

Parameters of Ground Rent for Non-Sales Mode Properties



The [ABC Commons Trust](#) pays full property value for land, even though [rent](#) is only paid on the land's value. Starting at 5% of the purchase price in month 1, the rent, [falling at 66.67% annually](#), or 8.75% monthly, falls from 5% to 1.66% of the purchase price by the end of month 12.

It falls to 0.555% at the end of the following year and continues to deplete rapidly, unless the property is trebled or the rent frozen or raised. Based on [AEI data suggesting an average 33% land share](#), the rent will average a fair land rent in one year's time.

There might be subjective or business reasons to [treble](#) a property on [commons trust](#) land. In those circumstances, no rent is [treble-safe](#). An objective measure of treble safety is an answer to the question, "When does it make more sense for a person to treble a home on commons trust land than to purchase an identical home next door on private land?"

To answer that question, [land share](#) turns out to be an important parameter. Land share is the percentage of property value due to the value of the land (as opposed to the value of the structure). As AEI data suggests, in the United States, the average residential land share is 33%.

The proposed parameter, rent-rate-of-fall, at 67% annually, causes trebled rents to return to their pre-treble value in one year's time.

Spreadsheet examples use a residential property priced at \$300,000. The results are independent of price, but using a price makes it easier to follow the examples.

The following defaults are used unless explicitly stated otherwise.

Lender closing costs	1%
Title closing costs	2%
Property tax	1%
Land-share	33.33%
Mortgage rate	5%
Mortgage term	20 years

Depreciation of the structure and appreciation of the land are ignored in early examples. This turns out to be surprisingly non-material.

Because the ground rent returns to the pre-treble amount in 12 months, only trebling profit and losses within this time window need to be considered. That is, we assume the property with its current ground rent and fair market price is equivalent to the identical property next door.

The elimination of appreciation and depreciation from the problem leaves the objective situation at the start of the 12 months identical to the objective situation at the end. If trebling made sense at the start of the period, then trebling would make sense at the end. This proves a simple principle.

Given no appreciation of land nor depreciation of structure, and a single interest rate for all parties, should a trebler make a profit over an identical private property purchase in the 12 months following the treble, the land will be trebled.

Is Property Safe From Trebler?	User Entered	Computed	
Land Share	33.33%		
Purchase Price	\$300,000		
Mortgage Rate	5%		
Land Appreciation	0%		
Structure depreciation	0%		
Land Value at start		\$100,000	
Structure value at start		\$200,000	
Ground Rent as percent of land value	2.05%	\$2,050	
Property Tax percentage	1.0%	\$3,000	
Bank down payment percent	20%	\$60,000	
Closing costs on title acquisition	2%	\$9,000	
Fees on bank loan	1%		
Bank loan term (months)/Total Down Payment	240	\$69,000	
Bank loan principle		\$240,000	
Treble 33.33% structure premium		\$66,000	
Trebled rent		\$6,088	
Loan fees on structure		\$1,980	
VIP\$ as percent of peg	99%		
Trebler down pymt = premium + 1 yr advance		\$74,069	
Higher/Lower down payment for Trebler		\$5,069	
Monthly standard mortgage payment		\$1,584	
Total monthly payment for standard bank loan		\$1,834 = \$1,584 + \$250	
Bank loan to trebler on structure - monthly		\$1,307	
Interest on excess down payment		\$253	
Average Monthly Rent Refund		(\$17)	
Trebler monthly ground rent at start		\$507	
Midpoint rent		\$290	** Treble Danger **
Total monthly payment for trebler		\$1,833 = \$1,307 + \$253 + (\$17) + \$290	

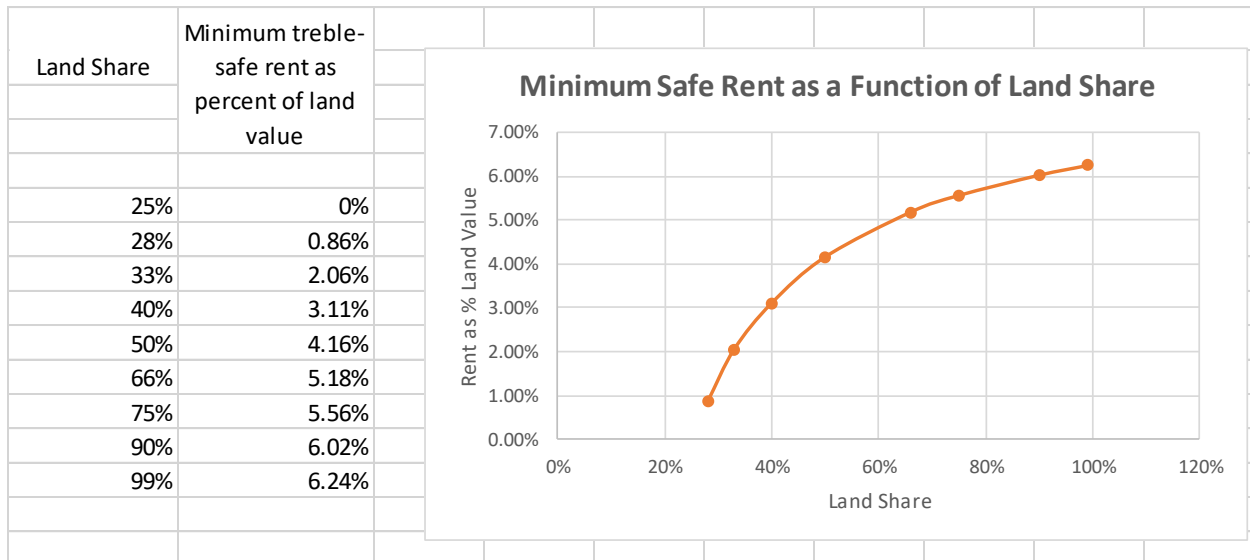
Although the landowner is paying 2.05% of the \$100,000 land value (\$2,050) in ground rent, this property is still in danger of being trebled. A trebler would only pay \$1,833 a month for the property (bank loan on structure + interest on excess down payment - a small advance rent alignment refund + average ground rent for the year). If they instead purchased the home on private land, it would cost \$1,834/month (bank loan + property tax).

The next analysis is identical, except the ground rent has been raised to

2.06% of land value. It is no longer a bargain for the trebler.

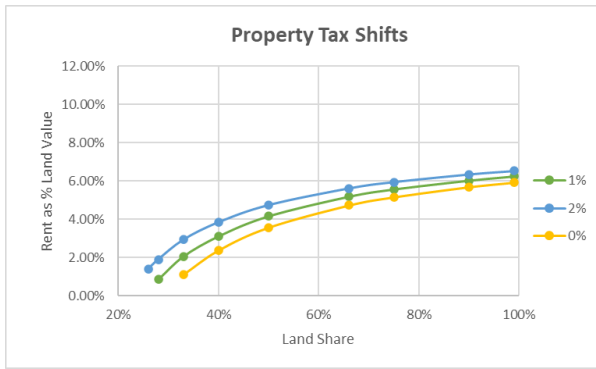
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Property Tax percentage	1.0%	\$3,000	
Bank down payment percent	20%	\$60,000	
Closing costs on title acquisition	2%	\$9,000	
Fees on bank loan	1%		
Bank loan term (months)/Total Down Payment	240	\$69,000	
Bank loan principle		\$240,000	
Treble 33.33% structure premium		\$66,000	
Trebled rent		\$6,118	
Loan fees on structure		\$1,980	
VIP\$ as percent of peg	99%		
Trebler down pymt = premium + 1 yr advance		\$74,098	
Higher/Lower down payment for Trebler		\$5,098	
Monthly standard mortgage payment		\$1,584	** Treble Safe **
Total monthly payment for standard bank loan		\$1,834 = \$1,584 + \$250	
Bank loan to trebler on structure - monthly		\$1,307	
Interest on excess down payment		\$255	
Average Monthly Rent Refund		(\$17)	
Trebler monthly ground rent at start		\$510	
Midpoint rent		\$291	
Total monthly payment for trebler		\$1,836 = \$1,307 + \$255 + (\$17) + \$291	

Interesting results are found by varying land share. Next is a table and graph of a minimum treble-safe ground rent as a percentage of land value, as a function of land share. All other defaults apply. This next graph is called a treble curve.



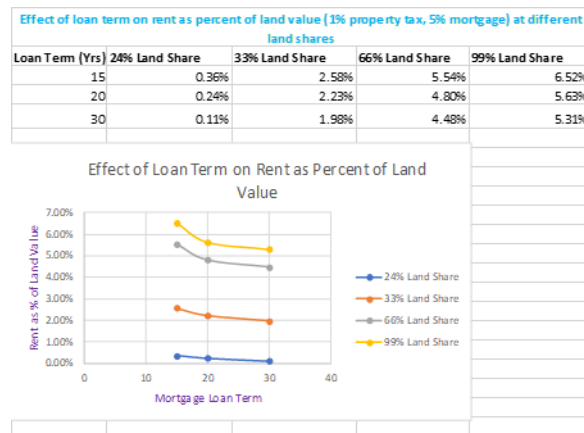
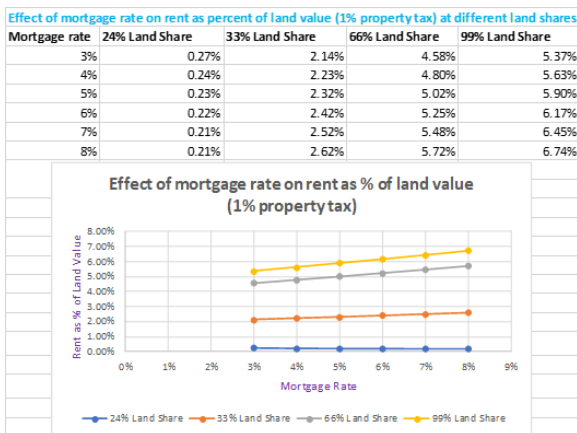
The greater the land share, the higher the ground rent must be to prevent a treble. It appears vacant land requires a minimum ground rent of 6.25% of land value to prevent a treble with these defaults. On the other end, well-maintained homes with a small footprint will pay nothing in ground rent.

When the land share is 25% or less, the homeowner need never pay rent. The advance rent account will suffice forever. On the other hand, slums and other highly depreciated buildings in rich urban areas would require ground rents well over 5% of land value.



Two other treble curves are added to the rent vs. land share graphic. The curve below represents the property tax at 0% and the curve above represents the property tax at 2%. The county will be glad to know that rents increase at all land shares as a function of the property tax.

How do mortgage rates affect ground rent for different land shares? The study below was done when the rent rate of fall treble parameter was **20%**, rather than **66.67%**, leading to lower rent values on the Y-axis. However, the effects of mortgage rates and loan terms are similar and far less significant than land share.



In the figure on the right, the effect of loan term on ground rent is shown for different land shares. Other examples assume 20-year mortgages, but this graph also shows the effect of 15 and 30-year terms on rent as a percentage of land value. Both mortgage rate and mortgage term are far less significant than land share.

How does expected land appreciation and actual structure depreciation affect the treble? After analysis, the answer is not as much as one would expect.

Depreciation is easier. To see why that doesn't have much effect on ground rent, consider inflation. Most central banks around the world target a 2% rate. Why not 0%? The reason has to do with the depreciated replacement cost of structures.

Suppose, on average, that structures depreciate by 2% annually. If replacement cost increases by 2% annually, which it would with 2% inflation, then total depreciated replacement cost remains constant.

Banks and insurance companies love a constant depreciated replacement cost. Without that 2% inflation guarantee, a 30-year mortgage might not even exist. Instead, 20-year mortgages where the principle repaid in the first year exceeds the depreciation would be more common.

As a [trebler](#), you might like a 2% inflation as well. It could be psychologically reassuring to know that the [33% premium](#) you paid on the treble will come back to you in an equal nominal amount many years later when somebody else trebles it away.

The downside, of course, is that 2% inflation will spill over into land values.

When land values rise due to improving conditions, you either pay the increased rent, or lose your spot to someone who will. That is how it should be, and there is no discounting to “compensate” you for the improving conditions.

However, if land values rise because of inflation, there is no benefit and there should be no cost. The Federal Reserve has a 2% inflation target which will affect ABC rents in the near term, and it is possible that even after federation, 2% will be so popular that the [VIP Treasury](#) continues the tradition (more effectively because inflation targeting is its only mandate).

What is the cost to the trebler of a 2% inflation (looking at only land appreciation)? The answer is 4%, because the trebler takes the hit from both sides. On one hand, rent on the trebled property rises by 2%, while payments on a fixed rate mortgage do not rise.

Then, when the property is sold, the landowner gets the annual 2% increase in land value as profit. The trebler, whether they sell the property or themselves get trebled, see no profits (nor losses) from a change in land value.

This seems fairly dismal for trebling, but not if present value is taken into account. Assume the interest rate is 5% and trebling would be financially preferable, were it not for the double whammy.

If the money used for paying the next month's rent were invested at 5%, there would be enough money to pay the increase in rent, enough money to profit from land appreciation, and 1% left over.

To be fair to the trebler, there is a cost associated with this technique. Primarily, the trebler lacks the economies of scale needed to get the same risk equivalent interest rate charged by the bank.

Secondly, there is an opportunity cost of lost time. Somewhat arbitrarily, these are costed at 1%. So, given a 5% interest rate and 2% rate of inflation, the increases in rent and land appreciation profits are fully paid for, with the remaining 1% going to pay for the costs associated with this remedy.

This ideal [5% interest rate, 2% inflation rate] will rarely hold, but as long as the mortgage interest rate is twice the inflation rate or better (which has been for the most part true over the last 40 years), expected inflation will not discount rents.

In the next module, a little mathematical magic on the treble curve will simplify everything.