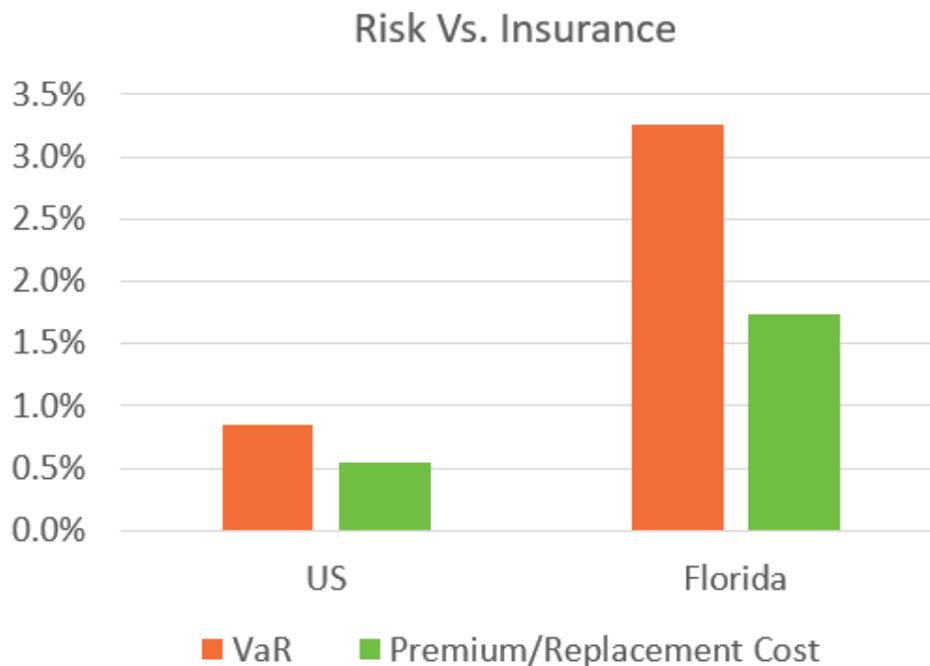


Good morning Members of the Committee. Thank you for the opportunity to participate in this hearing.

My name is David Burt and I'm the Founder and CEO of DeltaTerra Capital, a new investment research firm. I have been a real estate derivatives analyst and institutional investor for over 20 years and am currently focused on measuring the impact of climate risk on real estate markets and the real estate finance ecosystem. In the late 2000s, I helped clients protect their portfolios and navigate derivatives markets before and during the Global Financial Crisis (GFC). The GFC was the fallout of a large value bubble created by reckless lending practices that failed to accurately consider borrower ability to pay. I believe we are experiencing a similar value bubble today driven by the market's failure to consider the increasing risk of damages resulting from climate change.

The problem today is that there simply isn't enough money being collected to cover the costs related to climate change as the risks keep increasing. The chart below illustrates the current disconnect between insurance premiums (green bars) and an estimate of the actual risk of loss from flooding, wind and wildfire (orange bars).

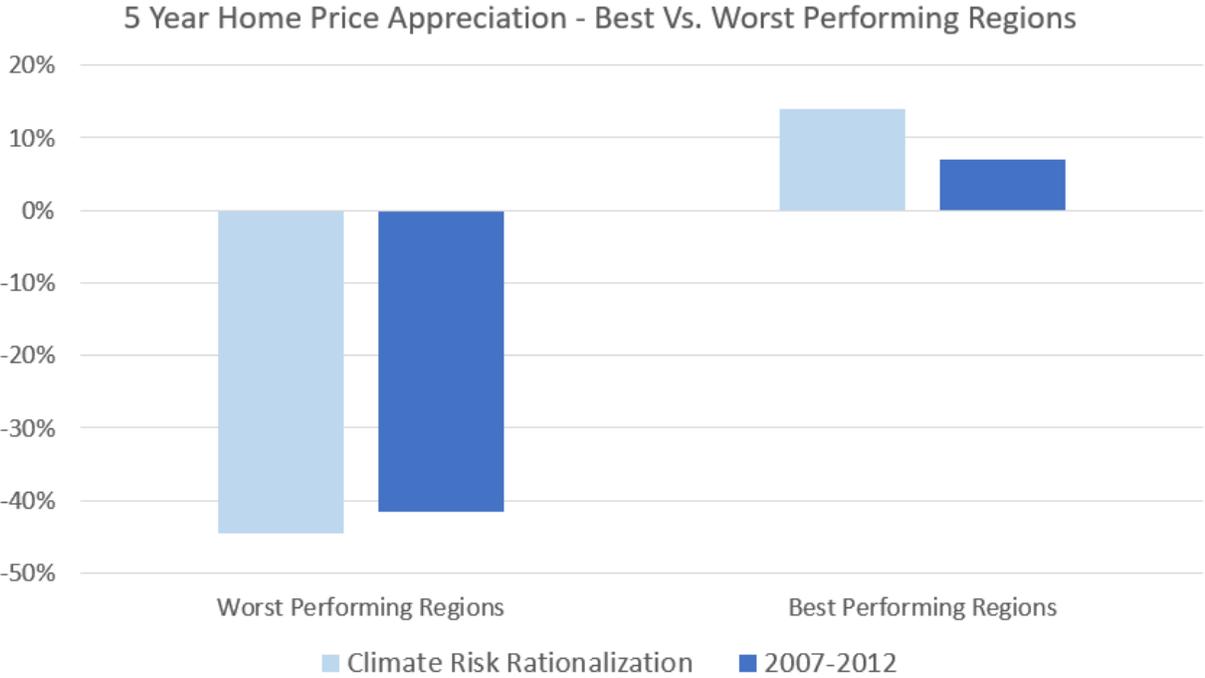


Sources: DeltaTerra Capital, risQ, Insurance.com

The loss expectations (also called Value at Risk or VaR) come from my climate services partner risQ. They apply new climate and data science techniques to integrate the increasing risks presented by climate change into traditional actuarial models that are more commonly used to predict the cost of catastrophes. In the US, risQ predicts that annual damages to residential real estate will be roughly .85% per year, 58% higher than the amount collected by insurers to cover it. The disconnect is larger in high risk places like Florida, where risQ predicts residential losses that are 87% higher than the insurance premiums collected there, despite those premiums being the highest in the country.

In 2007, investors made the irrational assumption that real estate demand would keep increasing indefinitely as more mortgages were given to less and less qualified borrowers. This kept inflating home values until it became obvious to all that many of these borrowers had no real hope of paying off their mortgages once their income potential was accurately considered. Today, investors are making an equally irrational assumption that the cost of ownership will stay constant even as catastrophe costs increase. This is flawed reasoning and ultimately insurance premiums, taxes, and uninsured losses will increase in risky regions.

When the costs of ownership do rise, some areas will become unaffordable and undesirable. The chart below compares a forecast of five year home price appreciation for the best and worst performing regions by quintile, after considering financial impacts from rising insurance premiums (light blue bars). This exercise suggests that when climate risk is accurately assessed, the 20% of the country that is most vulnerable will experience average value decline of 44% over the next five years, which is greater than the decline we saw for the worst quintile performers over the 2007-2012 period (dark blue bars).

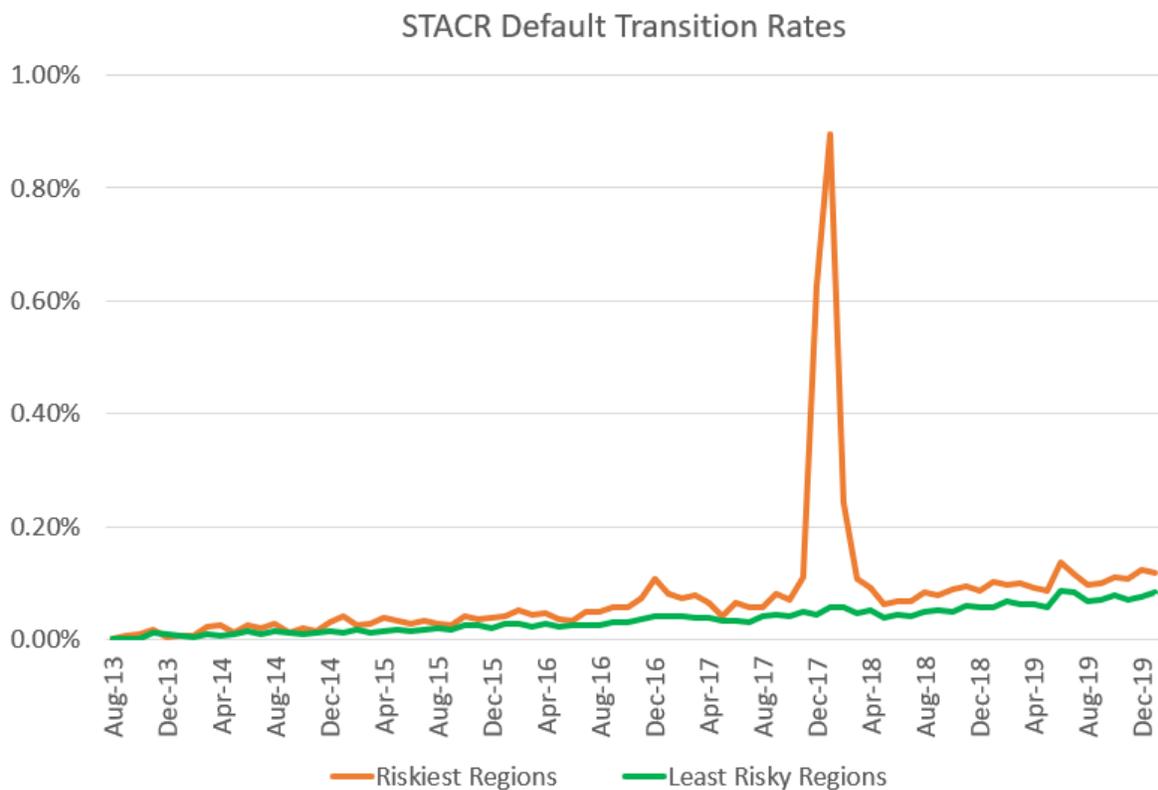


Sources: DeltaTerra, Zillow

While these forecasts include many assumptions and some of the statistical modeling is complex, the underlying dynamics are intuitive. Higher levels of greenhouse gases lead to increasing temperatures, higher temperatures lead to increasing risks of damage from severe weather, higher risks lead to increasing costs, higher costs lead to lower home values. Decreasing home prices lead to higher default rates in mortgage pools. There is a wealth of data sources out there for building these models and monitoring these dynamics and I wouldn't be surprised if ten years from now, history will wonder how we could have allowed such a bubble to form in the face of such obvious and devastating change.

When reckless lending practices ceased in 2007, demand destruction was widespread. In contrast, climate cost shocks will be more concentrated in the riskiest areas and surrounding municipalities. Appreciation is already weaker in the riskiest markets which are underperforming safer regions by about 2% annually. Regional price dispersion is terrible for mortgage portfolios because lenders don't benefit when prices go up, while default risk increases exponentially when prices go down. While it isn't likely that national home prices will fall as much as they did in the 2007-2012 period, regional dispersion is likely to be much greater.

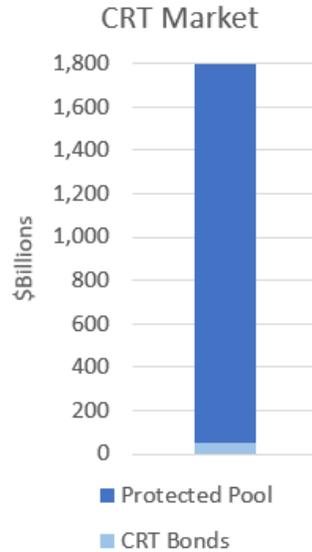
Default rates have always spiked in risky areas following catastrophes, but now we are starting to see elevated default rates in risky areas during stable climate periods as well. You can see this dynamic playing out in the chart below, which shows default rates in the riskiest geographies relative to the safest ones for Freddie Mac loans that are part of the Freddie Mac credit risk transfer program called STACR that started in 2013.



Sources: DeltaTerra, Freddie Mac

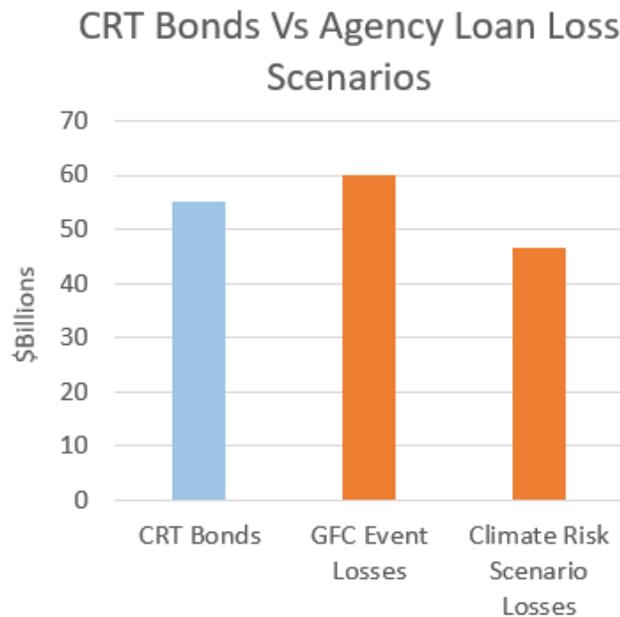
This Freddie Mac program brings up an important dimension of the market's structure today. While aggregate mortgage credit risk is much smaller than it was prior to the GFC, the risk of loss that is out there is being concentrated in a very similar subordinated bond market called CRT, or Credit Risk Transfer. In 2012, when the FHFA realized how difficult it was going to be to take Fannie Mae and Freddie Mac out of conservatorship, they mandated that the agencies "transfer" some of their credit risk to private markets to reduce taxpayer exposure.

As a result, there are now \$55B in CRT bonds outstanding, supporting \$1.8T in Fannie and Freddie loans, as pictured in the chart below.



Sources: DeltaTerra, Bloomberg

Agency loans are better quality than they were prior to the GFC and the risk rationalization scenario I'm anticipating shouldn't result in the same level of aggregate market depreciation. However, because of the performance dispersion we are likely to see both within and across markets we could see two thirds of the loss percentages on the outstanding agency book, as shown on the last chart. These losses would be enough to wipe out most of the outstanding CRT market.



Sources: DeltaTerra, Bloomberg

Money managers and specialized mortgage credit hedge funds have flocked to this market, especially since the large distressed non-agency mortgage trade that followed the crisis became picked over and non-agency mortgage bond yields fell from more than 15% in 2010 to 3.5% in 2015. Many of the CRT bonds that would get fully wiped out in the risk rationalization scenario trade at yield spreads below 2%, very similar to where BBB subprime mortgage bonds were trading in 2007.

I personally believe that pricing of CRT bonds is currently being driven by irrational demand from high fee institutional investment products, rather than an attractive return vs. risk tradeoff. This sector of the securitization market is the only one left that offers a high enough yield to achieve the aggressive return targets of securitized bond products - as long as nothing goes wrong. Today these bonds sometimes make up 30%-40% of a securitized portfolio, and many platforms would not be commercially viable without them. This creates a large incentive for the buy side of this market to look the other way on climate risk.

Sadly, this also leads to complacency at the housing agencies, that can lay off the risk at very attractive levels as long as the boat goes un-rocked. With the direct risk of loss being transferred to others, the negative consequences of making loans on homes that *may* be overvalued must seem remote relative to their virtuous objective of making 30 year fixed coupon credit available to responsible borrowers everywhere. Therefore, loans keep getting made without taking this looming risk into account and the asset mispricing issue continues to grow. Worse yet, the general population sees that they can still get insurance, they can still get cheap loans, and their home values are still stable – so everything must be fine, supporting the denial narrative and inaction.

As a result of my years of modeling experience in real estate derivative markets, I began to anticipate the mortgage crisis in 2005. I have since often wondered if some of the GFC fallout (including millions of foreclosures) could have been lessened if honest industry insiders like myself had done more to influence awareness and policy. Today, I appreciate the opportunity to share this experience with you to support more accurate pricing of climate risk and an end to complacency.

Thank you again for your time and consideration,

Dave Burt