THE DYNAMIC INTERPLAY BETWEEN FLOODS AND FINANCE

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Everglades Restoration coupled with Climate Change means South Florida will face more flooding events....
MIAMI HAS BEEN THERE BEFORE!
The GREAT HURRICANE hit 12 September 1926, and the “PANIC IN PARADISE” BANK FAILURE later that year.
MIAMI FLOOD RISK MAP AND EVACUATION ZONES
Hurricane evacuation is the one constant parameter that can control development and population density in coastal areas.
But after the flood, there is a serious decision: Re-BUILD or Re-LOCATE?
FLOOD EVENTS ARE THE RESULT OF COUPLED NATURAL-HUMAN SYSTEMS
Timing, Cost, & Application of Available Financing and Insurance

HUMAN SYSTEMS

Changes to Natural Systems e.g. Land Development, Pollution, and Resource Extraction

Impact, ecology

NATURAL SYSTEMS

Impact, finance

Change of Natural Systems e.g. Natural Hazards, Climate Change, Disasters

Function & Health of Atmosphere, Oceans and Terrestrial Systems

MEDIATES

links
CHALLENGES of connecting Ecosystem Change under SLR conditions to the Ecology of Modern Finance

Federal Reserve Board Policies:
Increase the amount of MBS purchased, and increase the flow of money to housing markets

INCREASE the NUMBER OF MORTGAGES AVAILABLE

INCREASE DEMAND FOR FLOOD AND DISASTER INSURANCE

MORE HOUSING STARTS, MORE PRESSURE OF LAND USE

INCREASED RISK FOR CARRIERS IN ONE COUNTY OR REGION

MORE AGGREGATE MINING, MORE STRESS ON AQUIFER

INCREASED USE OF CATATROPHE BONDS AND OTHER INSTRUMENTS TO COVER RISK
What is the connection between modern finance and flood response?

1. A BRIEF HISTORY OF MODERN FINANCE
2. MODEL OF FINANCIAL DRIVER OF LAND USE CHANGE
3. DEBT LOAD, MOBILITY AND LIQUIDITY OF HOME OWNERS
4. AFTER A FLOOD – WHAT ARE THE OPTIONS?
5. RE-BUILD vs RE-LOCATE OUTREACH AND PLANNING FOR HOMEOWNERS
PRIOR to 1970: People paid cash for most items. Banks were not interested in mortgages. A profound shift occurred with legislation in 1968 to establish and promote Mortgage-Backed Securities (MBS).

1970 to 1982: Government Sponsored Enterprises (GSEs) became the guarantor and built the MBS market.

After 1983: After Reagan-era relaxing of financial regulations, MBS were deemed as safe as treasury bonds, and an unprecedented flow of cash entered the housing market, creating more profitable instruments for investors. Home equity loans meant more items bought on credit.
Relative increase of developed land, number of households, and adult population since 1980.
Household debt and Increase in Mortgage debt as part of GDP.
What does this mean for South Florida?

• More of the population is moving to coastal areas
• More people have houses
• People have larger mortgages
• People are carrying higher debt loads
Simplified Scheme of Development Funding Flow

**INPUT:**
Developer uses debt or equity to as SOURCE of FUNDS for project

**PROCESS:**
Sources pay costs of the development (USE OF FUNDS)

**OUTPUT:**
Results of completed project (e.g. homes)

**EXIT STRATEGY:**
Key to obtaining development funding – the OUTPUT must be “monetized” through sales and repays developer’s debt and equity

*Cycle of Inputs and Outputs is dependent on sound Exit Strategy*
“Ultra-simplistic” Financing Scheme of a Residential Real Estate Project

1. Development Loan funding by Development Loan purchase

2. Loan

3. Payment

4. Funds on behalf of Homebuyer

5. Mortgage Loan funding by Mortgage Loan purchase

6. Home Buyers Using a Mortgage for Home Purchase

Sullivan Sealey, Binder and Burch, in press *Anthropocene*
Insurance, re-insurance, catastrophe bonds, environmental finance are novel ways for diversifying investments BUT these instruments are driven in a BUSINESS ENVIRONMENT. Environmental risks are known but poorly articulated to investors in terms of recovery and restoration costs.

MODERN FINANCE aims to reduce risk for investments through diversification, we have all benefited from these innovations.
DEBT LOAD, MOBILITY AND LIQUIDITY OF HOME OWNERS

A coupled physical and economic model of the response of coastal real estate to climate risk

- Dylan E. McNamara and Andrew Keeler

Nature Climate Change 3, 559–562 (2013)
“runaway credit growth feeds on itself by creating bloated, artificial demand for materials and industrial commodities that, in turn, generate shortages of capital assets like mines, ships, smelters, factories, ports and warehouses that require even more materials to construct. In a word, massive artificial credit sets the world digging, building, constructing, investing and gambling like there is no tomorrow.”

David Stockman, on the impact of modern finance on natural resources, Contra Corner, August 2015
AFTER A FLOOD – WHAT ARE THE OPTIONS?

• PREPARATION IS CRITICAL, HOMEOWNERS NEED TO HAVE A PLAN
• FINANCIAL ASSESSMENT – Can I rebuild?
• ENVIRONMENTAL ASSESSMENT – Is it safe to rebuild?
• ECOLOGICAL ASSESSMENT – What is the relative value of my property?
RE-BUILD vs RE-LOCATE OUTREACH AND PLANNING FOR HOMEOWNERS

• ACCESS TO INFORMATION IS CRITICAL
• TRANSPARENCY IN FINANCIAL INSTRUMENTS
• EDUCATION AND PLANNING WORKSHOPS FOR HOMEOWNER.

WHAT IS THE PLAN FOR COASTAL LAND USE FOR 40, 80 or 100 years into the future?
Disaster Risk management can not be carried out in a business and regulatory environment alone.

WITHOUT SCARING PEOPLE, WE NEED TO BEGIN A DIALOGUE ON HOW COMMUNITIES IN MIAMI WILL MOVE, AND HOW THOSE MOVES WILL BE TRIGGERED.
Thank you!

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