**Related Lit**The majority of evidence on LTV limits seems to be at the aggregate level (e.g. cross-country panels). I highlight work using micro data to estimate the effect since this is most comparable to the paper at hand.

The most influential paper seems to be Igan and Kang (<https://www.imf.org/en/Publications/WP/Issues/2016/12/31/Do-Loan-To-Value-and-Debt-To-Income-Limits-Work-Evidence-From-Korea-25441>) use micro data in Korea and compare regions classified as “speculative zones” which received additional restrictions to regions that did not. They find a negative effect on house price growth.  
  
The most similar paper seems to be (<https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3297797>) by Laufer and Tzur-Ilan. This paper employs more or less the same policy feature (variation in LTV limits across mortgage size) in Isreal, and finds a negative effect of LTV limits on house prices.   
  
Another similar paper is Armstrong, Skilling and Yao (<https://www.sciencedirect.com/science/article/pii/S1051137718300901>) who look at the effect of a limit on the percentage of banks loans that can be issued over an LTV of 80 in New Zealand. They us an exemption for newly constructed properties to build a control group. They find that the LTV limits reduces house price growth.

I think the stated contribution of the paper is that they have a more credible estimate of the effect of LTV restrictions on house prices than the previous literature. I don’t really know if this is true.

**Research Question**

How do loan-to-value ratios affect house prices?

**Ideal Experiment**

You might take a sample of regions which are ex-ante similar but whose house markets are unlikely to be interlinked. You would then (unexpectedly) randomize the size of the LTV limits in each market and observe house prices over time.

The author observes the housing market for Hong Kong. The Hong Kong Monetary Authority over the study period changed the LTV limits that applied to homes of different values. The author uses repeat sales of homes in the study period and runs essentially a differences-in-differences (the treatment group is whether the second sale value falls above the cutoff). He finds that LTV limits reduce house prices.

**Identification**

The key equation is equation 1 i.e.:

The author takes log house prices as the LHS variable. Individual and Year-Month fixed effects are included as the first two coefficients. X is a variable of time varying controls (“interior size, building age, an indicator for primary transactions and whether the property is sold with a carpark”). The nature of these controls probably suggests that the individual fixed effect is best thought of as an address fixed effect. The key parameter of interest, gamma is then going to be identified from the repeat sale of houses with changes in the LTV limit they are subject to (otherwise it would absorbed by the fixed effect), using the remaining houses to identify (and partial out) time effects.

I don’t really know how to think about this estimating equation. I think it must not be true that they are estimating a true treatment effect.   
  
Suppose the true model is : there is no effect of LTV limits, and there is no time effect. Additionally suppose we just have 2 periods so we can think about this as a regression in first differences. Finally suppose that there is only one LTV limit set at a fixed threshold. The limit is introduced in the second period. The researcher runs the following regression: , where now the limit is a dummy variable that takes the value of 1 when the value is above the cutoff in the second period.   
  
Then because the only treated houses are the houses with second period high values, and the distribution of first period house prices will be the same as those who are untreated, we would (spuriously) estimate a positive effect of the LTV limit on housing prices. The author finds that affected houses are less valuable (which is the opposite of the bias) indicating that perhaps this isn’t a practical concern, other endogeneity concerns turn out being larger or the effect is sufficiently negative to overcome this issue.  
  
The regression design is obviously substantially more complicated than this but I don’t think anything deals with the fact that the treatment is mechanically contingent on the LHS variable.

**Other concerns:**  
The author doesn’t really do much to justify parallel trends in the data. This is hard to think about because there are both cheap and expensive houses in the control group (never and always treated). Other papers seem to find effects on house price growth (not just levels), and there are already differential LTV limits in effect at the start of the study period so it seems like this could be a concern. To the extent that the author can’t show pre-trends, maybe it would be useful to show that false bins e.g. 12M in 2015 have no effect on house prices.

It also seems unusual to believe that HKMA is not responding in their policy changes to features of the housing market. If they think the top of the market is overpriced, they will strengthen LTV caps. If they are accurate, this would shows up as a negative effect of LTV caps on prices.

The author claims that he deals with the intervention affecting house prices in the comparison group (through substitution) by showing that the interaction of whether variation is resulting from policy change 1,2 and 3 or the other policy changes is small (noting that the opportunity for spillovers here is small b/c less houses are affected). Given that the value of houses affected is different, I do not really follow how this shows that the bias is not there.

I think there is also a sense in which the author needs to be worried about other types of “spillover”. Because house prices generally appreciate, houses with values at announcement below the cutoff should still be affected in anticipation of lower sale prices in the future. This does not need substitution between treatment and control like the above concern (although this bias attenuates the effect).

I don’t know what to make of selection in this context. My decision to sell probably be partly contingent on the price I can get at sale, which is contingent on the treatment. It is not clear to me what the differences between houses that do and do not appear in the data would be, but it feels like an issue.  
  
Half the market in Hong Kong is public. It isn’t clear how the LTV effects are interacting with the public market since the government is probably not subject to borrowing constraints in its purchases. Insofar as the authors frame their paper as having policy relevance to the rest of the world, it seems like a bit of a hurdle for external validity. The LTV limits also seem substantially lower than those imposed in the US (and in Australia).   
  
I think the language used by the author regarding “growth” is somewhat strange e.g. he writes ”Our results demonstrate that macro-prudential policies are effective in controlling house price growth”. His estimating equation gives an effect on log levels, which suggests he can’t actually speak to the effect of the policy on growth rates.