

I DO NOT KNOW WHAT TO CALL THIS PRESENTATION

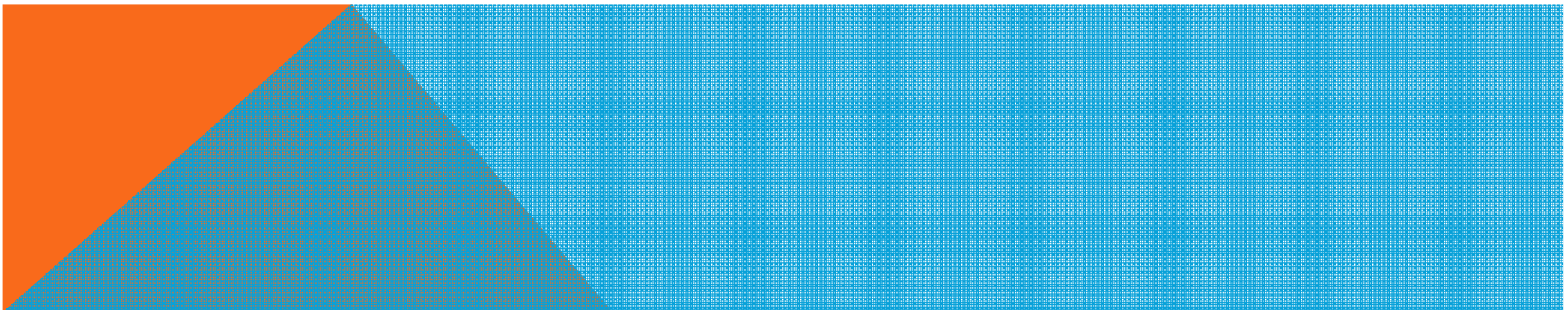
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Acknowledgement: Materials summarized from
Feb 2009 issue of Wired Magazine

The planet had a problem, which was this: most people were unhappy most of the time. many solutions were suggested for this problem, but most of them were concerned with the movements of small green pieces of paper, which is odd because on the whole it wasn't the small green pieces of paper that were unhappy. - *Hitchhiker's Guide to the Galaxy* by Douglas Adams

For analyzing data - perspective does matter!



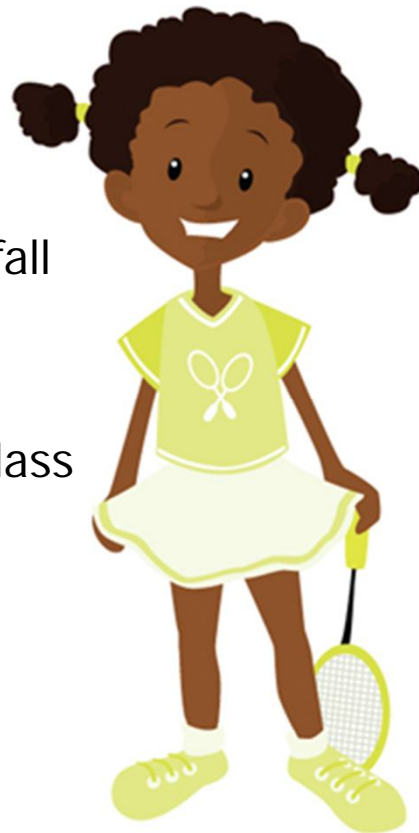
Story build up.....

Parents argued in the morning

Head lice

Saw the teacher fall

Came first in the class



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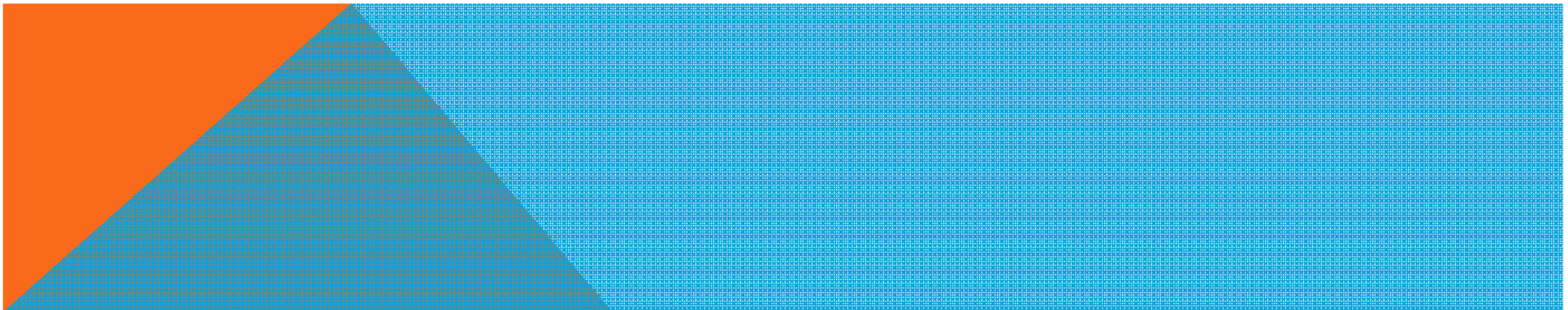
DIP YOUR TOE IN THE WORLD OF MORTGAGES

Individual mortgage can have uneven and unpredictable cash flows because

- **payment defaults**
- **home sale**
- **refinancing**
- **floating interest rate**

- **No way to assign a single probability of default**

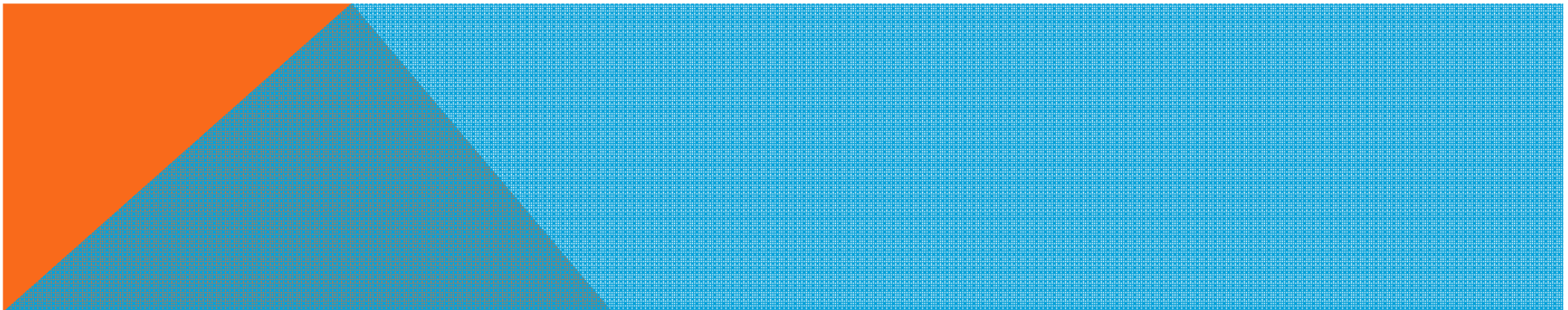
- **Solution - "tranching"**



DIP YOUR TOE IN THE WORLD OF MORTGAGES

- **Tranche - pool mortgages, slice it into tranches based on credit rating**
- **Buyers of tranches get paid in a sequence based on credit rating**
- **Inherent assumption - not everybody has a calamity in the same time and not everybody will default at the same time**

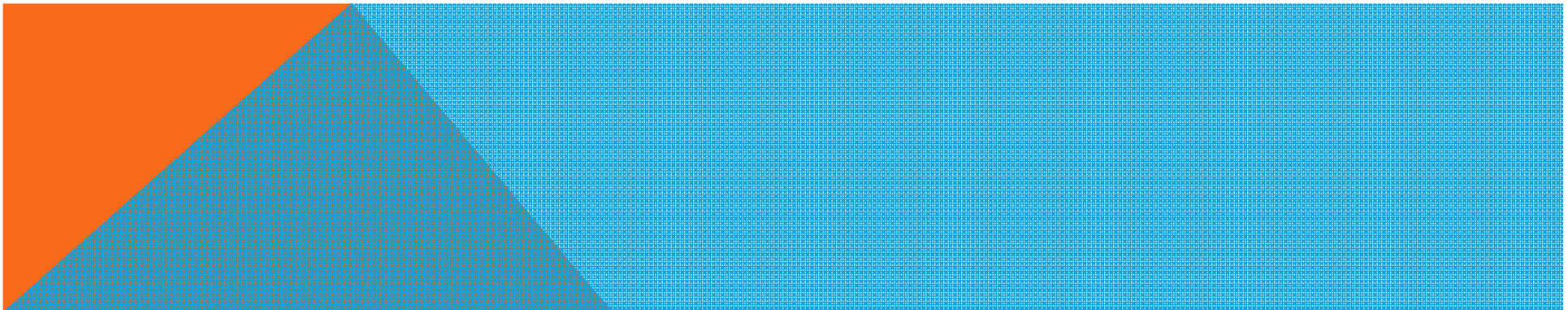
- **The problem - tranches do not solve the problem of pool risk - you do need to know the correlation**



WHY SIMPLIFY WHEN YOU CAN MAKE IT COMPLEX

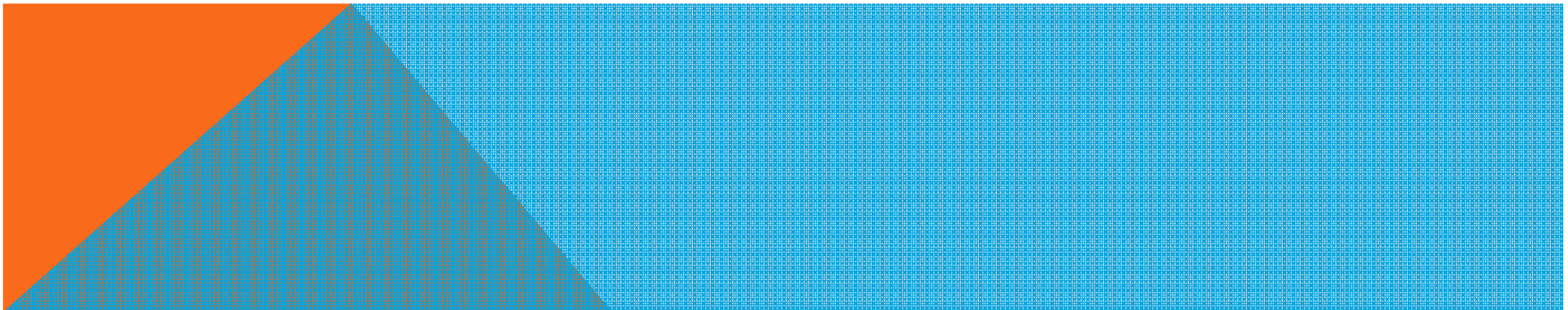
- **Along with mortgages, you can sell the receivables of credit card, auto loans etc.**
- **You can create tranches of other loans**

- **and you can combine tranches, repackage them and sell it as well...there are folks who actually do this for a living and enjoy it as well!**



HOW DO YOU PRICE THE SECURITIES

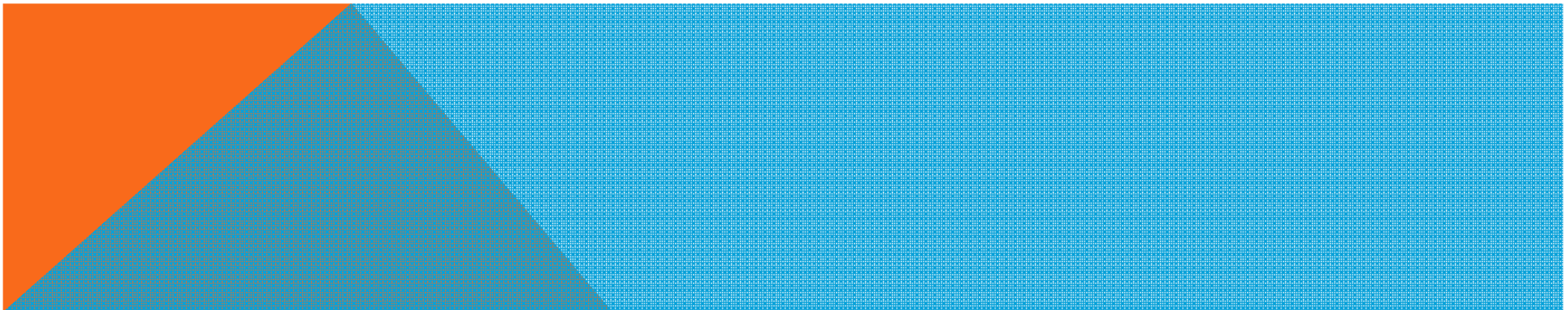
- If a person defaults on his home loan, odds are he will default on his credit card debt as well
- Price of homes go up or down in a complete neighborhood
- So to price one of these instruments, you need to know the correlations and conditional probabilities
-and how do we estimate the probability, conditional probability, correlation?



DETOUR TO CREDIT DEFAULT SWAPS

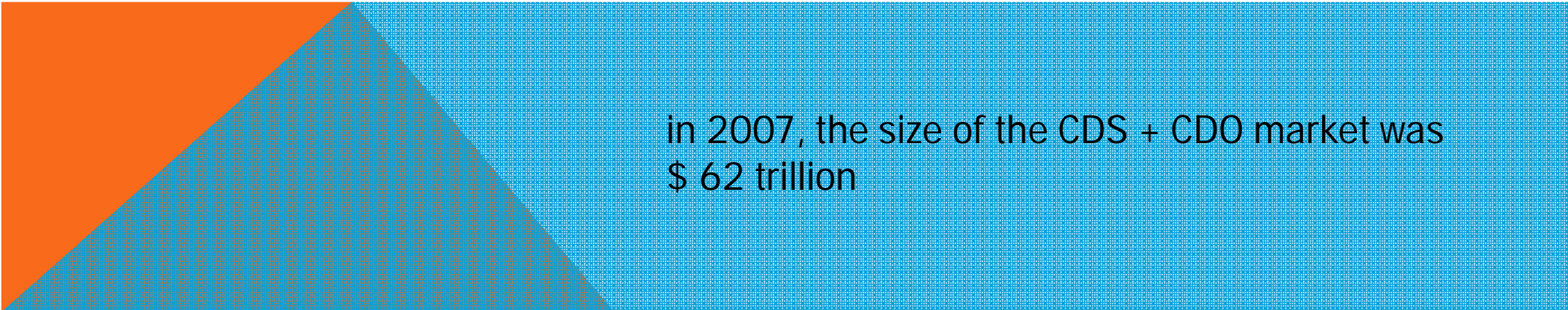
A swap designed to transfer the credit exposure of fixed income products between parties. A credit default swap is also referred to as a credit derivative contract, where the purchaser of the swap makes payments up until the maturity date of a contract. Payments are made to the seller of the swap. In return, the seller agrees to pay off a third party debt if this party defaults on the loan. A CDS is considered insurance against non-payment. A buyer of a CDS might be speculating on the possibility that the third party will indeed default

Definition from www.investopedia.com



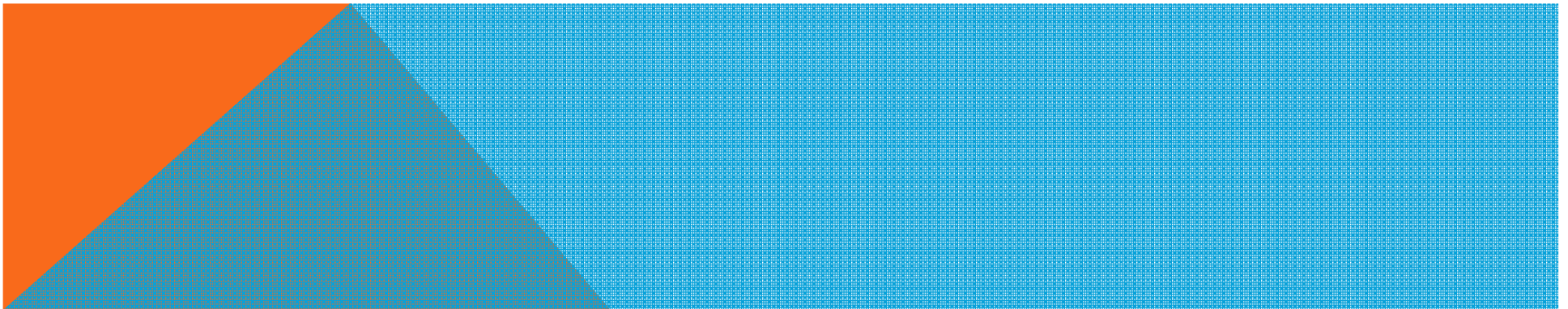
DETOUR TO CREDIT DEFAULT SWAPS

- In order to get a continuous fixed income stream, a financial institution can lend money as in a home loan or it can issue a credit default swap
- If the risk of a loan goes up, logically, the price of a CDS would go up.
- So, rather than individually estimate probability of default, conditional probability, correlations, a model emerged where you would use the CDS price as a representative. So you no longer needed to look at individual loans and all the associated complexity. You just needed to find the correlation of prices of CDS associated with the tranches...the associated model was based on gaussian copulas...and this would work **assuming**
- *OVER TO ABHINANDA*



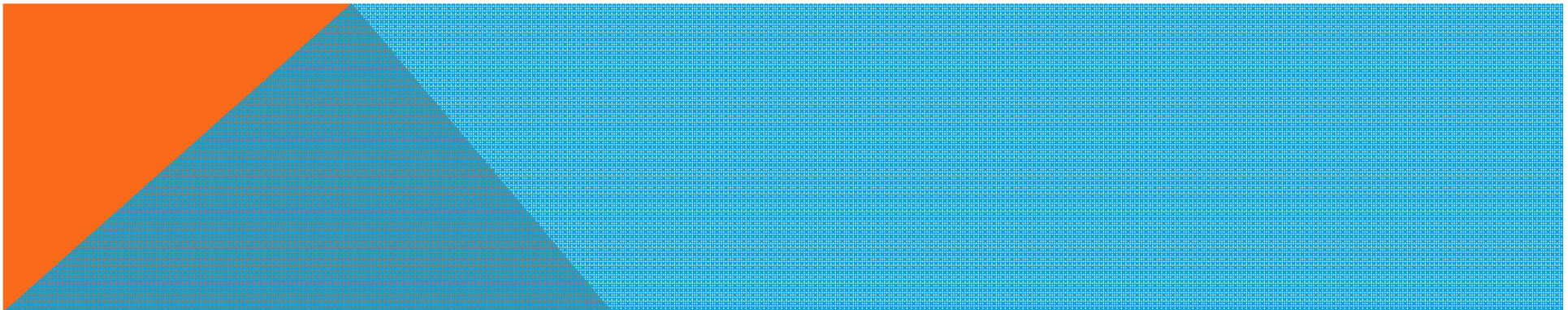
in 2007, the size of the CDS + CDO market was
\$ 62 trillion

ABHINANDA TO TAKE OVER



ADDITIONAL POINTS

- **Correlations between financial instruments is highly unstable and not a fixed number.**
- **The CDS market has been in existence for too short a period - so not enough to measure correlation in any case**
- **When the mortgage boom ended, home values started declining, correlations soared**
- **Somehow the link between the CDO/CDS and the underlying asset was lost. Too much repackaging, too many change of hands.**
- **The credit rating agencies had never built a cushion for the possibility that housing prices can deflate**
- **Post the Lehmann bankruptcy, there was no way to take an instrument sold by them and trace back the original asset 100% of the cases - so you had no way to know the real worth of the asset...all that you could do was go by the market price**
- **In a mark to market world, effectively, this eroded the networth of banks - so normal transactions became impossible**



POINTS TO PONDER

- **11AM, June 28, 1914 – Gavrilo Princip meets Archduke Franz Ferdinand**
- **Prediction of landslides, earthquakes**

- **But you also have the case of Nicholas Volker**

