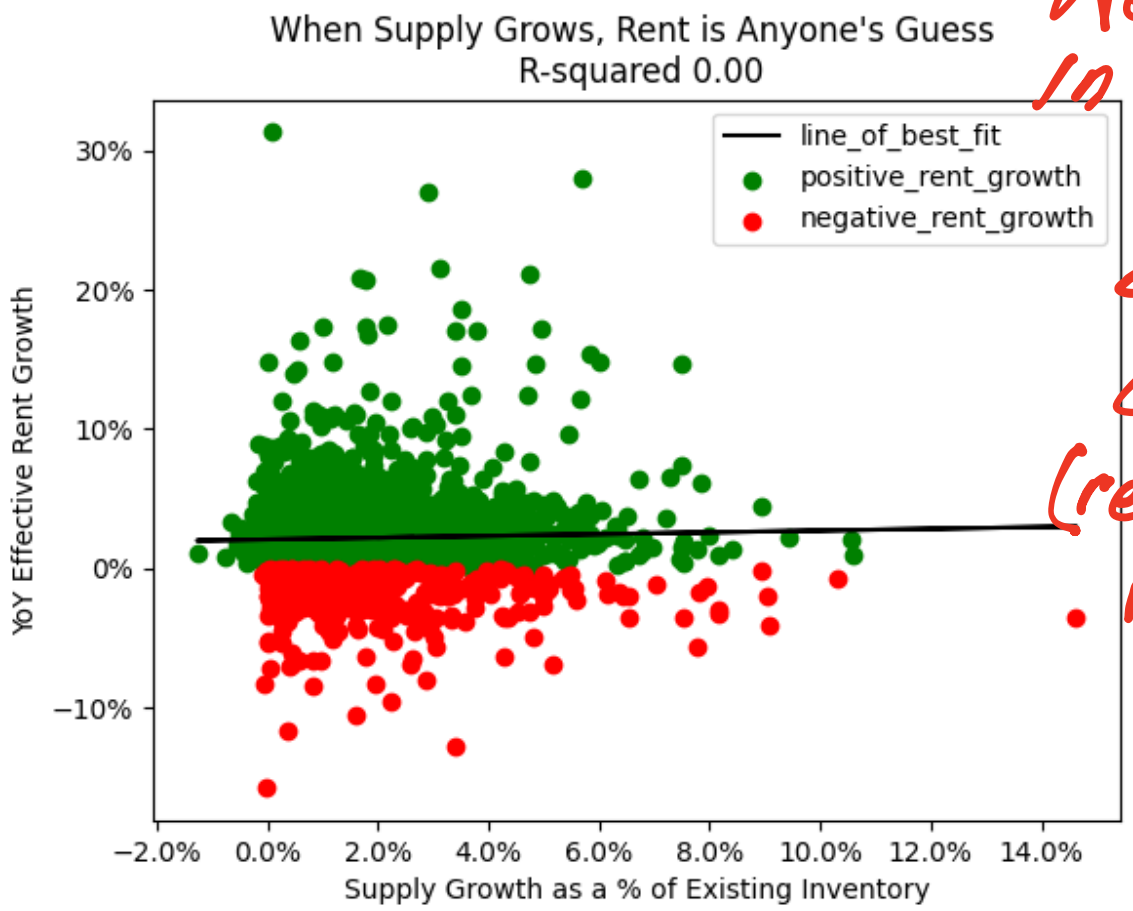
What to expect when you're expecting… a ton of supply

We hear that residential real estate is experiencing record levels of supply. In fact, it's hard to read about anything else in our sector these days. The sophistic analysis goes like this: supply is up, so rents are down. This is usually supplemented with a graph implying that the worst is yet to come. While this makes for good clickbait, it leaves one with more questions than answers. Namely, how can we be both oversupplied but in a 'housing shortage'? What's the correlation between supply and rent growth? And most importantly: how does demand factor into this?

To determine what we should expect from this so-called wave of supply, we studied the last 25 years of data across the largest 100 markets in the US. As any ECON101 student could have told you: the impact depends not on supply, but on *supply and demand*. And demand is hot.

Supply and Rent Growth: very distant cousins

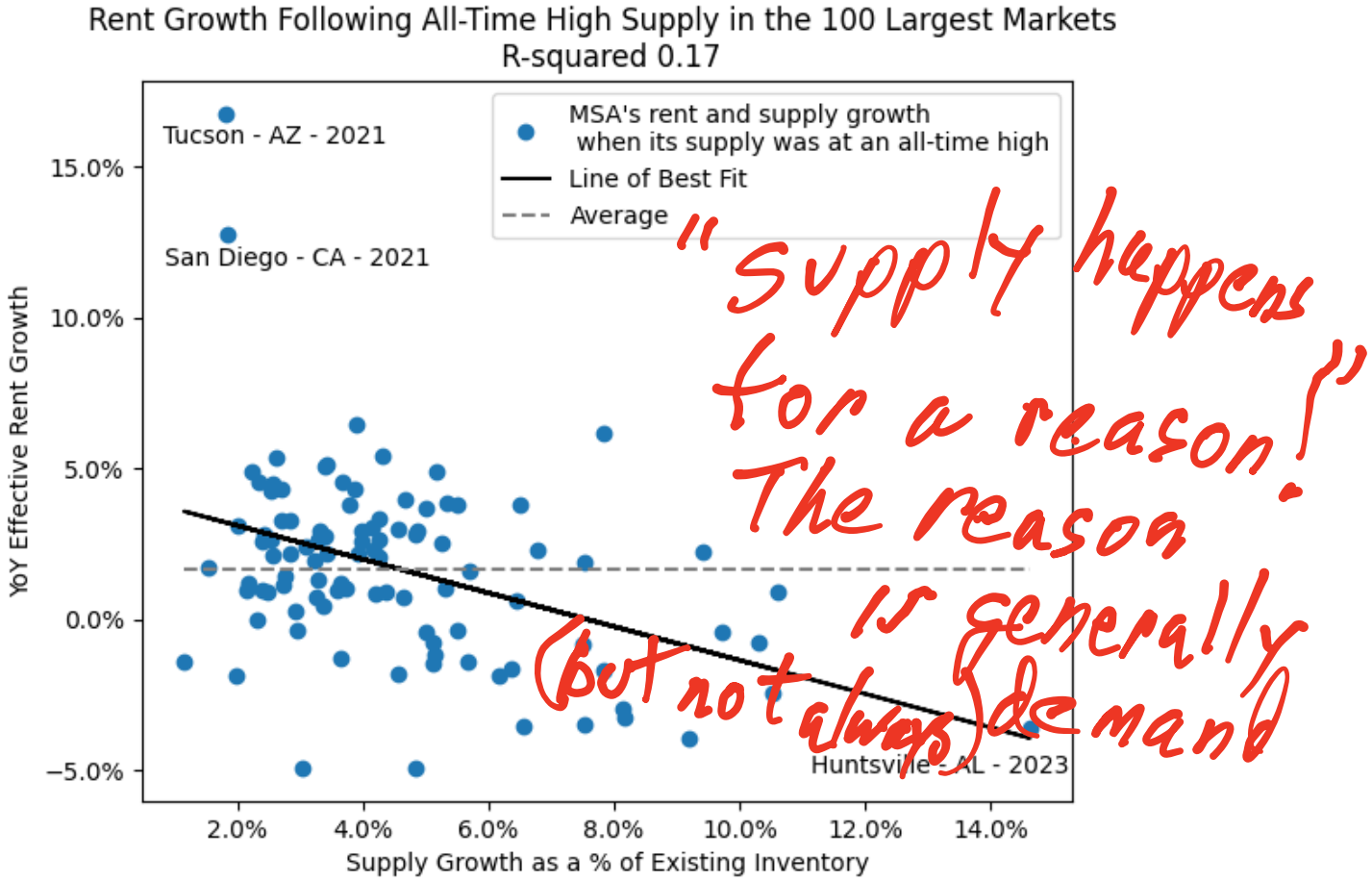
As to not burry the lead, this is a graph of the largest 100 markets in the US showing rent's response to supply growth. The relationship has an R-squared of zero and a slightly *positive* line of best fit.



The R-squared is also zero when comparing supply growth to rent growth in the *following* twelve months.

When supply surges

Some will look at that relationship and concede perhaps supply doesn't matter in all cases. But 2024 is not 'all cases.' We find ourselves with extreme levels of supply growth (we're told). To contextualize this, we can examine the historical impact of abnormally high supply. We took each hundred MSAs and found the year when supply grew at its highest level on record.



While this looks intuitive, it presents evidence that is hard to square. First, the average rent growth is positive. This means that in 100 markets, at their highest year of supply on record, the safe bet was for rents to continue growing. And grow they did: in 77 out of 100 markets the rent growth was positive. More surprisingly, in only 3 out of 100 markets was the highest supply-growth year the same as the lowest rent-growth year (Boston 2020, Huntsville 2023, Nashville 2023). While in two of the markets, the highest supply-growth year was also the highest rent-growth year on record (San Diego 2021, Tucson 2021).

That result is not very satisfying to those who are convinced high supply is to blame for falling rents. And so a common strawman goes, "so you're saying supply doesn't matter *at all*?" That is, of course, nonsense. Supply is half of the equation in the supply and demand balance that

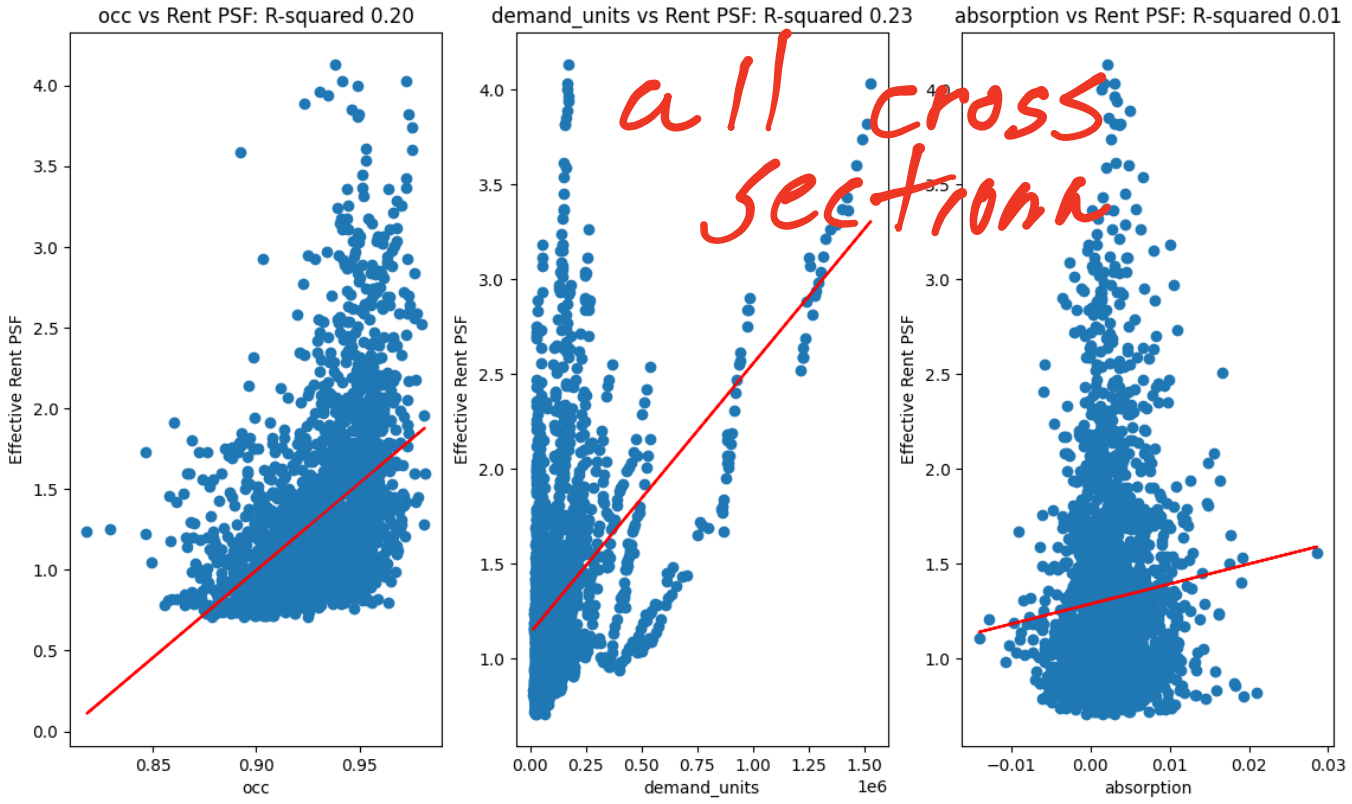
economists use to determine market-clearing rents. Where practitioners go wrong is by assuming that they can solve the equation without the demand variable.

The Demand Disaster

Measuring demand is not easy. While you can gather supply from induction, you can only find demand through deduction. I can observe that upwards of 80 million barrels of oil are produced each day, but I can only gauge the demand for that oil by looking at driving habits, contracts, and historical energy needs. So too in real estate where we can observe the units of inventory delivered, but we can only approximate the number of people who want to live in those units.

To work around this, the real estate industry uses a few stand-ins: occupancy, absorption, and 'demand units' (occupancy times inventory). The problem with all of these is the same: they can never be greater than existing stock. A building cannot be 101% occupied; a market cannot absorb more units than were net delivered; demand units can never be greater than inventory. This is a problem because it means, by definition, demand can never exceed supply.

The other more glaring issue is these demand variables are positively sloping, implying that a lessee would consume more units if they were at a higher price. It should be inverse.

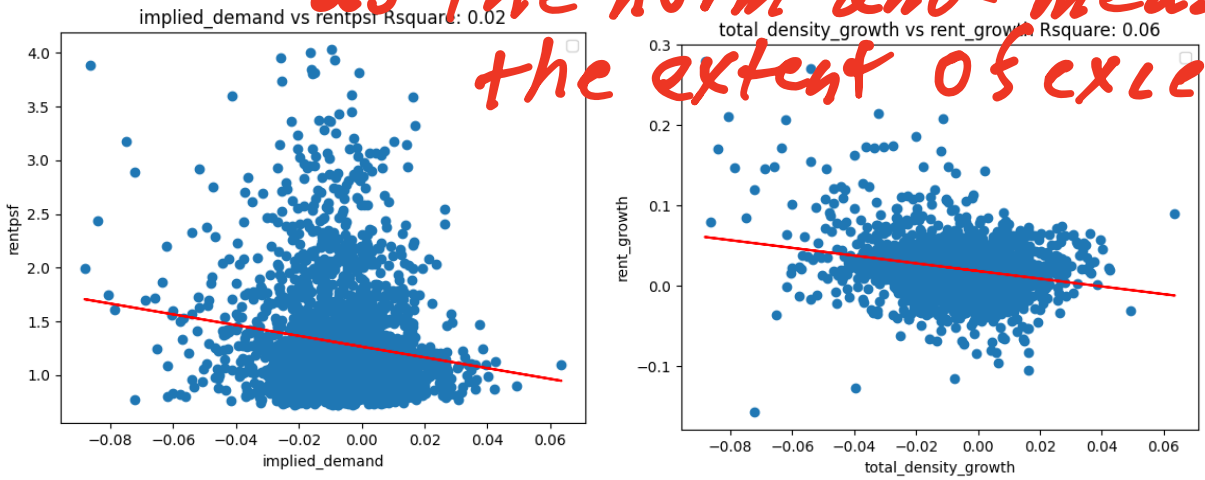


The Density Delta

Why not also use Houston (no restrictions) as a benchmark

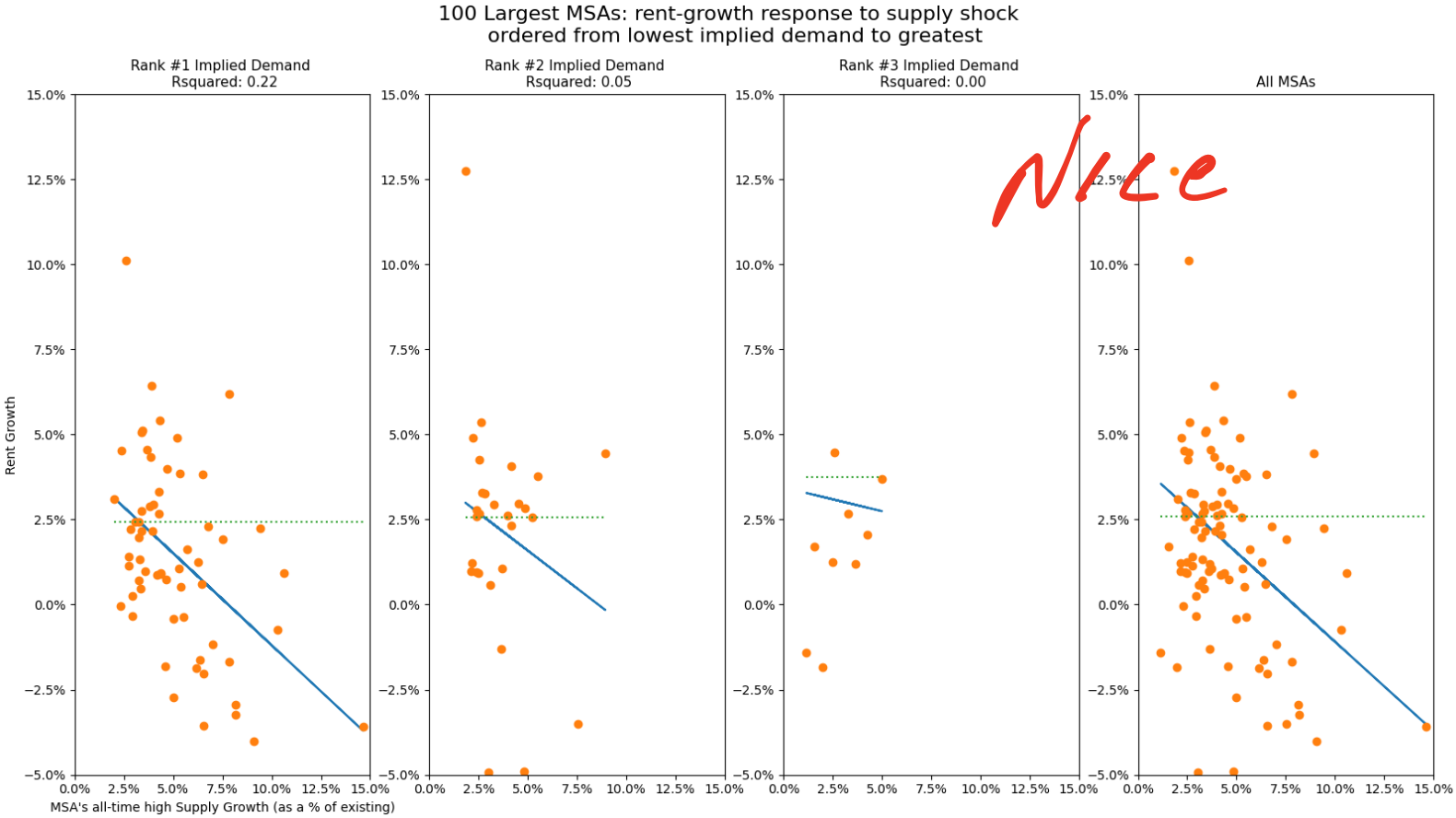
Given the problems with the existing demand variables, we propose a new one: the change in density of a market. Dividing the population of an MSA by the number of occupied units gives a simple density measure. Taking its growth reveals a surprisingly flexible demand variable which we will call *implied demand*.

use their units/person as the norm and measure the extent of excess?



This variable is inversely related to price: any point on the line is an acceptable tradeoff between space and cost. They will crowd if they can reduce their rent by enough, otherwise, they prefer lower density for a higher cost.

When we use the implied demand in conjunction with the supply growth, we can see which markets will respond well to additional supply, and which will respond negatively. Using the same data from the record-supply graph above, we slice the markets into thirds, according to their implied demand rank. The lowest implied demand markets are on the left, increasing from left to right.



Nice

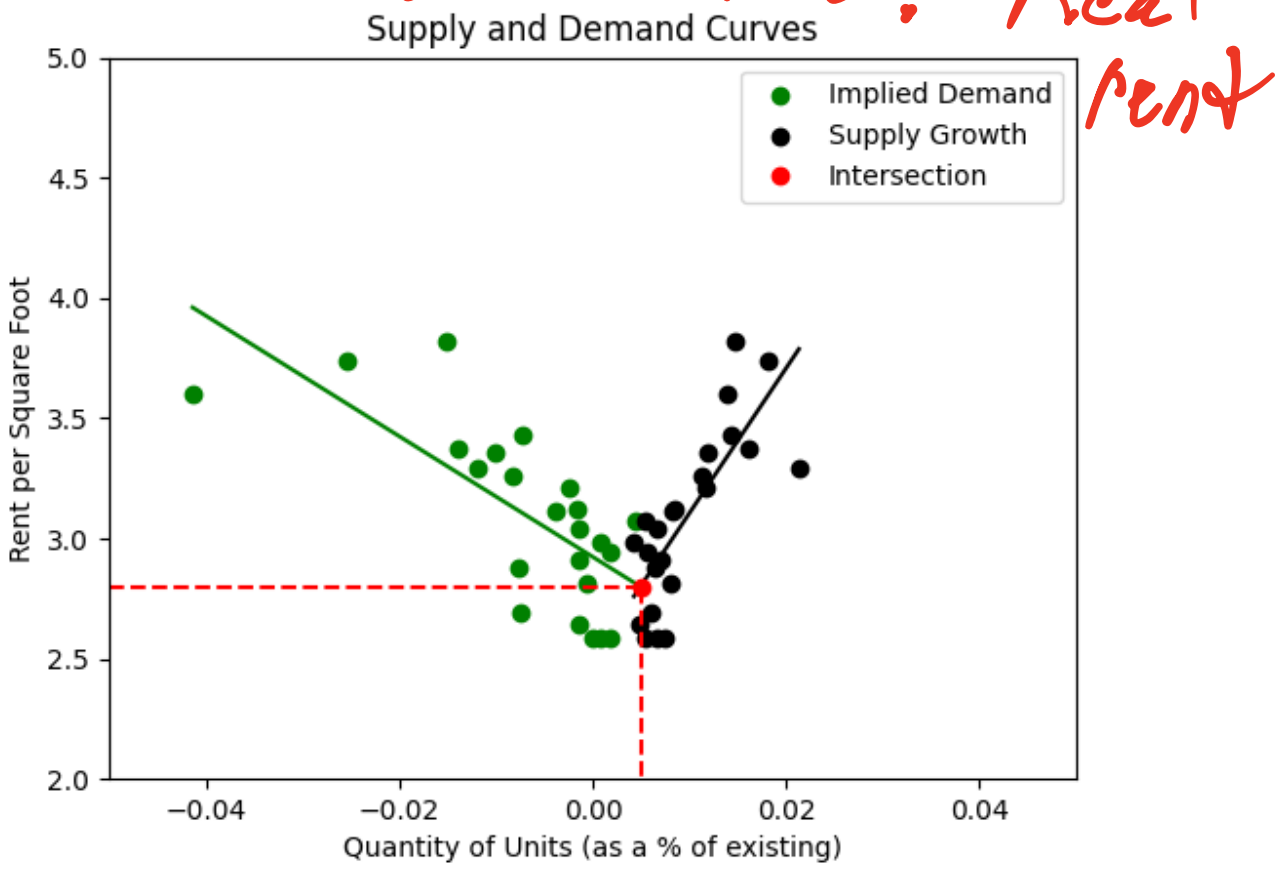
The only place where high supply puts downward pressure on rents is when implied demand is at its least (far left). As implied demand increase (second and third panels), the average rent increases, the relationship weakens (R-squared decrease), and the slope of the relationship flattens. In the case where implied demand is highest (second from the right) we see that record supply has no explanatory power over rent growth.

Do $rent = \alpha + \beta_1 Density + \beta_2 Supply$?

Supply only has meaning relative to Demand

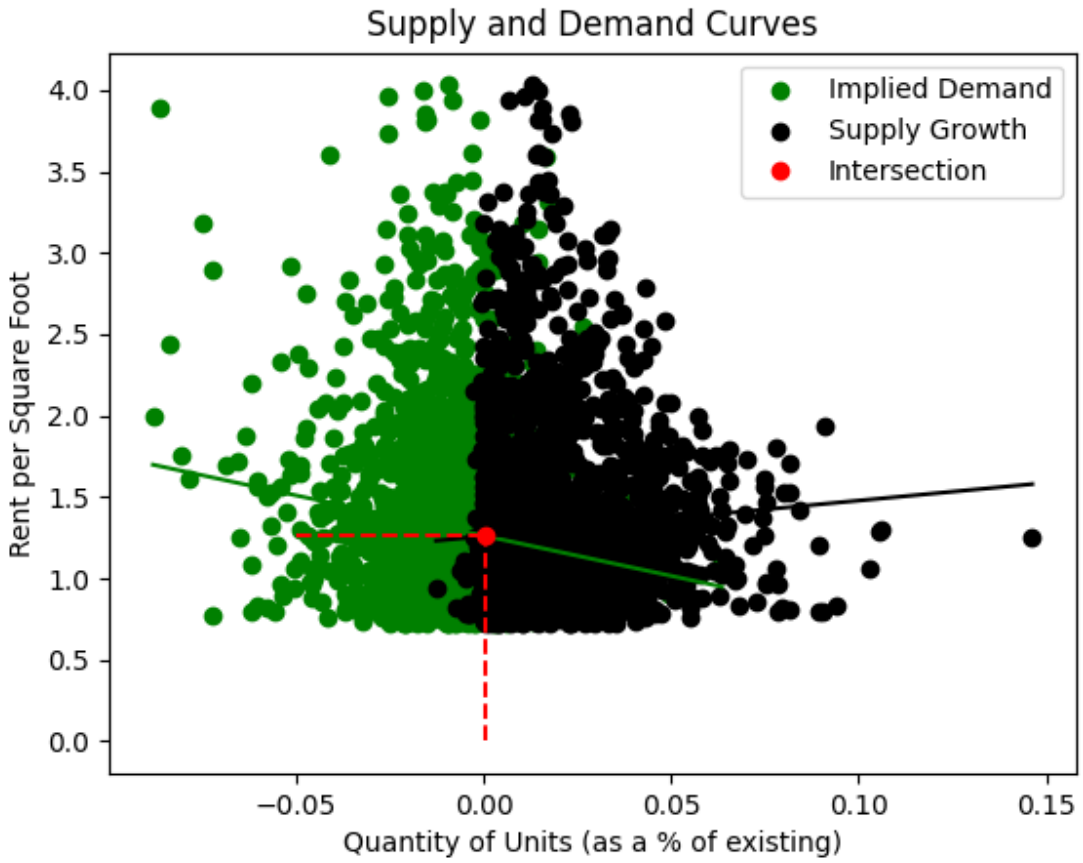
The final feature of the implied demand variable is that it meets the supply curve at a theoretical market clearing rent.

The graph of New York City is shown below:



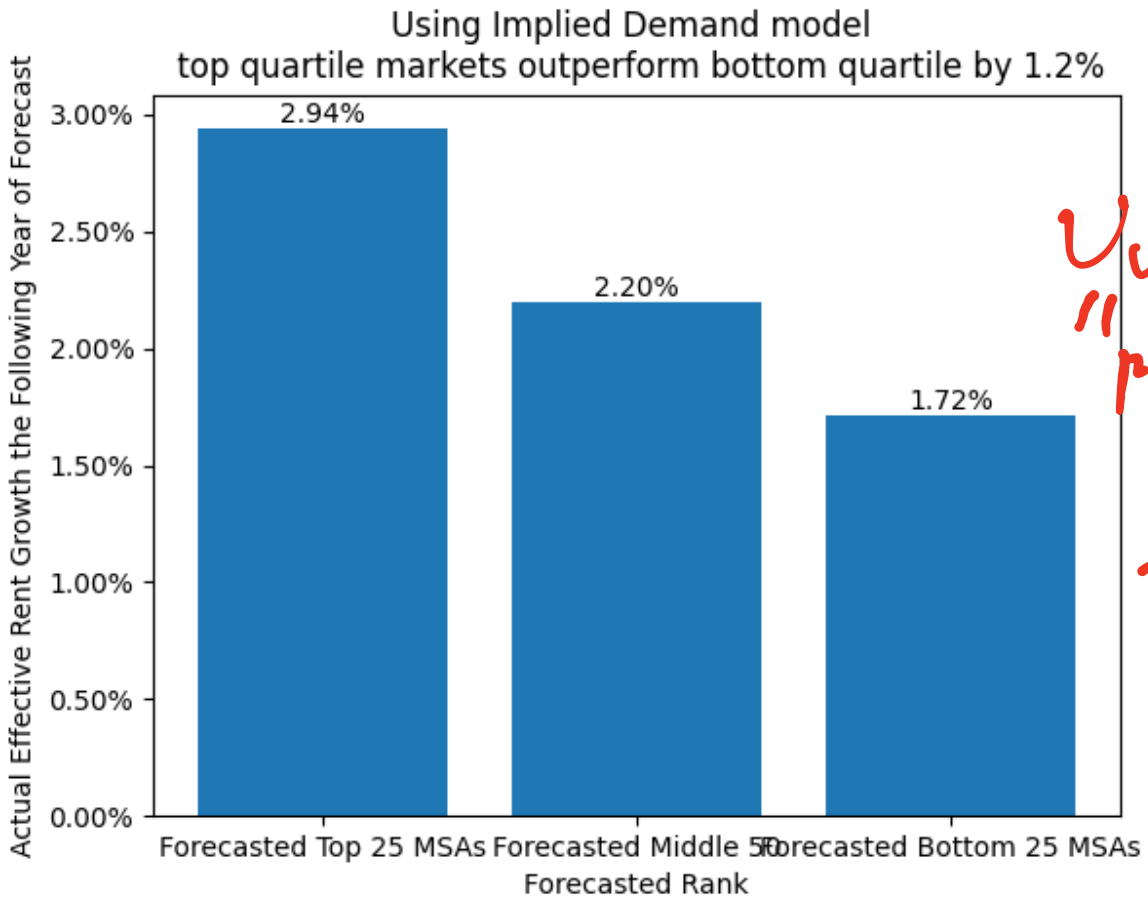
The lines intersect at $2.80; New York City's average rent per square foot over this time period was $3.11. We attribute the discrepancy to the various rent-restrictions and subsidies at work. The x-axis intersection suggests a willingness to of the market to pay a higher rent for more units.

The same plot for the top 100 markets is shown below. Not surprisingly, it suggests an equilibrium.



But can it forecast?

We made a simple regression to explain next year's rent growth using 1) implied demand, 2) supply-growth 3) rent-growth and 4) the interaction between the terms. Using this we can were able to forecast the next year's rent with surprising accuracy:



Useful "rule of thumb"

Demand for Days

This model is flawed in its own right, but hopefully it adds depth to a one-sided discussion.

Supply is not a bad word, but it is a misused one. We would learn more if we looked at supply on a relative basis, and with regard to demand. Demand on the other hand is not a misused word but a miscalculated metric. We should use a variable that isn't capped at existing inventory, and we propose that density changes may be a useful proxy.

Are results robust to other time periods

Appendix…

Supply is not a bad word, but it is a misused one. When talking about supply we should talk about it as a percent of existing units (relative supply) , not as a nominal figure. It's not for nothing that we've been bombarded by the chart on the left and blind to the one on the right. There are only six markets who have both nominal and relative supply in the top 20 ranks.

Period	MSA	Net Delivered Units 12 M	Existing Inventory Units	Supply as % of Existing Inventory
2024	Dallas-Fort Worth - TX	35,237	900,062	3.9%
2024	Austin - TX	26,328	312,308	8.4%
2024	New York - NY	22,067	1,572,425	1.4%
2024	Atlanta - GA	21,681	529,309	4.1%
2024	Phoenix - AZ	19,681	402,000	4.9%
2024	Houston - TX	18,868	722,153	2.6%
2024	Charlotte - NC	16,200	231,829	7.0%
2024	Denver - CO	15,350	310,340	4.9%
2024	Orlando - FL	13,178	228,347	5.8%
2024	Washington - DC	12,753	576,640	2.2%
2024	Seattle - WA	12,540	394,245	3.2%
2024	Nashville - TN	12,489	177,736	7.0%
2024	Philadelphia - PA	11,737	370,718	3.2%
2024	Tampa - FL	11,323	233,152	4.9%
2024	San Antonio - TX	10,977	225,440	4.9%
2024	Raleigh - NC	9,107	133,596	6.8%
2024	Chicago - IL	9,098	570,070	1.6%
2024	Minneapolis - MN	9,007	283,726	3.2%
2024	Miami - FL	8,052	197,163	4.1%
2024	Los Angeles - CA	7,459	1,041,693	0.7%

Period	MSA	Net Delivered Units 12 M	Existing Inventory Units	Supply as % of Existing Inventory
2024	Lakeland - FL	4,495	31,552	16.6%
2024	Sarasota - FL	4,264	44,791	10.5%
2024	Colorado Springs - CO	4,929	55,564	9.7%
2024	Austin - TX	26,328	312,308	9.2%
2024	Fort Myers - FL	2,575	33,780	8.3%
2024	Nashville - TN	12,489	177,736	7.6%
2024	Charlotte - NC	16,200	231,829	7.5%
2024	Raleigh - NC	9,107	133,596	7.3%
2024	Daytona Beach - FL	1,873	27,967	7.2%
2024	Melbourne - FL	1,972	29,923	7.1%
2024	Boise - ID	2,670	41,261	6.9%
2024	Jacksonville - FL	7,206	121,874	6.3%
2024	Orlando - FL	13,178	228,347	6.1%
2024	Charleston - SC	3,949	71,880	5.8%
2024	McAllen - TX	1,105	20,306	5.8%
2024	Stamford - CT	2,179	40,063	5.8%
2024	Palm Beach - FL	4,489	83,484	5.7%
2024	Denver - CO	15,350	310,340	5.2%
2024	Salt Lake City - UT	4,791	97,019	5.2%
2024	Provo - UT	1,030	21,038	5.1%