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The Effect of Proximity to Fault Line as a Land Value Determinant in Metro Manila

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Outline

- I. Introduction
- II. Objectives and Significance of the Study
- III. Study Area and Data
- IV. Methodology
- V. Results and Discussions
- VI. Conclusions



Introduction

- For many years, Filipino appraisers have considered the following factors in land valuation of urban areas:
 - Land Use
 - Neighborhood Classification
 - Proximity to Main Roads
 - Proximity to Points of Interest
 - Easement Condition
 - Corner Effect
 - **Flood Risk**



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QUANTIFYING RISK IN NEW ZEALAND 2-6 MAY 2016

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- + Exposure to natural hazards
- + Susceptibility
- + Coping capacities
- + Adaptive capacities

Introduction

The 15 countries with the highest risk

Rank	Country	WorldRiskIndex (%)
1.	Vanuatu	36.31
2.	Tonga	28.62
3.	Philippines	27.98
4.	Guatemala	20.75
5.	Bangladesh	20.22
6.	Solomon Islands	18.15
7.	Costa Rica	17.38
8.	Cambodia	17.17
9.	Timor-Leste	17.13
10.	El Salvador	16.89
11.	Brunei Darussalam	15.92
12.	Papua New Guinea	15.81
13.	Mauritius	15.39
14.	Nicaragua	15.36
15.	Fiji	13.69

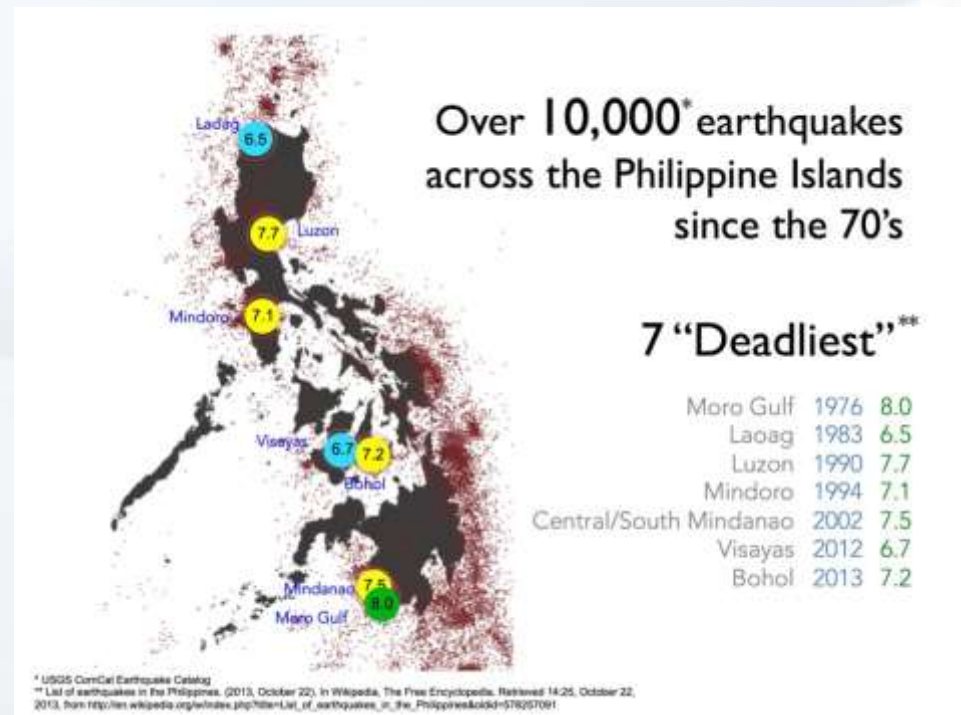




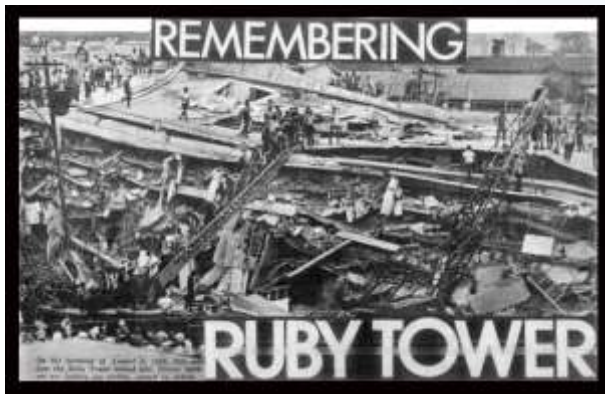
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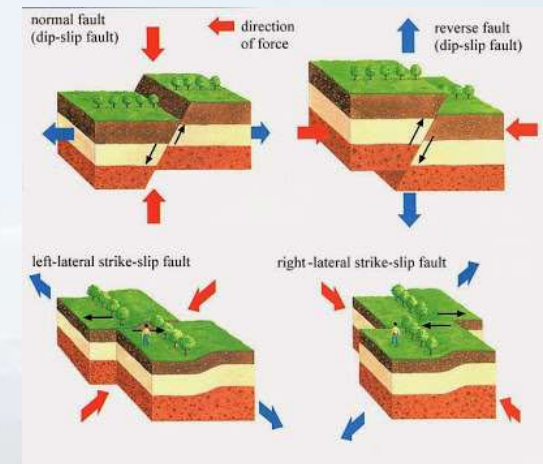
Introduction





What is a Fault Line?

- According to the United States Geological Survey, a fault is a break in the rocks that make up the earth's crust, along which rocks on either side have moved past each other.
- Energy release associated with rapid movement on active faults is the cause of most earthquakes.
- A *fault line* is the surface trace of a fault, the line of intersection between the fault plane and the Earth's surface





Literature Review

- Gordy Bunch in the US is continuing his legal battle after learning in April 2011 that his \$1.2 million home was built on a fault line. According to the Montgomery Central Appraisal District, the 2010 value of the home and property was \$1.2 million but dropped to \$200,000 in 2013.
- A 2011 study from the University of California-Berkeley found that lot values dropped as much as 2 percent for every mile closer the lot was to a fault line.
- The price of nonresidential land one kilometer off the Uemachi fault line was 1,000,000 yen per m² in 1996, while the price of nonresidential land with similar characteristics, but immediately above the fault, was only about 700,000 yen per m².



Objectives and Significance of the Study

- This study will determine the effect of proximity to fault line and provide actual losses on the land values in Metro Manila.
- This paper provides an actual figure as a basis for the appraisal of lands.
- It gives the opportunity to inform or educate owners and other people of the existence of fault line and its potential risk.



Study Area

- The Marikina Valley Fault System aka the West Valley Fault System is the biggest fault line system in Metro Manila. The areas affected are densely populated with many infrastructures and commercial centers.





Methodology

Gathering of Maps and Market Data from Internet, Prints, and Interviews

Geo-referencing of West Valley Fault

There are five (5) general steps needed to accomplish this study.

Validation Aided by GPS

Market Data Analysis of the Effect of Proximity to Fault Line

Land Market Value Difference



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Market Data Compilation



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Market Values

Market Value is the estimated amount for which a property should exchange on the date of valuation between a willing buyer and a willing seller in an arm's length transaction after proper marketing wherein the parties had each acted knowledgeably, prudently, and without compulsion.

(International Valuation Standards)

1. ***The estimated amount...***
2. ***...a property should exchange...***
3. ***...on the date of valuation...***
4. ***...between a willing buyer...***
5. ***...a willing seller...***
6. ***...in an arm's-length transaction...***
7. ***...after proper marketing ...***
8. ***...wherein the parties had each acted knowledgeably, and prudently...***
9. ***...and without compulsion.***



Results and Discussions

List of Comparable Characteristics	Comparable 1	Comparable 2	Comparable 3	Comparable 4
Price/sqm	PhP 18,000	PhP 15,000	PhP 16,000	PhP 16,000
Area (sqm)	420	565	300	164
Location	Pres. Aguinaldo	Aquarius St.	Taurus St.	Sagittarius St.
Time of Sale	For Sale	For Sale	For Sale	For Sale
Property Rights	Fee Simple	Fee Simple	Fee Simple	Fee Simple
Access	Main Road	Interior Road	Main Road	Main Road
Utilities	All	All	All	All
Topography	Road Level	Road Level	Road Level	Road Level
Zoning	Residential	Residential	Residential	Residential
Traffic	Moderate	Moderate	Moderate	Moderate
Frontage (m)	15	20	15	10
Shape	Rectangular	Rectangular	Rectangular	Rectangular
Elevation	72 ft or 22 m	45 ft or 13.7 m	45 ft or 13.7 m	41 ft or 12.5 m
Distance to Fault	35 m	150 m	130 m	190 m



Results and Discussions

List of Comparable Characteristics	Comparable 1	Comparable 2
Price/sqm	PhP 8,000	PhP 8,500
Area (sqm)	450	400
Location	Sunnyside Drive	Dona Justina St.
Time of Sale	For Sale	Recent
Property Rights	Fee Simple	Fee Simple
Access	Main Road	Main Road
Utilities	All	All
Topography	Road Level	Road Level
Zoning	Residential	Residential
Traffic	Moderate	Moderate
Frontage (m)	18	15
Shape	Rectangular	Rectangular
Elevation	129 ft or 39 m	228 ft or 70 m
Distance to Fault	10 m	370 m



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Interesting Findings

Fault Line





Summary of Interviews in 2014 Fieldwork

- An owner whose house is traversed by the fault line was in a state of denial about the existence of fault line.
- Some owners are open minded to accept the fact and consulted with us what is to be done for preparation of the “Big One”.
- Few are knowledgeable and did some retrofitting of their houses.
- Majority of the owners and people in general have limited or no knowledge of the fault line.



Recent Update from March 2016 Fieldwork

List of Comparable Characteristics	Comparable 1	Comparable 2	Comparable 3
Price/sqm	PhP 8,000	PhP 8,500	PhP 12,000
Area (sqm)	400	380	300
Location	Gold St.	Cohen St.	Chase St.
Time of Sale	For Sale	For Sale	For Sale
Property Rights	Fee Simple	Fee Simple	Fee Simple
Access	Main Road	Main Road	Main Road
Utilities	All	All	All
Topography	Road Level	Road Level	Road Level
Zoning	Residential	Residential	Residential
Traffic	Moderate	Moderate	Moderate
Frontage (m)	20 m	18	15
Shape	Rectangular	Rectangular	Rectangular
Elevation	12 m	12.5 m	8.7 m
Distance to Fault	Directly on Top	2 m	70 m



Conclusions

- Lot or property owners and other real estate participants along the West Valley Fault System have limited or no knowledge of the existence of the fault line and the risk of the coming big earthquake as of July 2014. At this stated date, the proximity of the lands to the fault line has no effect on the land values in Metro Manila.
- Recent study clearly show the negative effect of the proximity to fault line in the land prices of Metro Manila. However, there is no enough market data to correlate decrease in land values to fault line proximity.



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Salamat Po!

(Thank You)