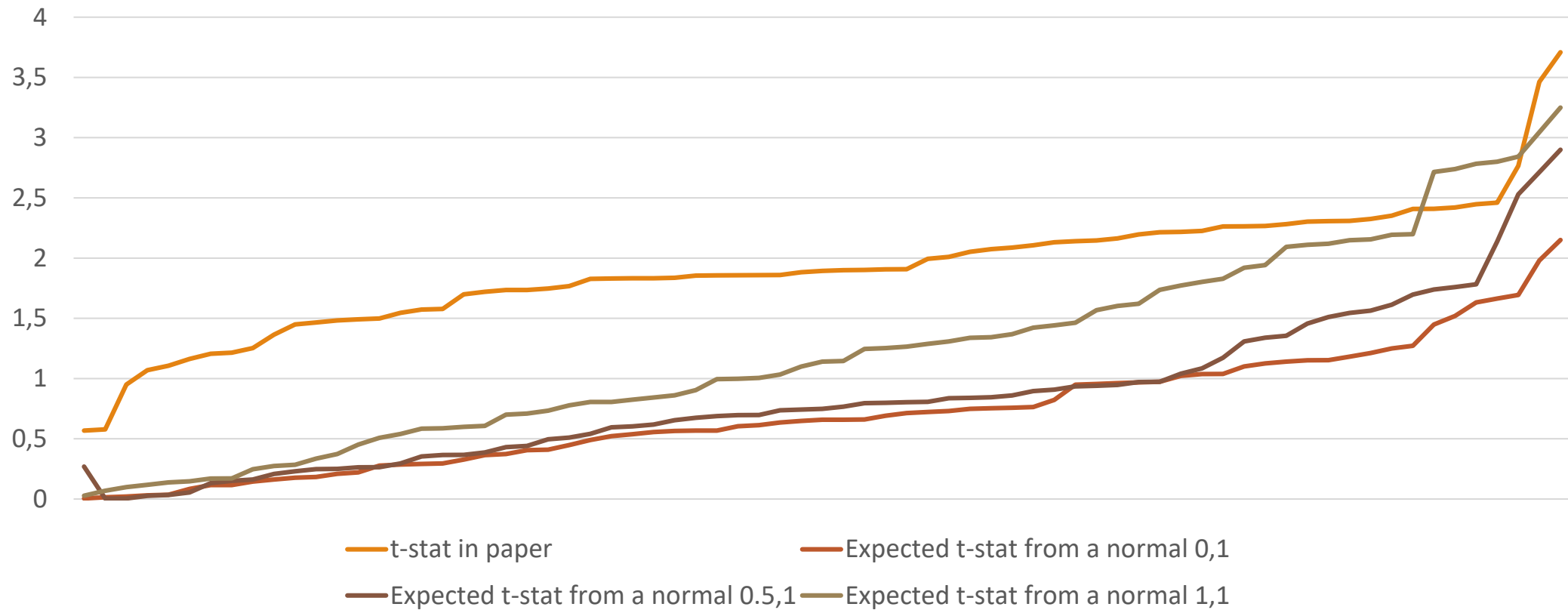
t-stats in a null distribution



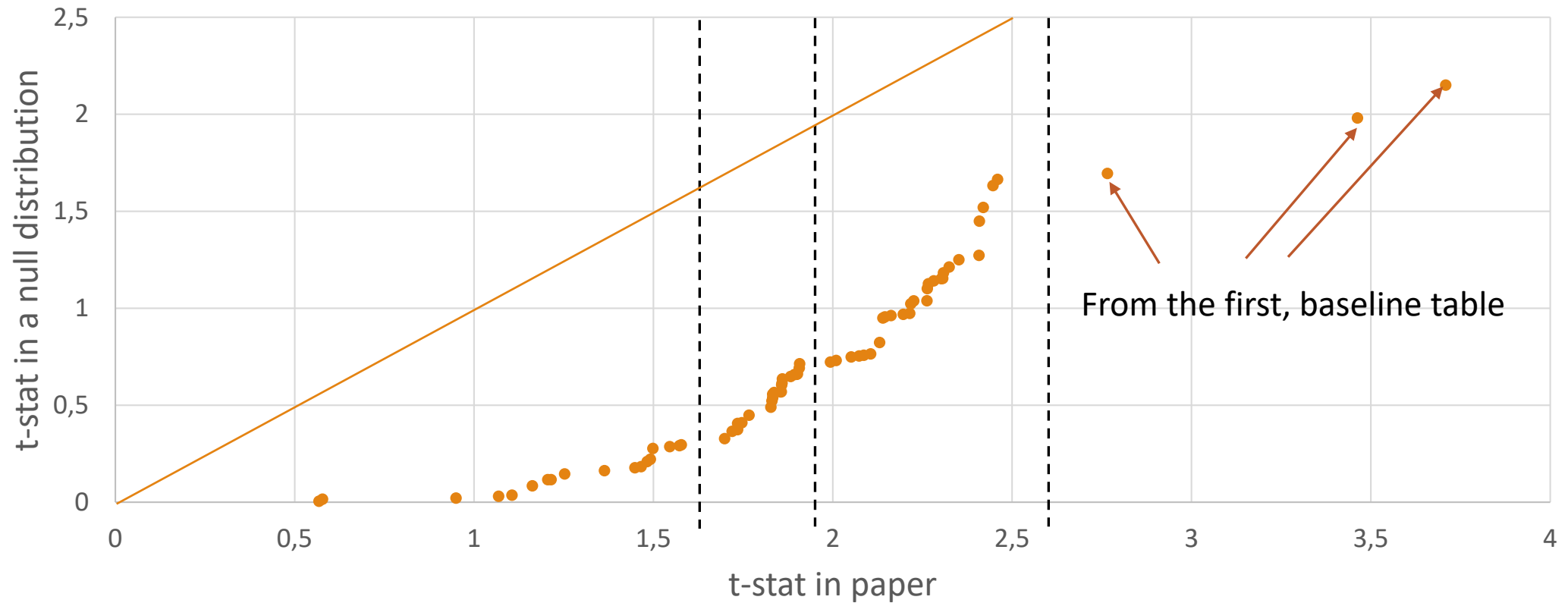
For example, this is the distribution of t-stats for the control variables in Table 3



The distribution of t-stats for the 71 coefficients of interest is concave (except for the ones in Table 3)

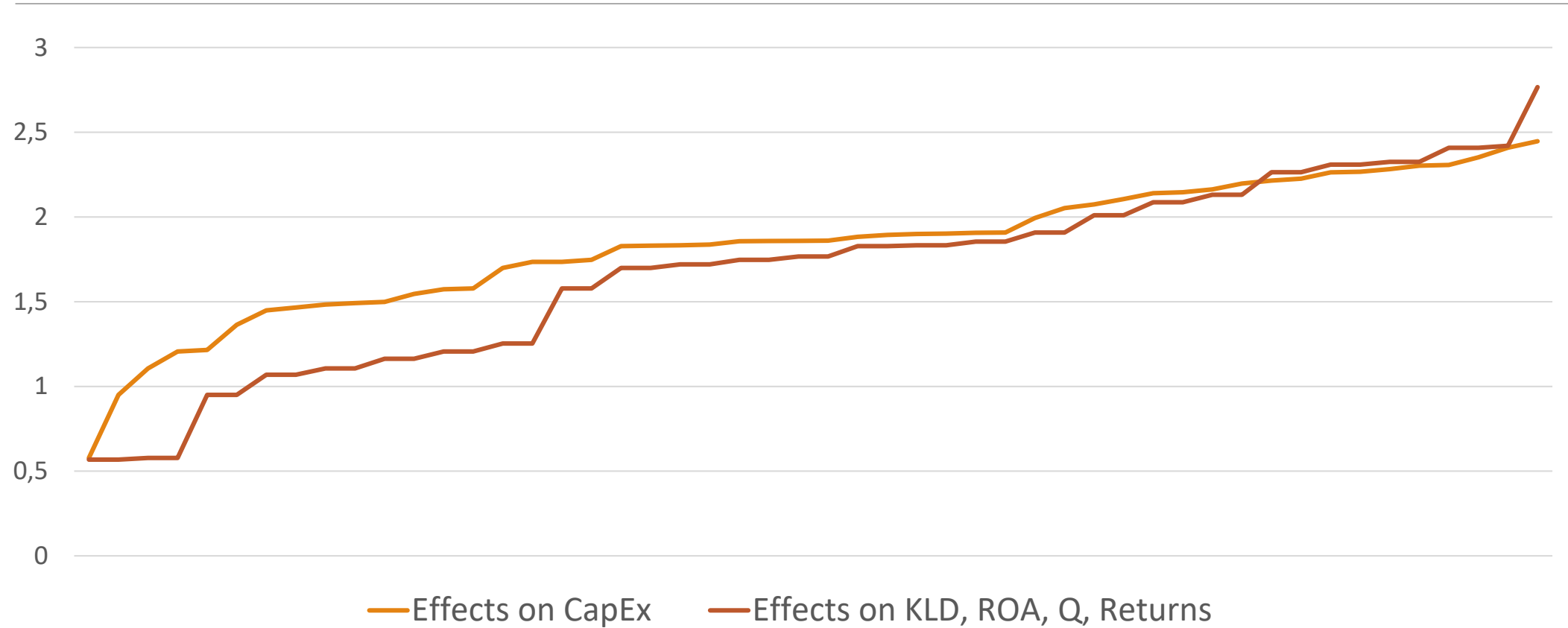


Another way to see it: t-stats of interest and t-stats in a null ought to be parallel (and below the 45 degree line if the mean is above the null)

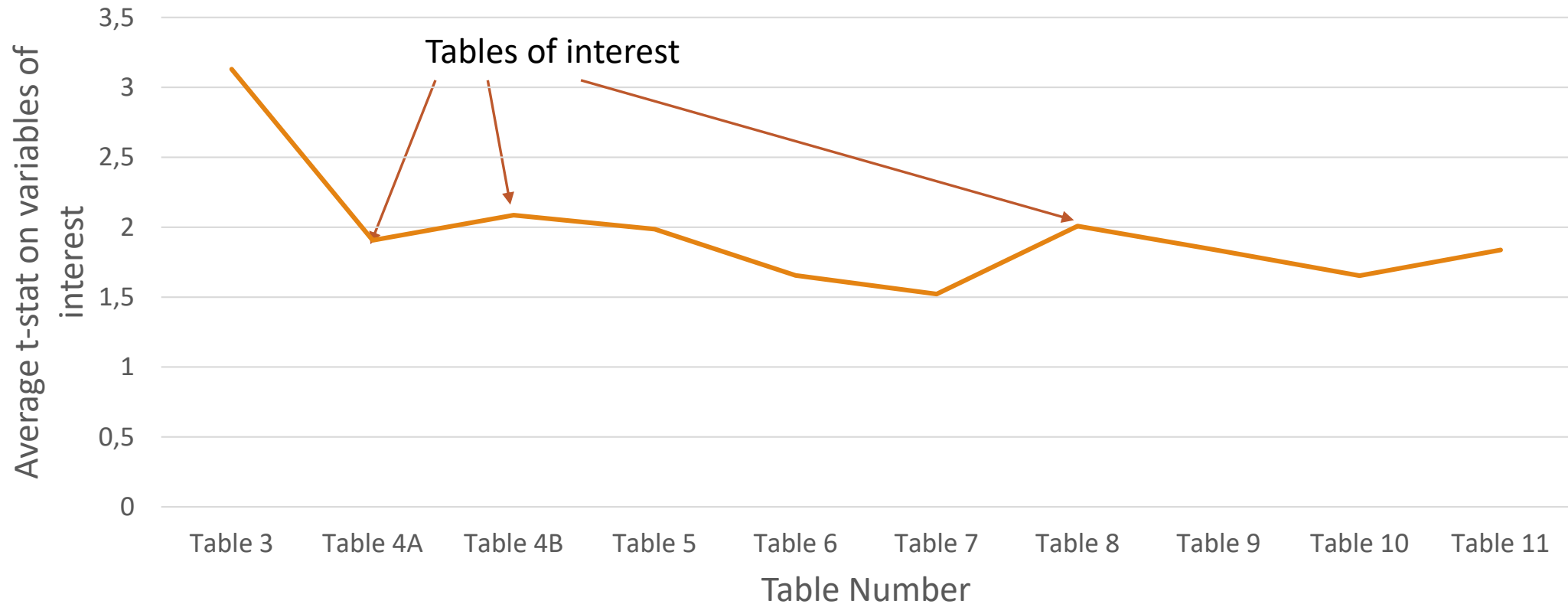




# The pattern is similar when the LHS is CapEx or something else



T-stats are pretty even across all tables except Table 3, which isn't using the variable of interest.



# Suggestion 3

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Nothing to do here. It's just interesting to note.

If you can figure out what's going on, that would be interesting too.