Real Estate and Capital Markets

Real Estate Forecasting Seminar

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& Person who sets in

Real Estate Research Center

Trends in Real Estate Capital Markets

Session Objectives:

Participants will:

- **view relations of real estate & capital**
- **Note changes in structure of real estate capital market**
- **Identify the effect of changing relationships on risk and return options**
- **Have option to consider strategies using our insights**
- **Develop an alternative way of thinking**

Nature of Real Estate and Capital

Alternative Economic Tradition shows:

- **Real Estate $\equiv$ Capital**

&

Real Estate $\neq$ Capital

A partial function of difference in:

Risk $\neq$ Uncertainty

& Consideration of distributive factors

Structural Nature of Real Estate

Real Estate is alternatively categorized and perceived as:

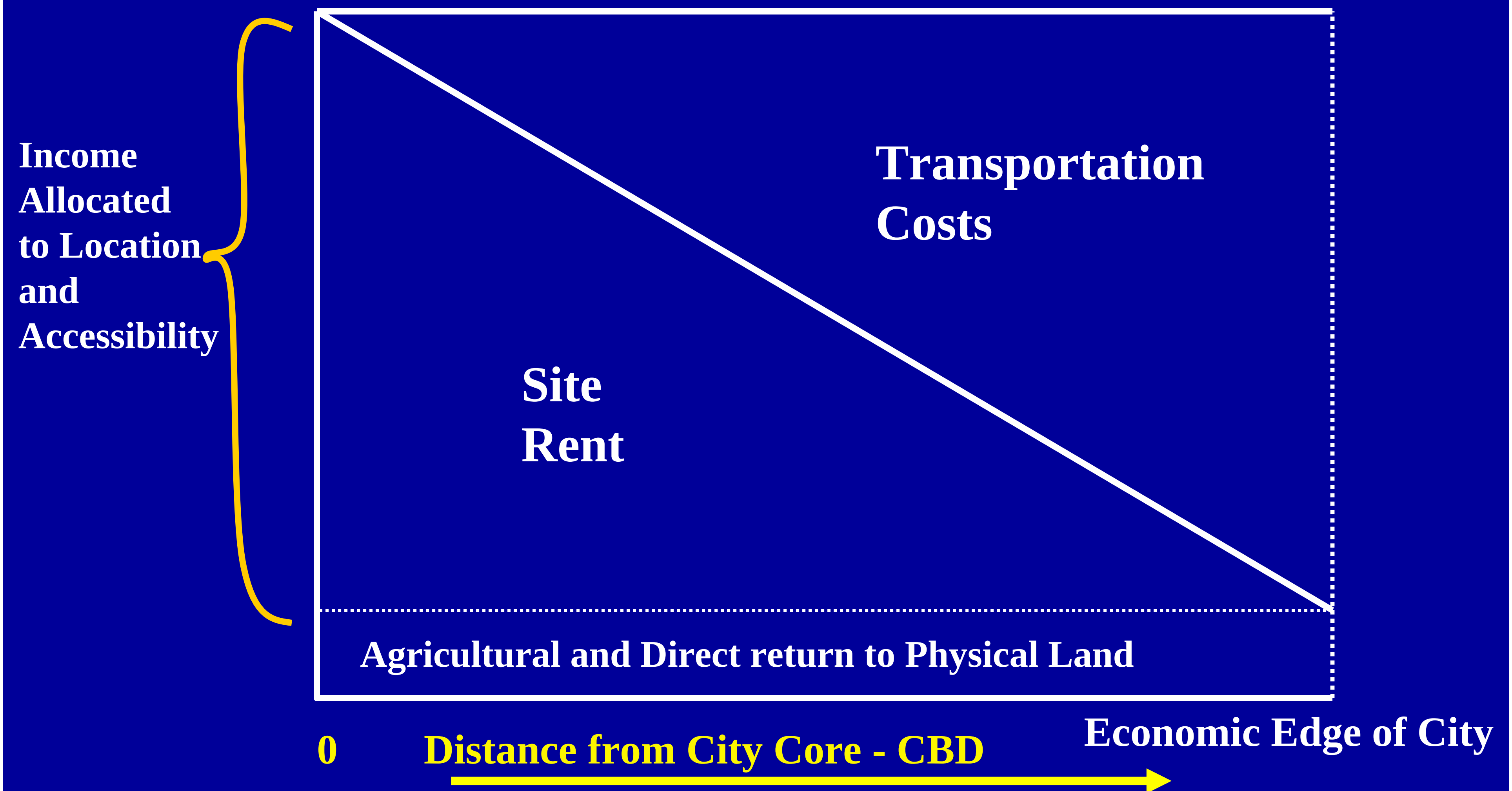
- **A Commodity**
- **A factor of production**
- **A Resource**
- **An Asset Class**

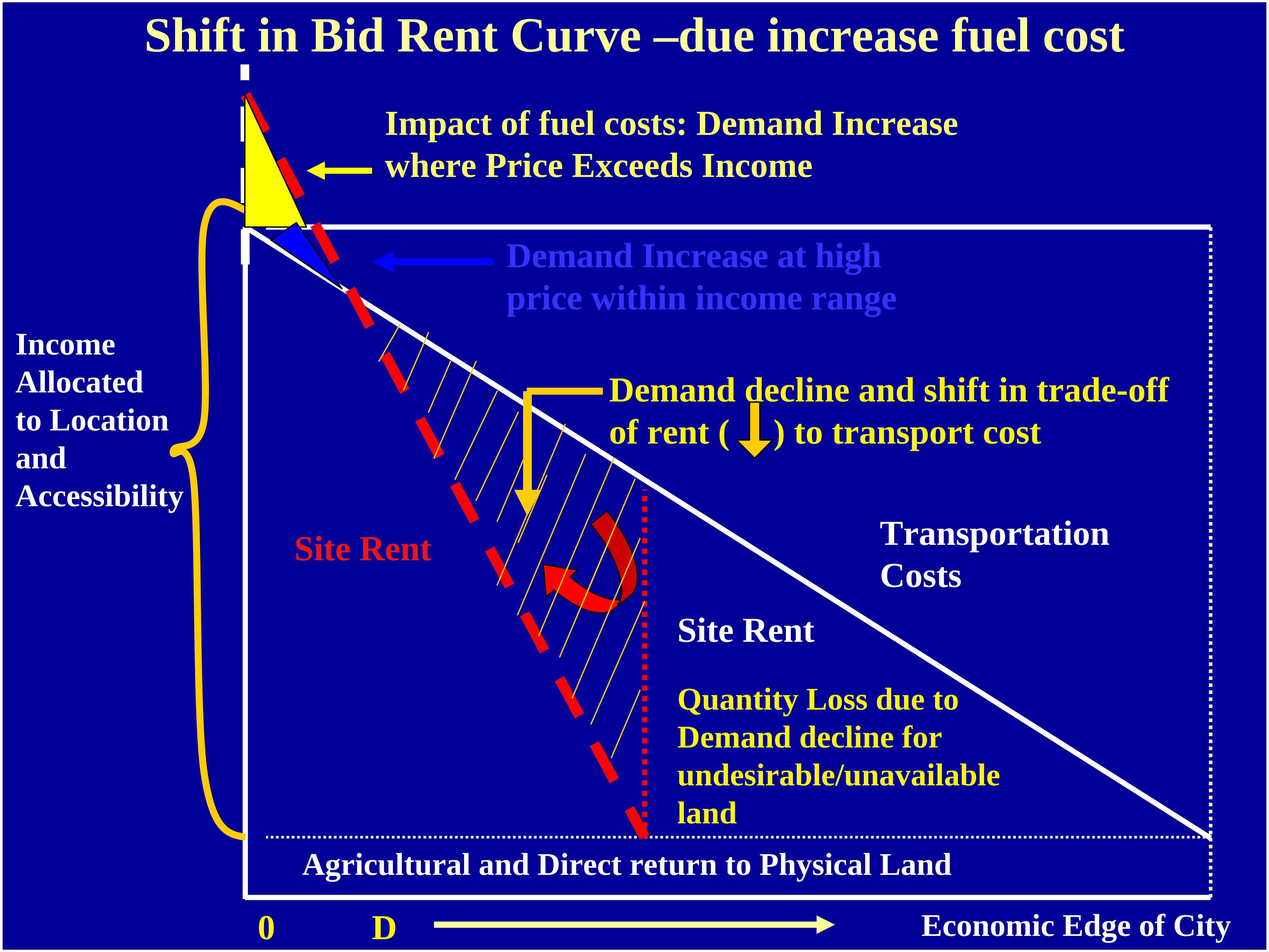
Operational Nature of Real Estate

Operational Essence of Real Estate

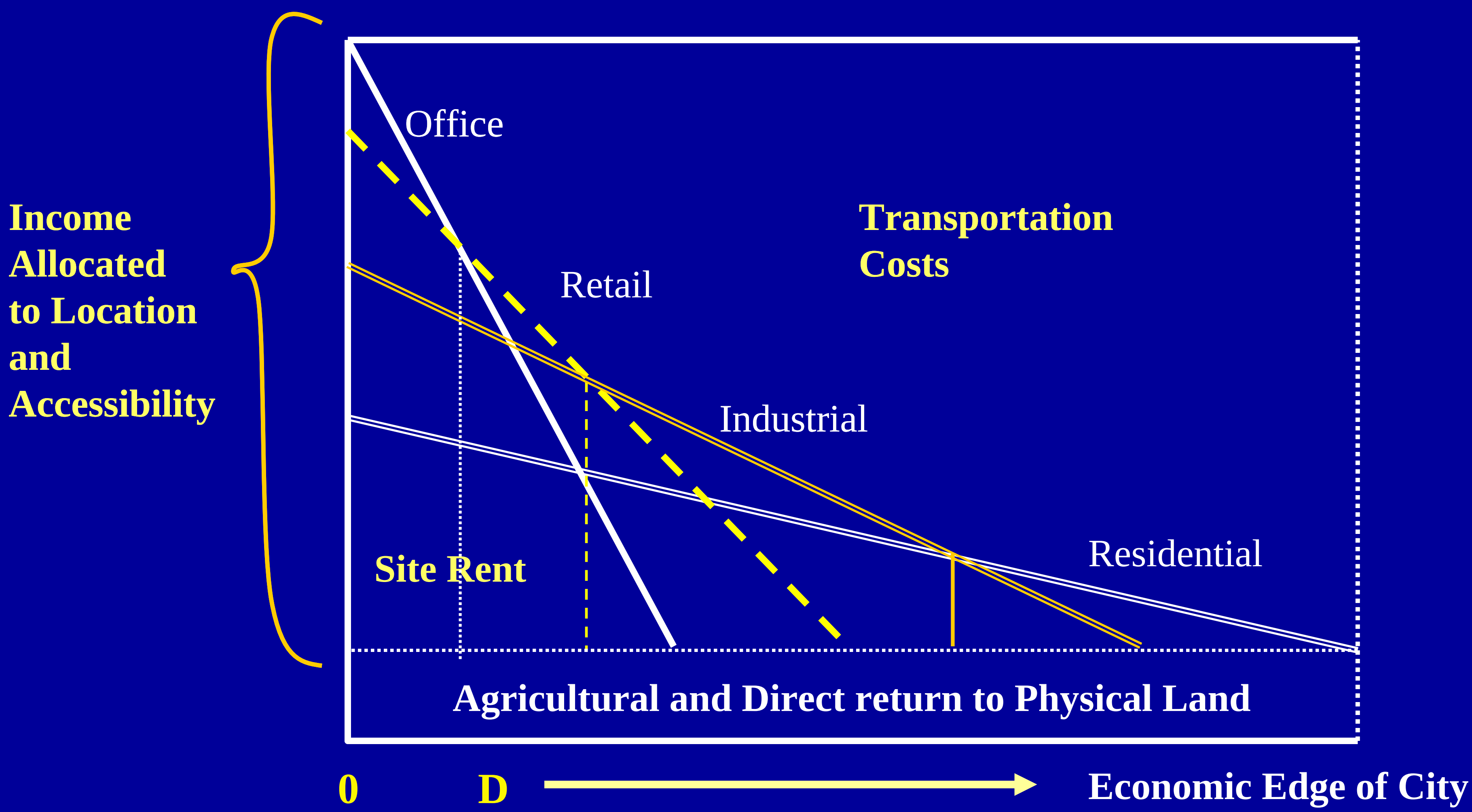
-
  - Economic Location:
    - Situs
    - Use Succession (LUST)
  - Collateral

Basis of Real Estate Value: Basic Bid Rent Curve Model – defining Land Use Patterns by Trade-off Location and Accessibility




Shift in Bid Rent Curve –due increase fuel cost
Impact of fuel costs: Demand Increase where Price Exceeds Income
Demand Increase at high price within income range
Income Allocated to Location and Accessibility
Demand decline and shift in trade-off of rent ( ) to transport cost
Site Rent
Transportation Costs
Site Rent
Quantity Loss due to Demand decline for undesirable/unavailable land
Agricultural and Direct return to Physical Land
0
D
Economic Edge of City

Basis of Real Estate Value: Basic Bid Rent Curve: Patterns of Trade-off of Site Rent and Accessibility Vary with Land Use



Linking Economic Location to Capital : A Spatial Capital as Product

Real Estate as:

- Space used over time
- Situs Capital – Economic Location
- Sustainable development –natural capital
- Space and money as Capital
- Real Estate as Capital Markets within Spatial Markets
- How to pull it all together and get there

Valuation: Cost Analysis and Asset Feasibility

Risk Measure from origins of a project at a location:

Cost

Potential
Market Revenue

[Financing Options]
[Operating Options]

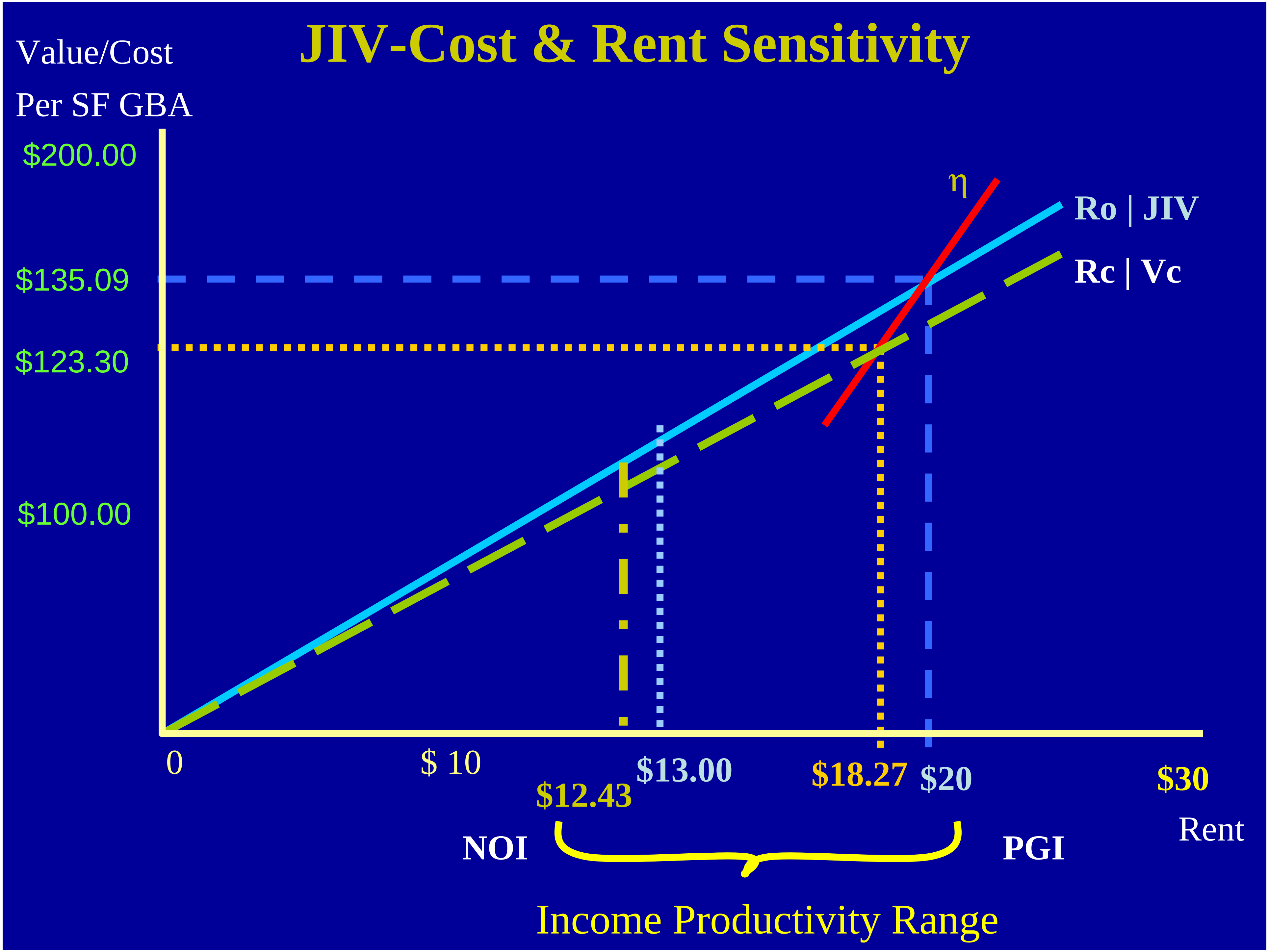
[Operating Options]
[Financing Options]

Required
Revenue

Justified Investment
Value

RR

(JIV)



JIV-Cost & Rent Sensitivity
Value/Cost
Per SF GBA
$200.00
$135.09
$123.30
$100.00
η
Ro | JIV
Rc | Vc
0
$ 10
$13.00
$18.27
$20
$30
$12.43
Rent
NOI
PGI
Income Productivity Range

JIV-Cost Comparison As Measure of Risk

Alternative Risk Adjustment:

- Value:
  - A. JIV/Cost = Profitability Index (PI):
    PI >1 go, PI =1, neutral, PI<1, no go
  - B. Probability of Ruin (δ = PI -1)
- Income Elasticity:
  (JIV/Cost -1)/(Mkt Rent/Required Rent-1)

- Rate/Return/Yield – Equity Shortfall Risk (ESR) or Roy’s Criterion (a hurdle rate);

JIV-Cost Comparison As Measure of Risk

Roy's Criterion (ESR):

$$\frac{E(R_i) - \varphi}{\sigma R_i} = ESR\ (\pi\ E(R_i) \leq \varphi)$$

Where: $E(R_i)$ = expect return on asset (average)

σR_i = total risk to asset (market measures can be used)

φ = investor's hurdle rate (required rate of return)

π = probability

ESR = equity shortfall rate

Functional Nature of Real Estate

- **Functional Essence of Real Estate:**

Conversion of:

Space-time <====> Money-time

Repeat of Overview Essentials from Underwriting and Risk Perspectives

The general principles of real estate finance, underwriting, investment and portfolio analysis are simplified as:

- Pain
- Pleasure
- Bail-out

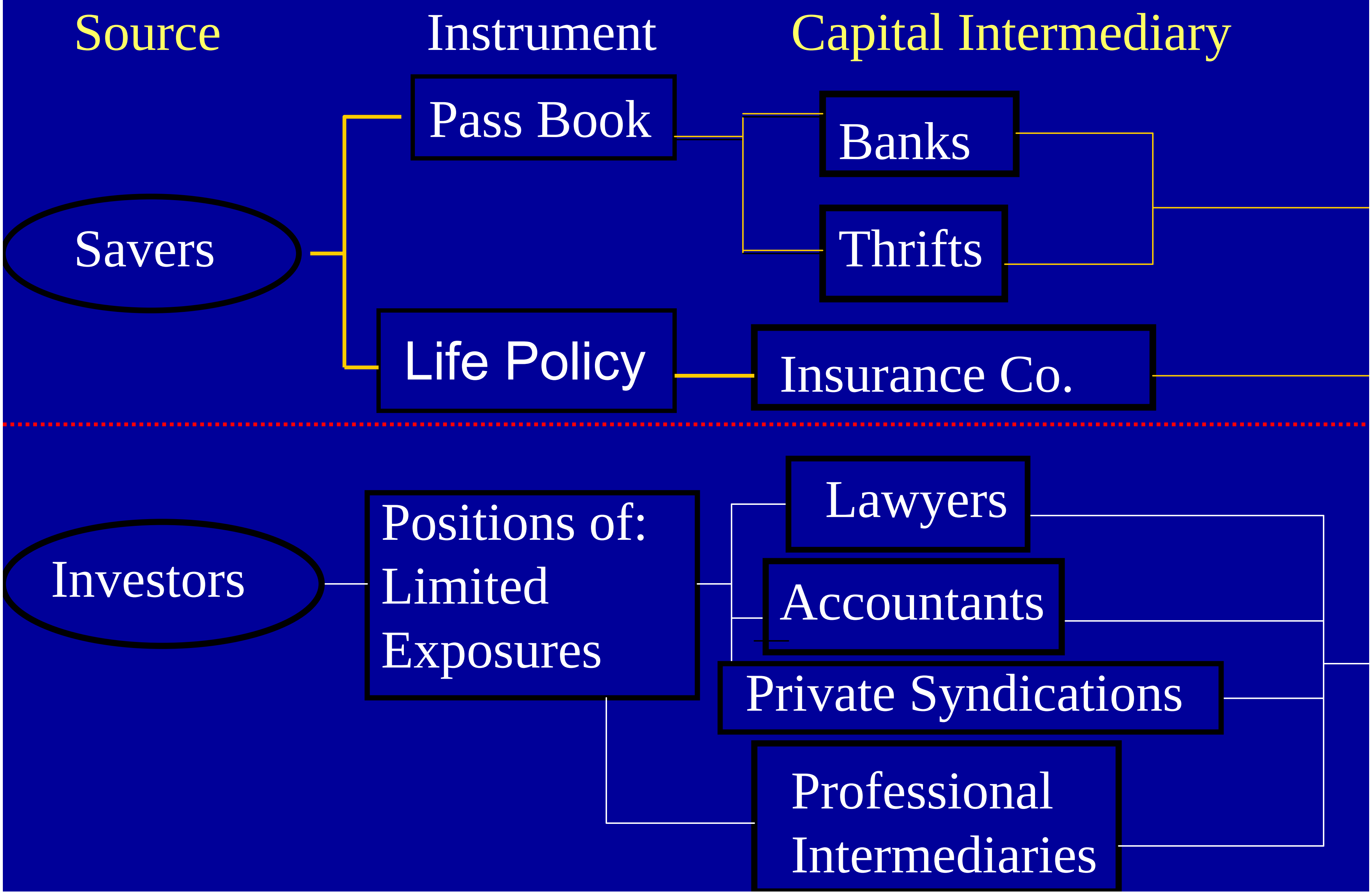
Real Estate Finance

As in general finance, the nature of real estate finance has evolved and changed over time.

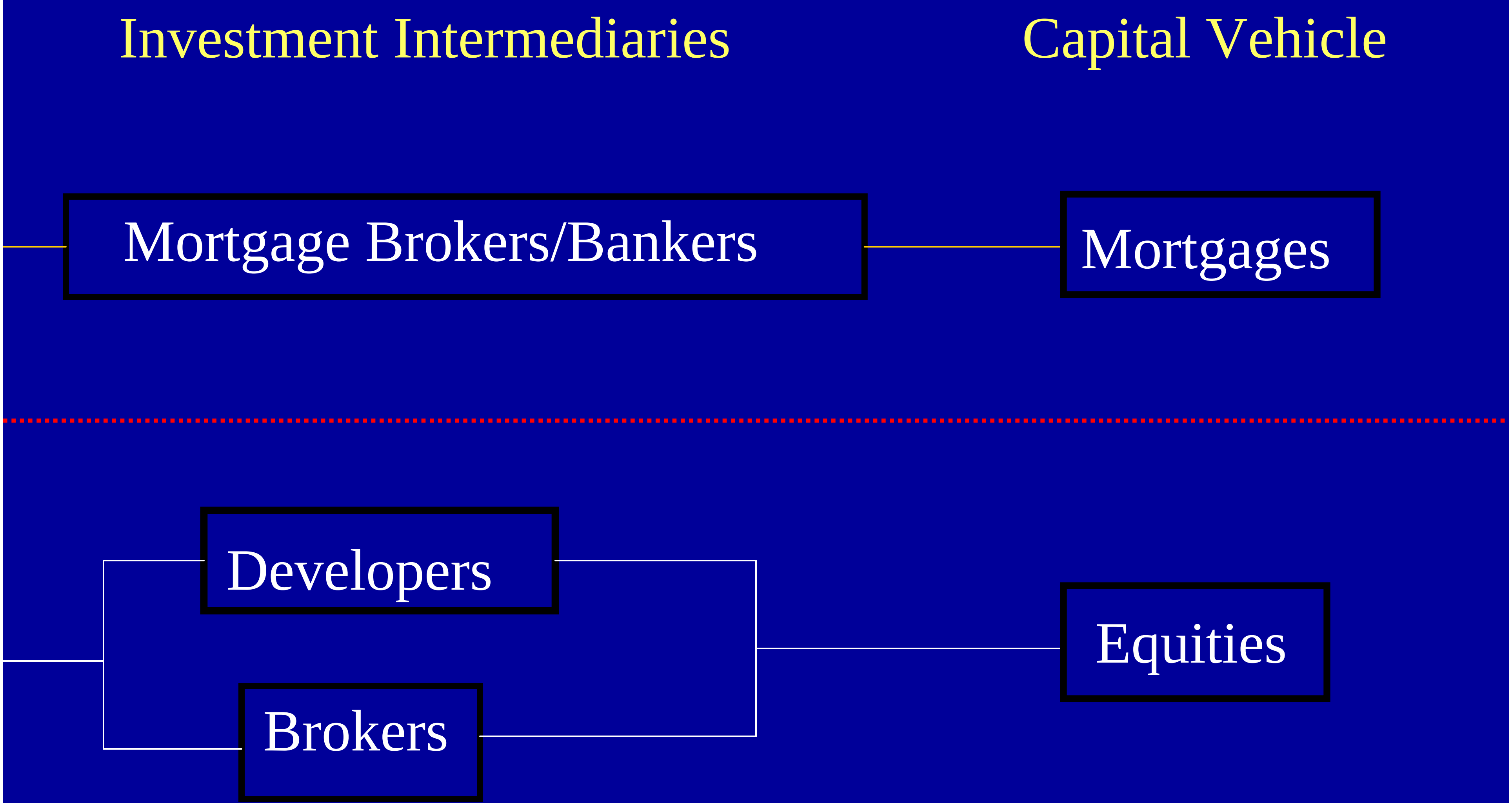
Key changes have been in:

- Nature of institutions and intermediaries
- Participants and sources of capital
- Real estate investment vehicles
- Relationships to inflation and interest contingencies
- Change in risk exposures

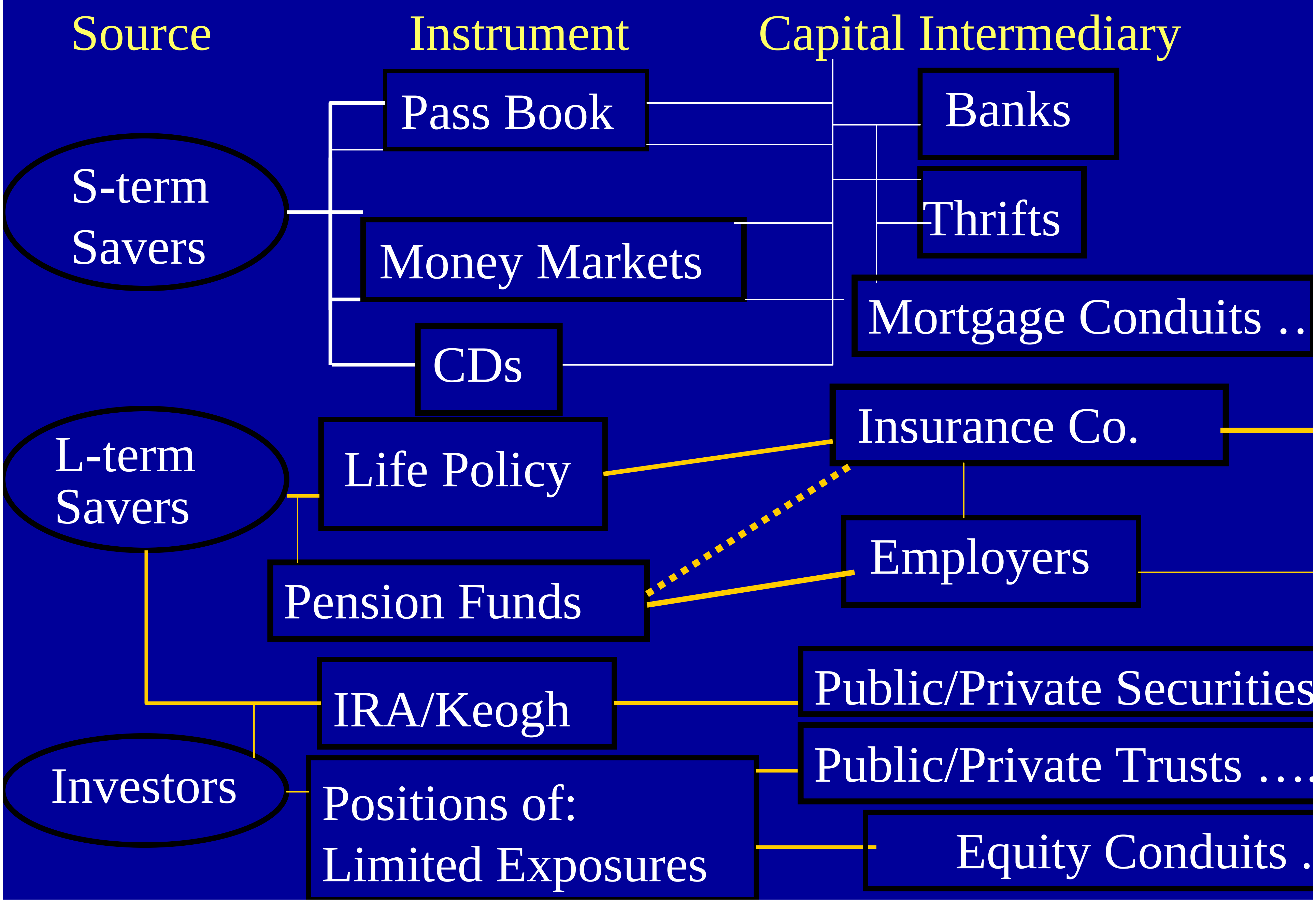
Traditional Capital Market for Real Estate



Traditional Capital Market for Real Estate



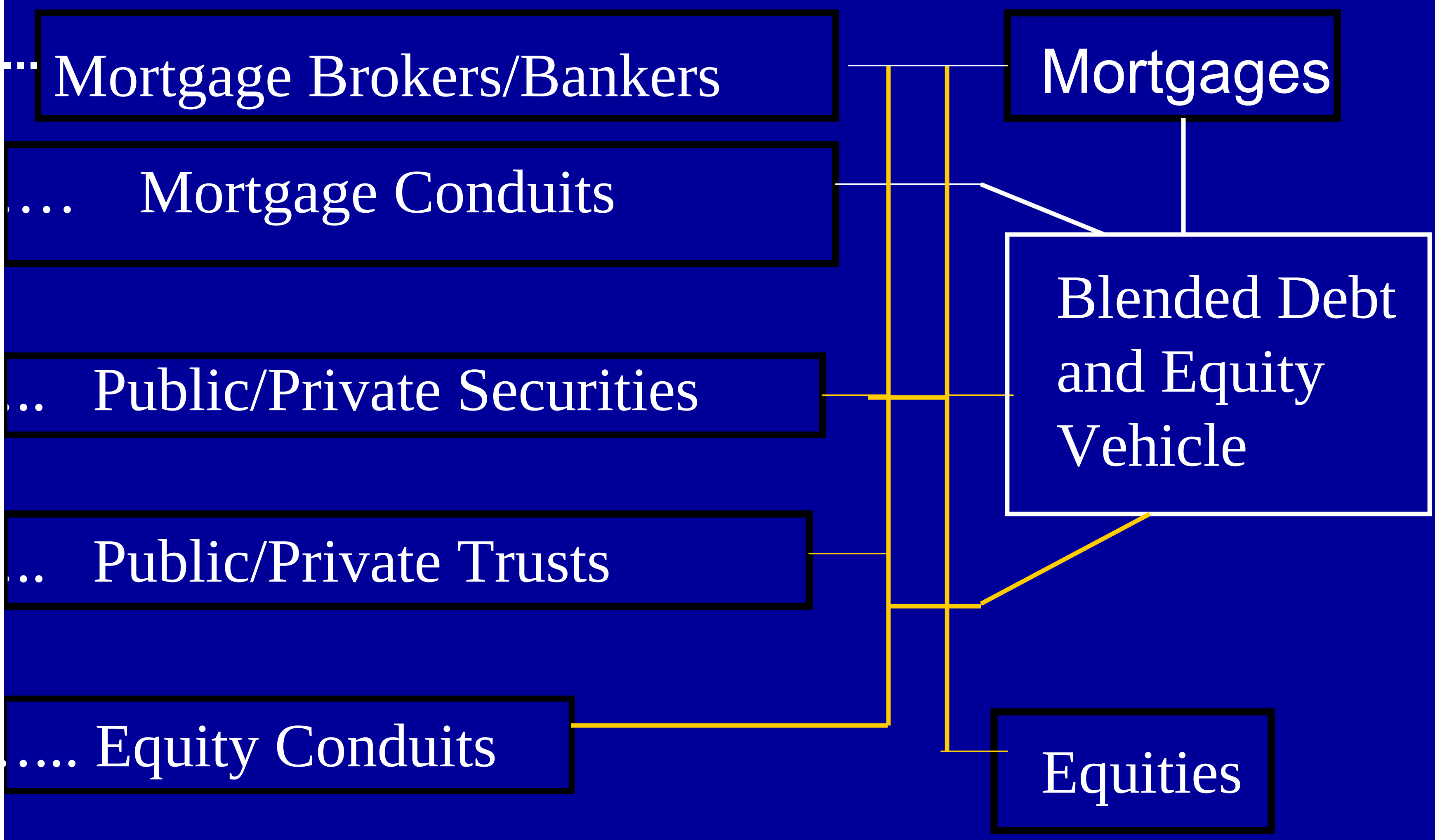
Evolving Capital Market for Real Estate



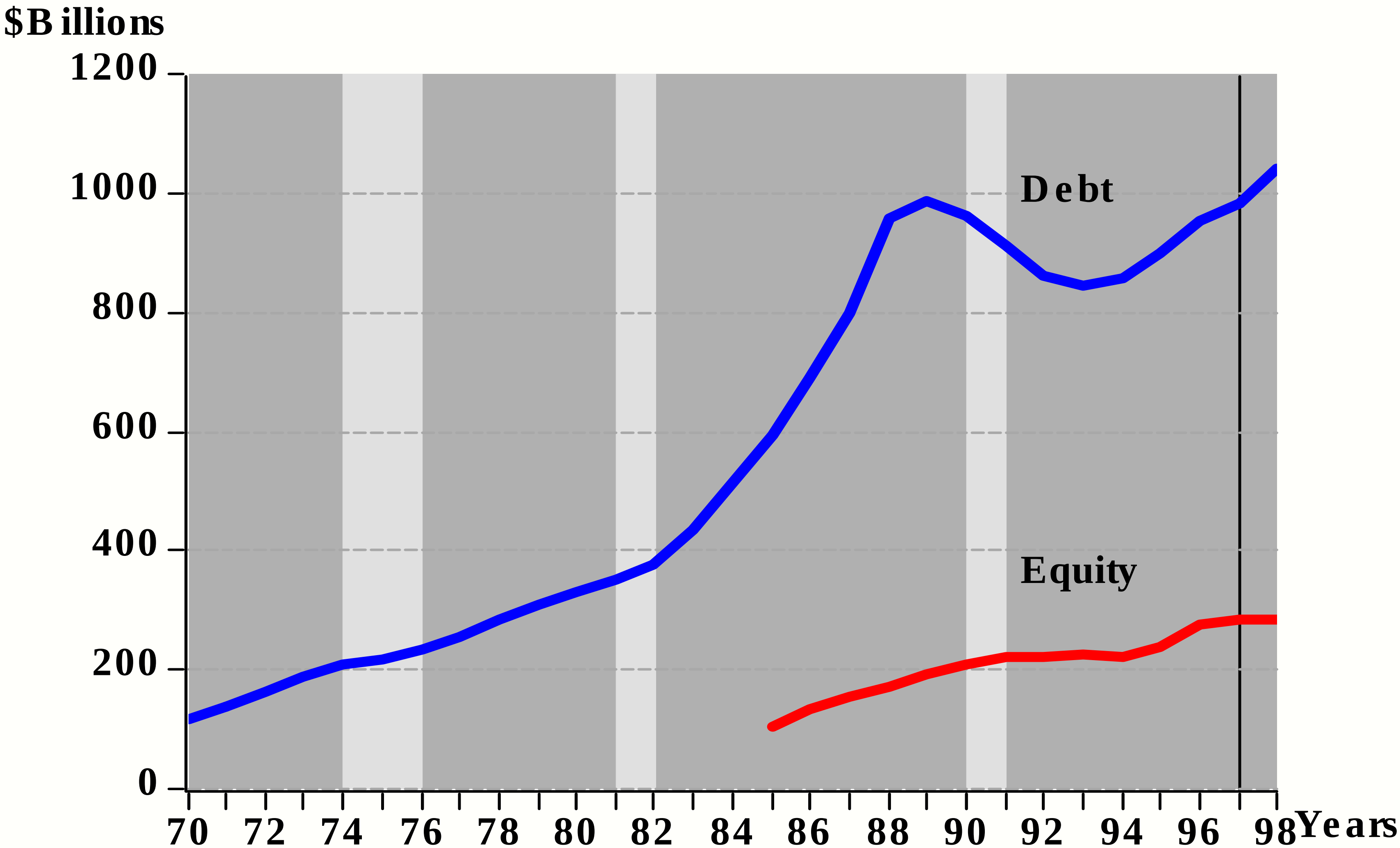
Evolving Capital Market for Real Estate

Investment Intermediaries

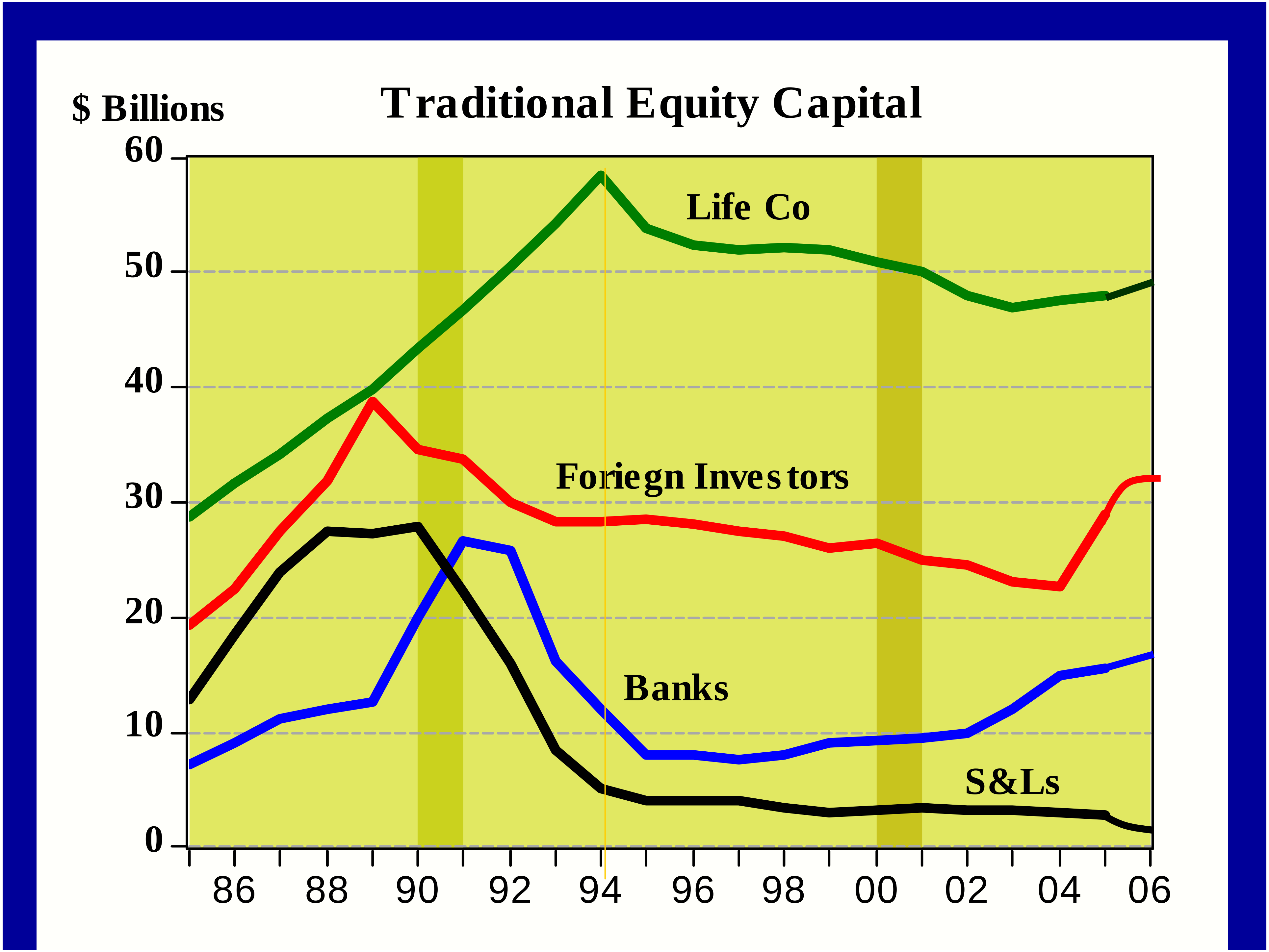
Capital Vehicle



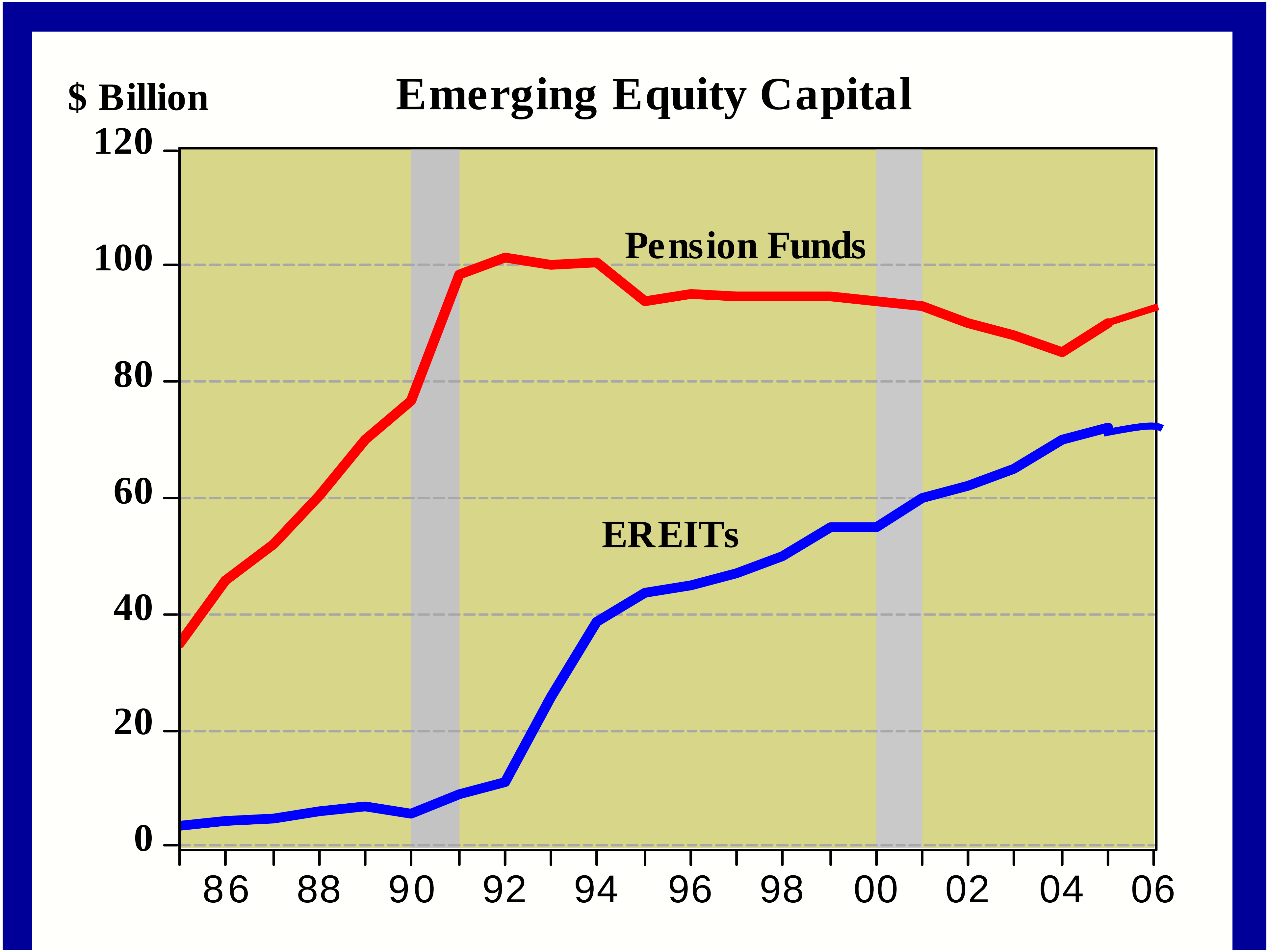
Comparison of Debt and Equity Capital

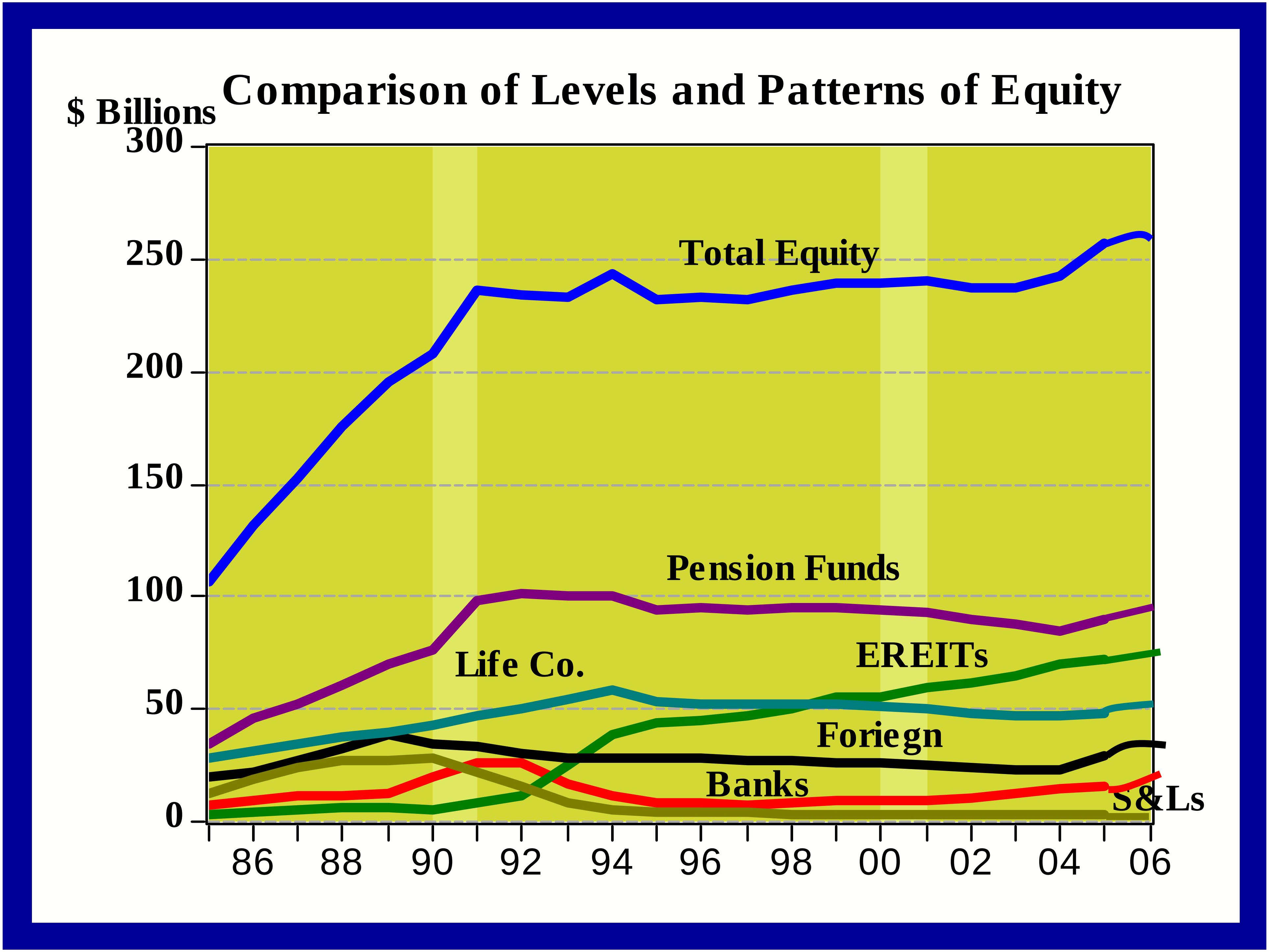


Source: GSU Real Estate; Grissom



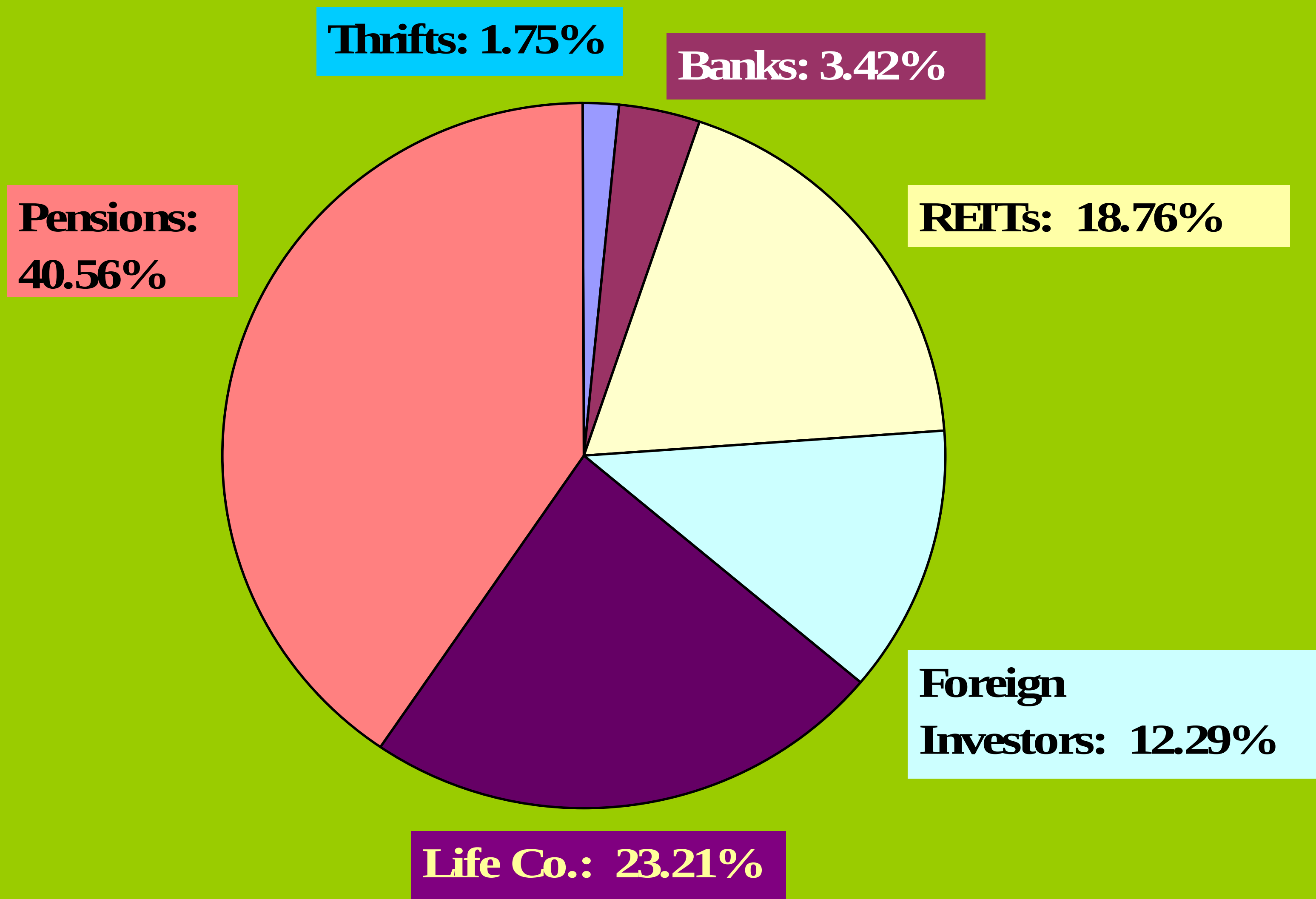
Traditional Equity Capital
$ Billions
60
50
40
30
20
10
0
Life Co
Foriegn Investors
Banks
S&Ls
86
88
90
92
94
96
98
00
02
04
06


Emerging Equity Capital
$ Billion
120
100
80
60
40
20
0
Pension Funds
EREITs
86
88
90
92
94
96
98
00
02
04
06

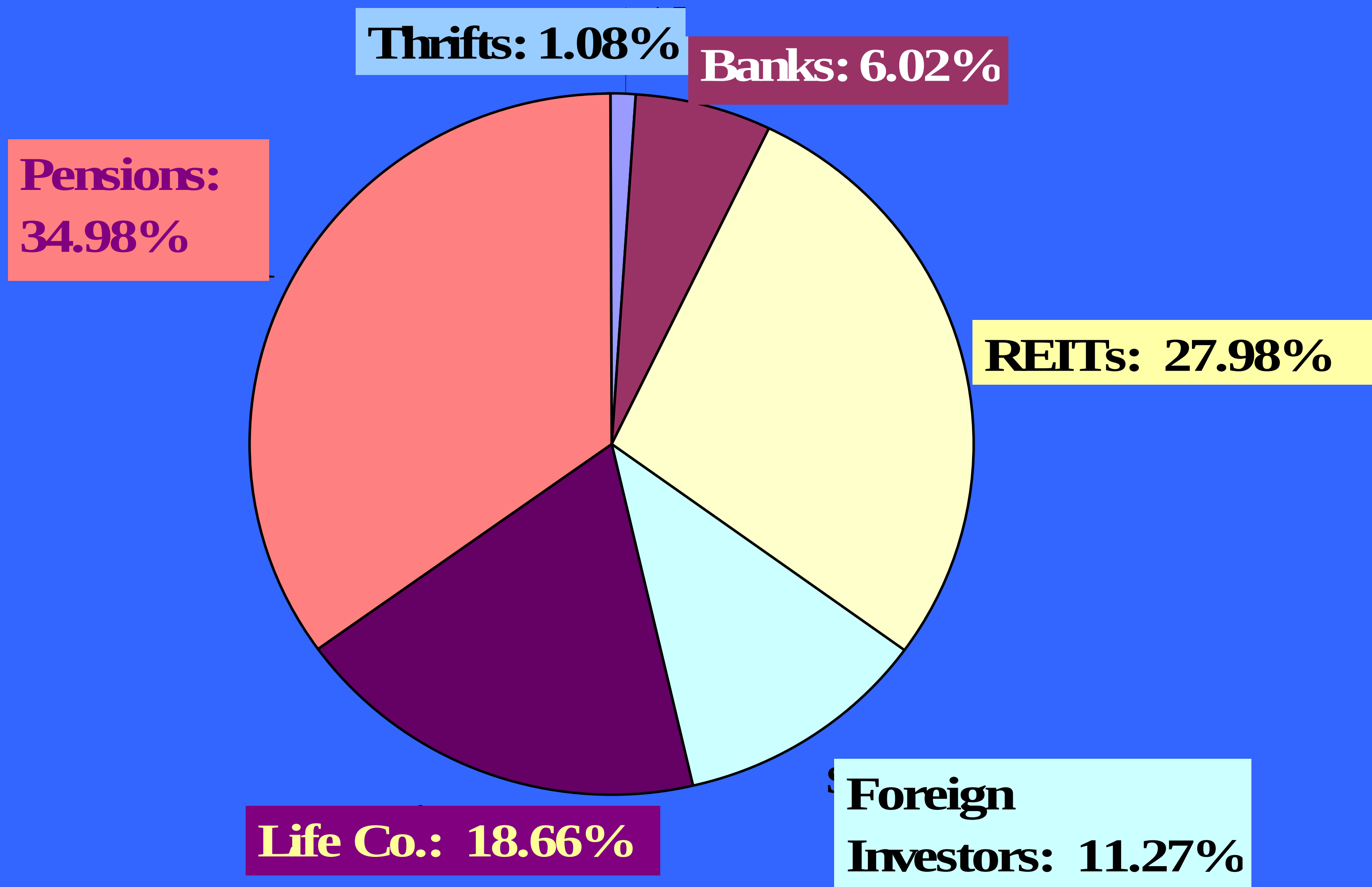


Comparison of Levels and Patterns of Equity
$ Billions
300
250
200
150
100
50
0
Total Equity
Pension Funds
Life Co.
EREITs
Foriegn
Banks
S&Ls
86
88
90
92
94
96
98
00
02
04
06

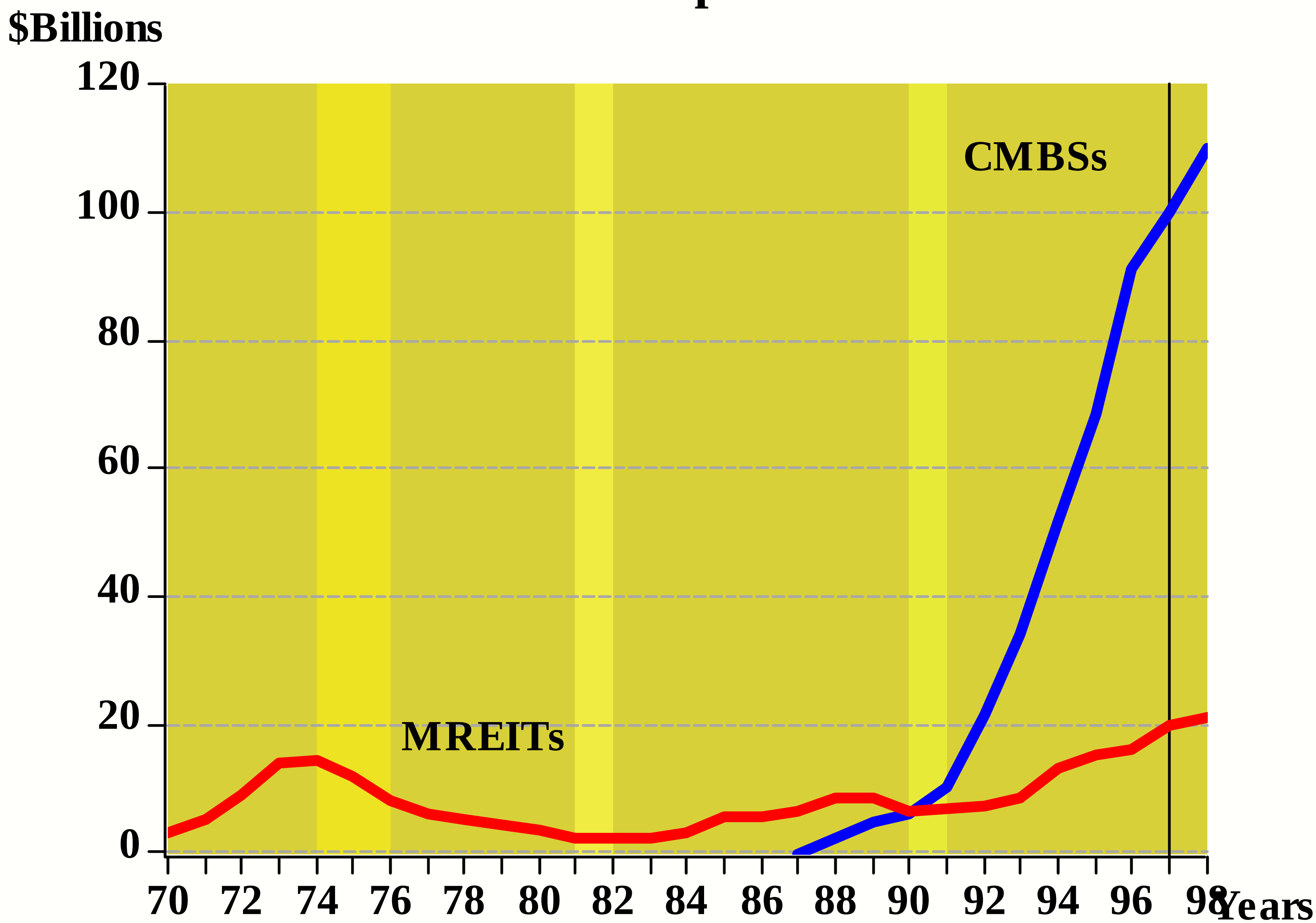
Equity Pie: 1995-6



Equity Pie: 2005-6

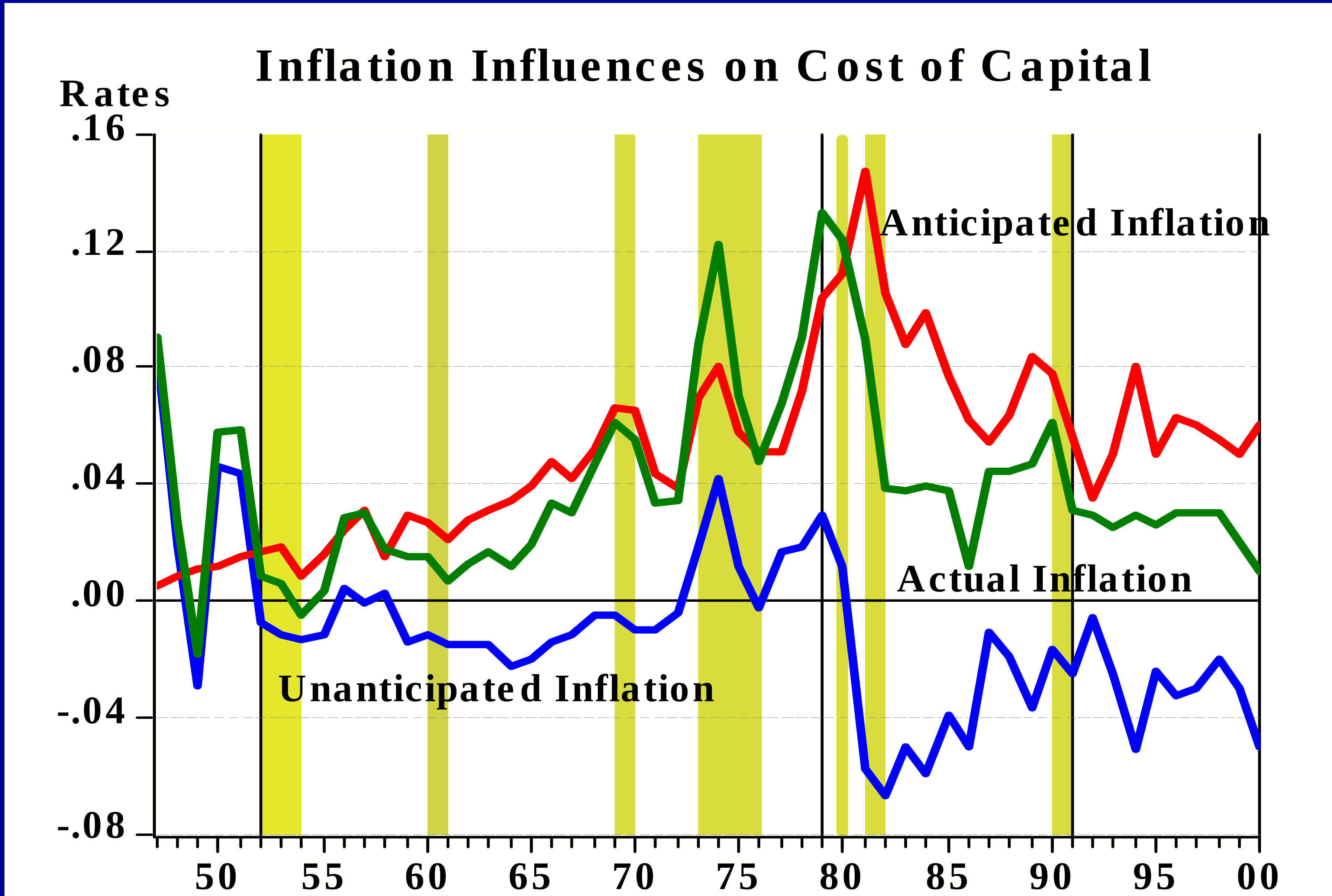


Securitized Debt Capital Sources

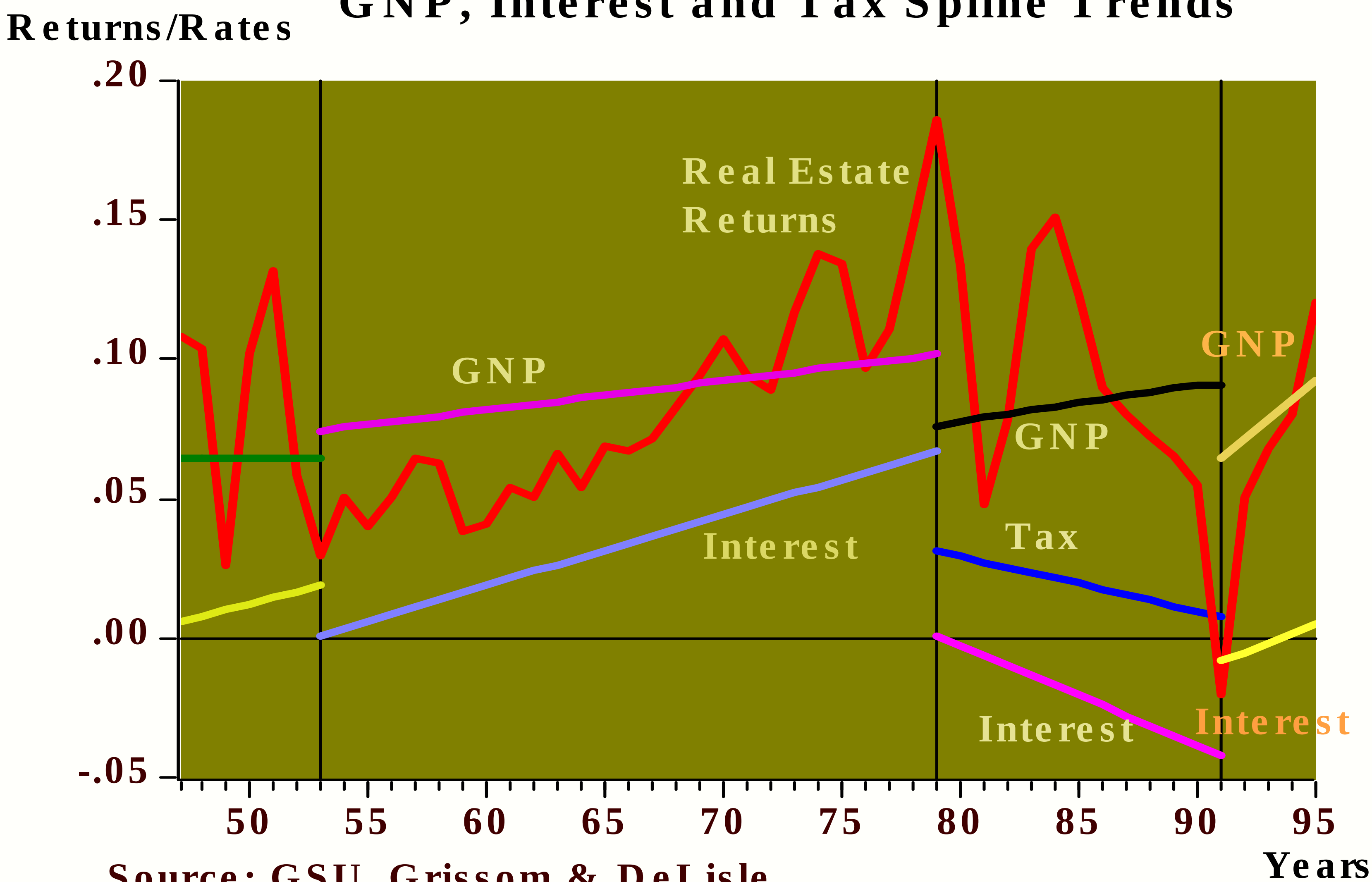


Source: GSU Real Estate; Grissom

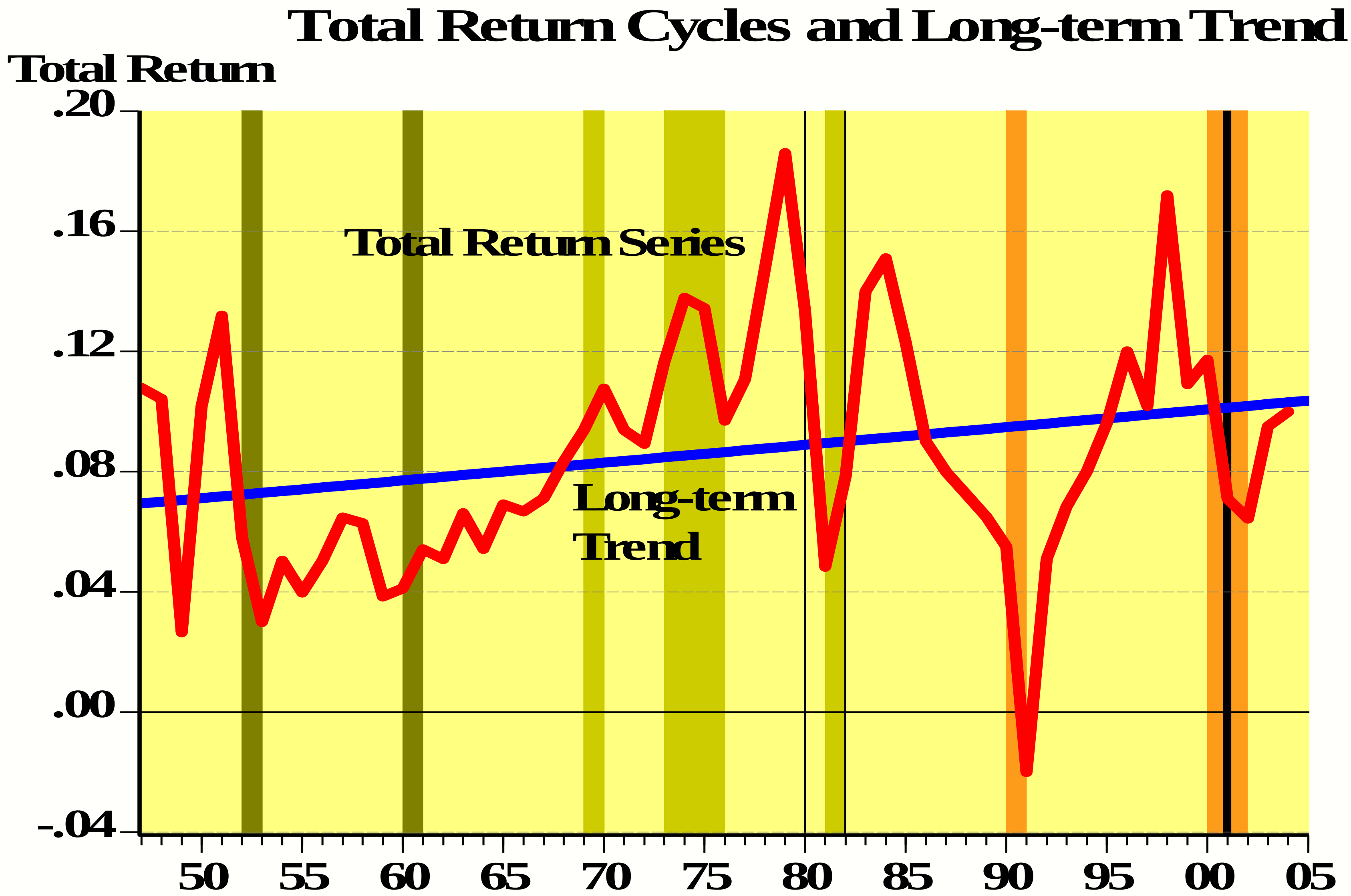
Interest Rate Determinates: Classes of Inflation



Total Returns and Regimes
GNP, Interest and Tax Spline Trends



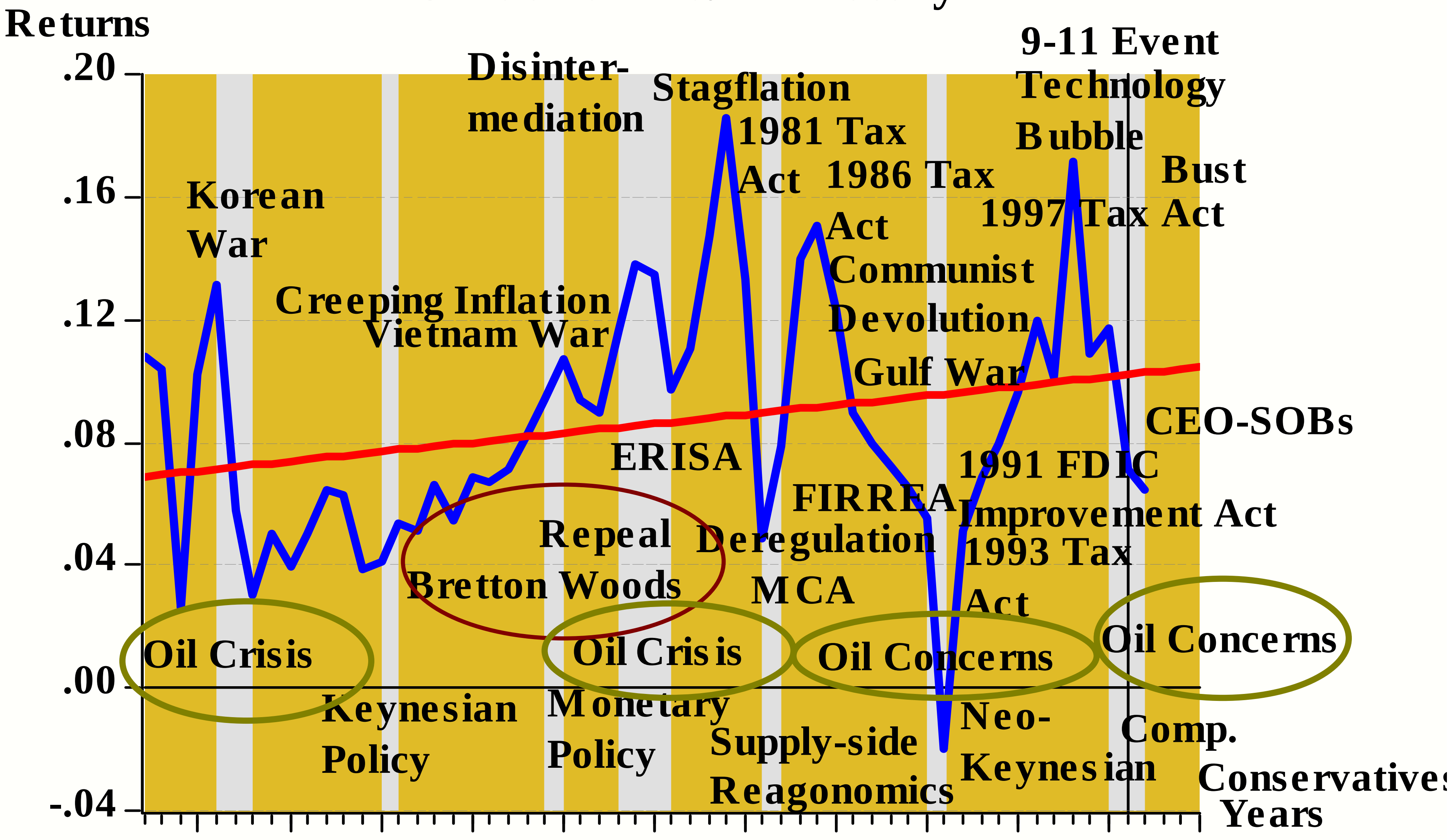
Source: GSU, Grissom & DeLisle
This exhibit shows the segmented splines or trend in the key causal variablesimpacting real estate returns over time.



Source: Grissom, GSU: 57 Year Trend/Cycle

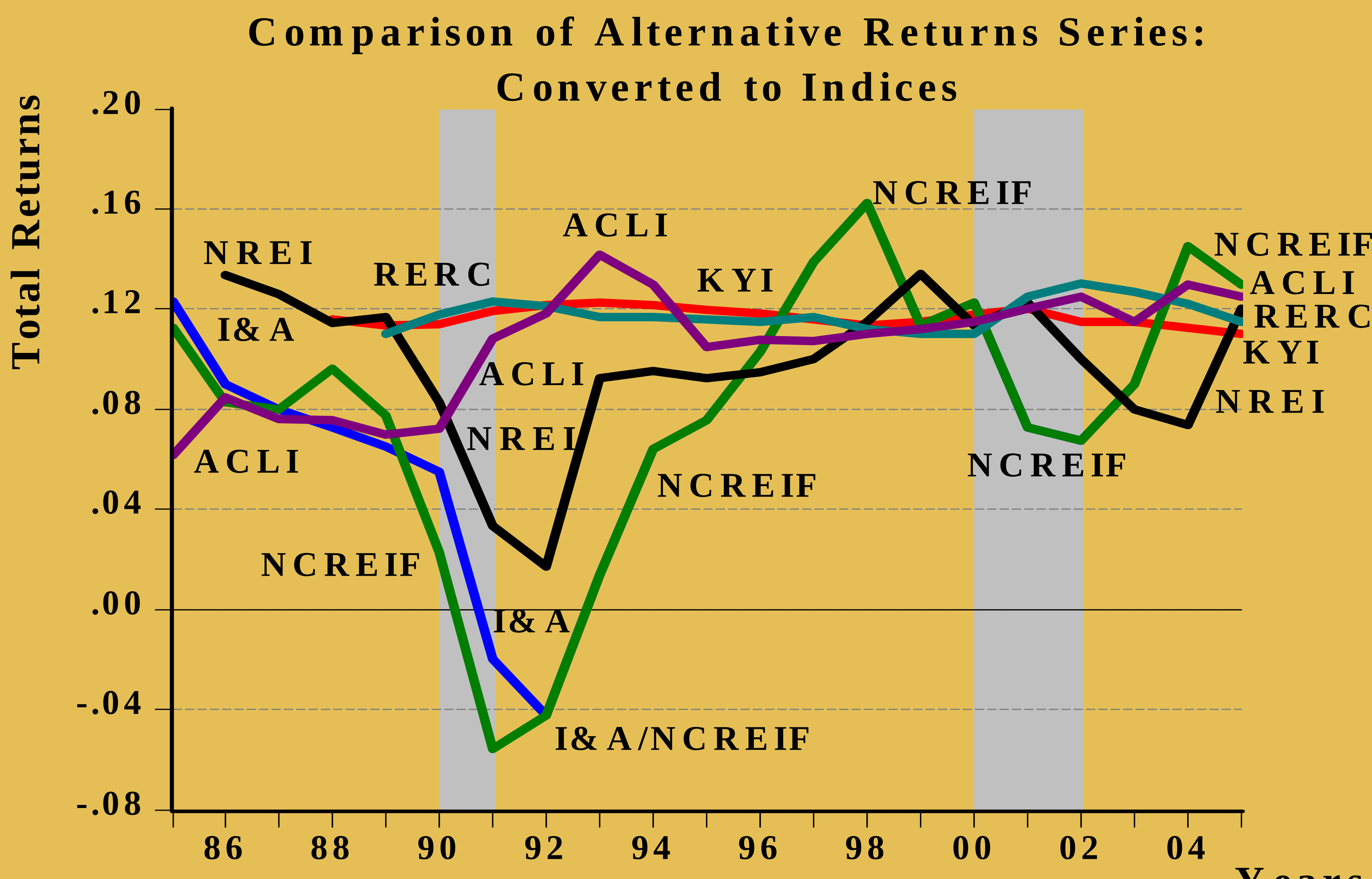
Data Sources: Ibbotson Associates and NCREIF data

Event and Return History



Source: Grissom, GSU

General Real Estate Trends: Multiple Indices



Source: Grissom GSU Real Etate Center

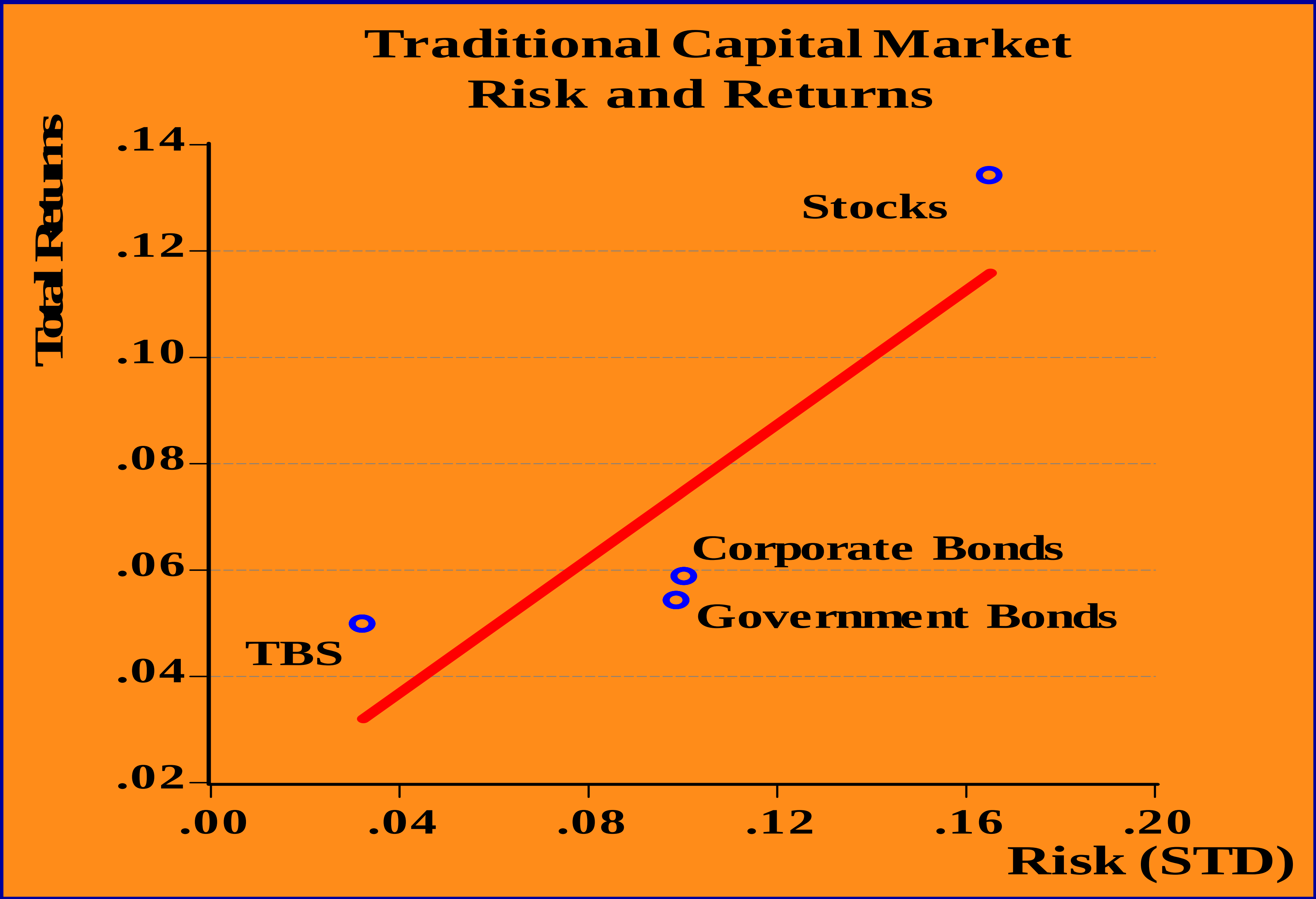
Changes in Real Estate As Function of Capital Evolution

The changes:

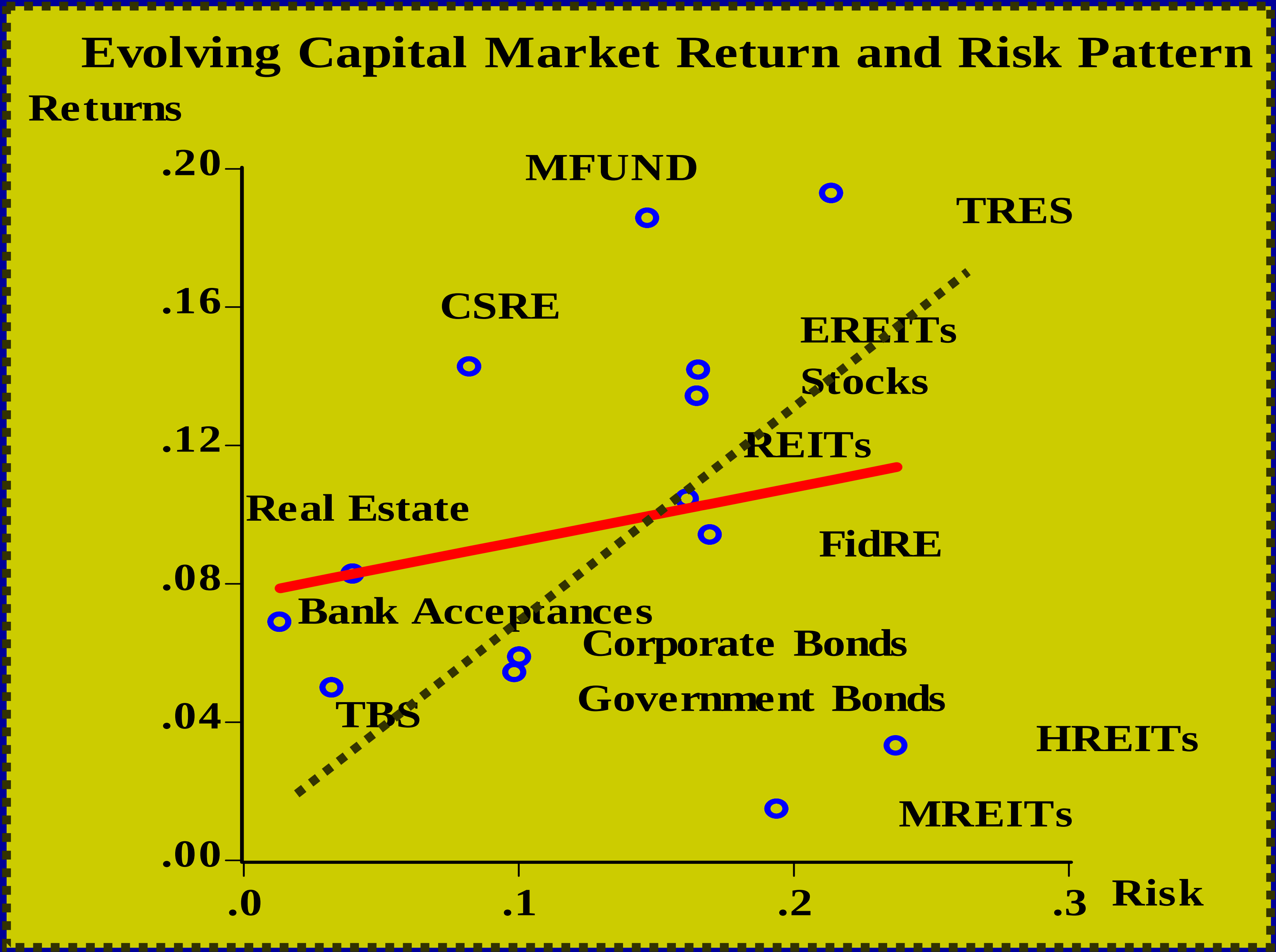
- More players: Increase flow of K to RE
- Varying source of K
- Increase instruments: Blended
- Direct Real Estate: debt and equity
- Indirect Real Estate: debt and equity (securities or other derivatives)

K = capital, RE = Real Estate

Traditional CAPM: Stocks, Bonds and Bills



Evolving Capital Market: Risk-Return T/O



Four Quadrant Strategy

	Private	Public
Equity	Direct Commingled Funds Participating Interests Private Syndications Limited Partnerships Co-investment Development	Eqty in Operating Cos. Equity REITs Real Estate Securities Public Syndications RE Mutual Funds Derivatives Development
Debt	Development Mortgages Mortgage Pools Synthetic Leases Commingled Funds Participating Mtg Co-investment	Development Mtg REITs Hybrid REITs Senior/Junior Positions CMOs Synthetic Leases CMBSs

Enhanced Core

Core

Fully Leased in the (concentration investment size between $10-25 million)

- Office
- Retail
- Industrial
- Apartment

Opportunistic -- Pools of partially defaulted loans, large broken deals, etc.

New Development

Agriculture

Timber

Hotels, Healthcare, Mobile Home Parks

Modest Value Added - Traditional core properties with lease or rehab "challenges"

Equity in Private Real Estate Companies

Below - investment- grade CMBS

Equity in public real estate companies

The End!

Appendix

Extension of Real Estate, Direct and Indirect to International Asset Classes

International Real Estate Securities

The European Public Real Estate Association (EPRA):

- offers a global data base of securitized national market portfolios
- Data base allows the development of market models for both property and equity
- A characteristic line can also be developed per national portfolios

International Real Estate Securities

The EPRA data is a foundation for a market model per national asset/portfolio measures:

- Market Model
- $E(R_i) = \alpha_i + \beta_{iM}(\_R_M) \pm \varepsilon_i$

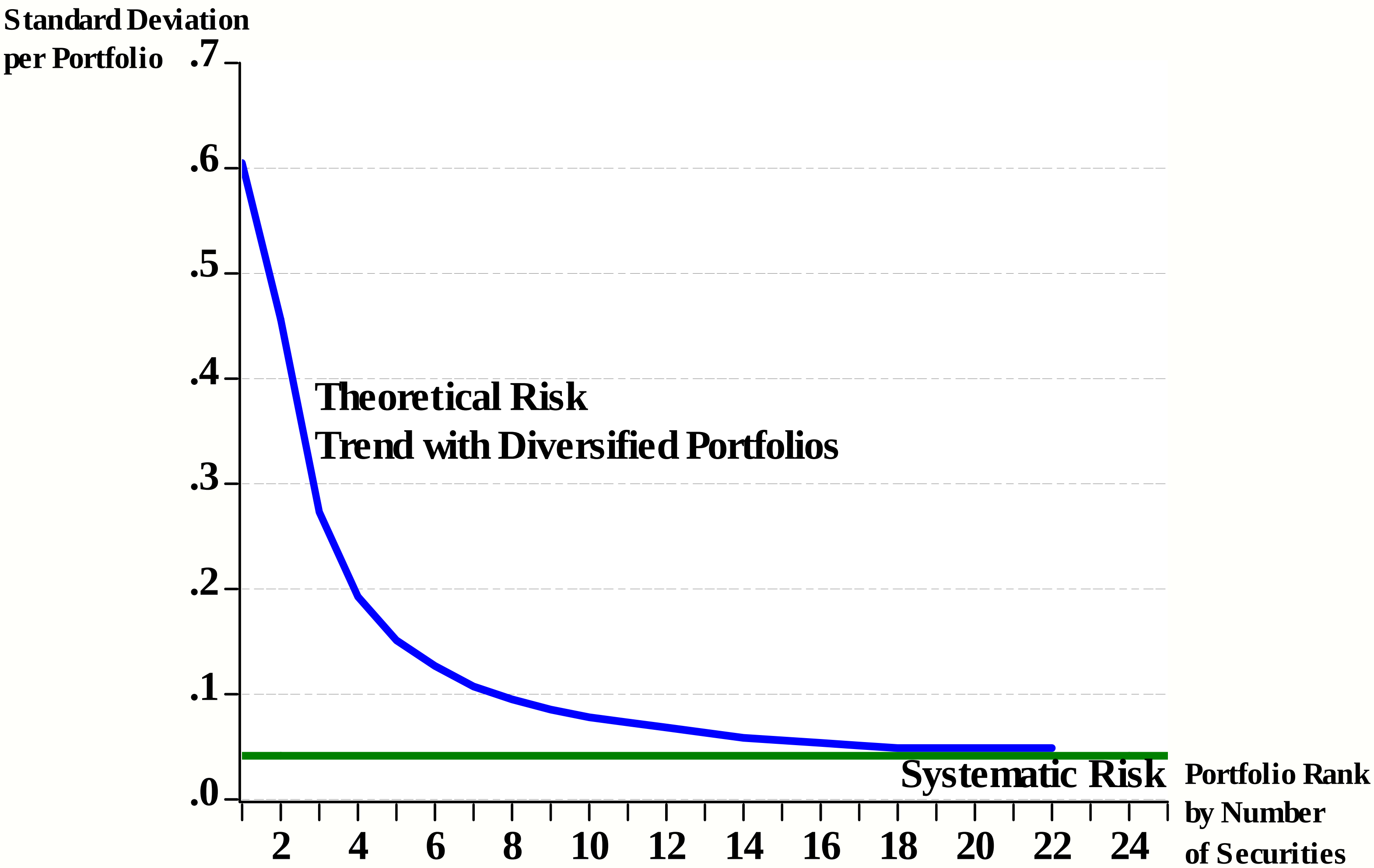
- The beta parameter β_{iM} reflects the sensitivity of the asset to market volatility
- α_i reflects the return component not associated with the market

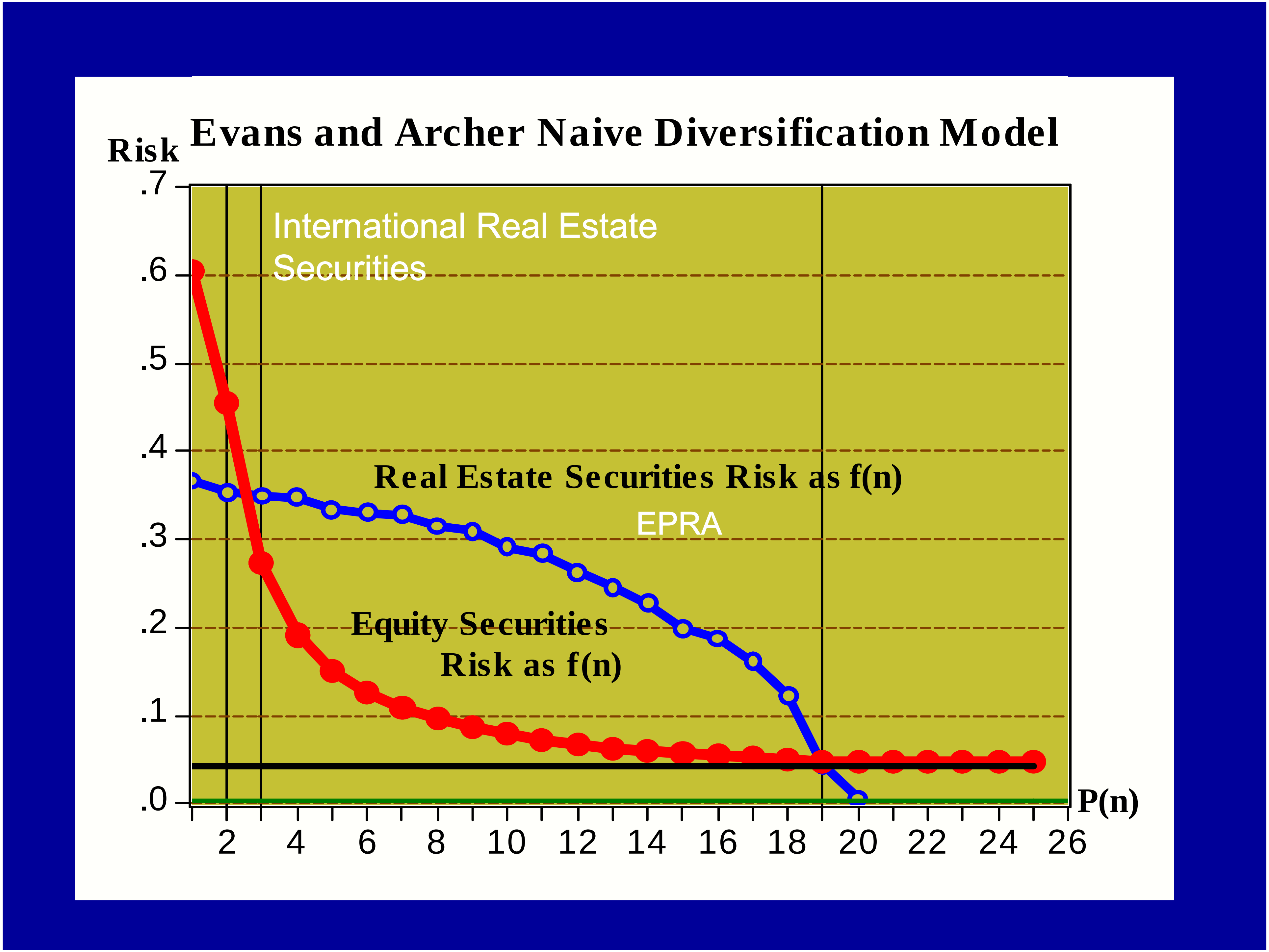
International Real Estate Securities

Market Model enables a characteristic line for each asset/portfolio:

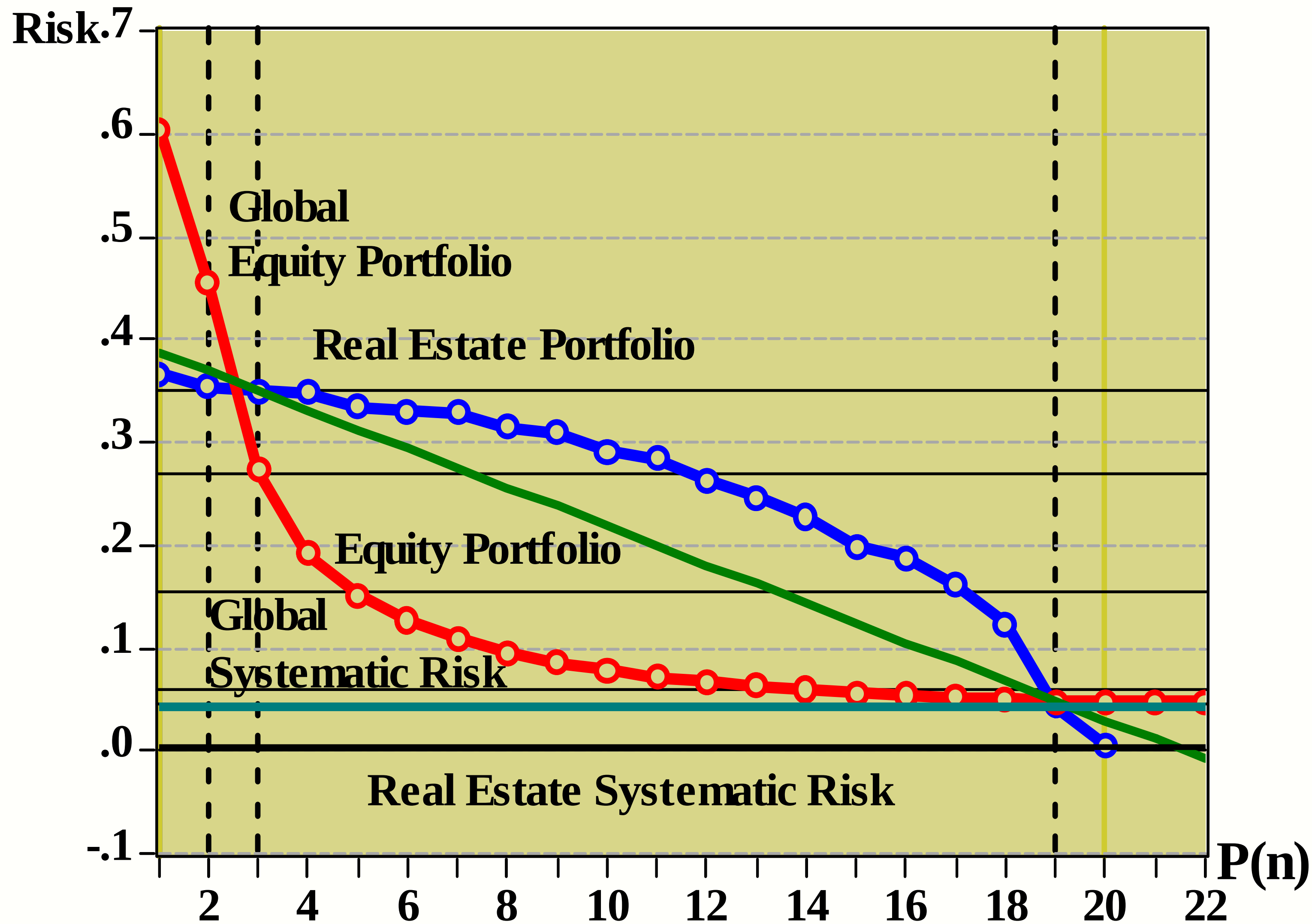
$$E(R_i) = \underbrace{\beta_{iM}(\_R_M)}_{\text{Systematic}} \quad (+) \quad \underbrace{\alpha_i + \varepsilon_i}_{\text{Unsystematic}}$$

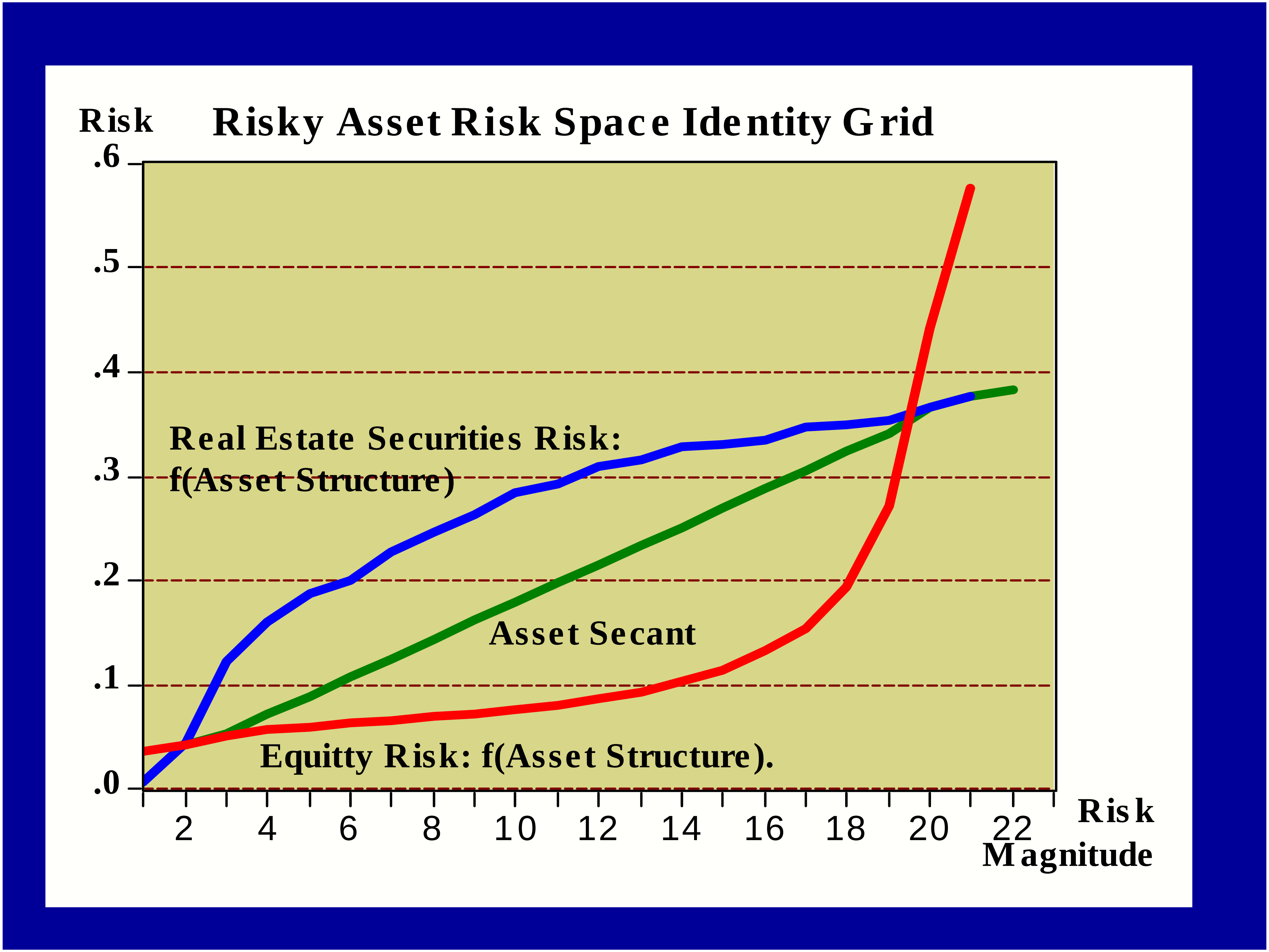
Diverification Impacts




Evans and Archer Naive Diversification Model
Risk
.7
.6
.5
.4
.3
.2
.1
.0
International Real Estate
Securities
Real Estate Securities Risk as f(n)
EPRA
Equity Securities
Risk as f(n)
P(n)
2
4
6
8
10
12
14
16
18
20
22
24
26

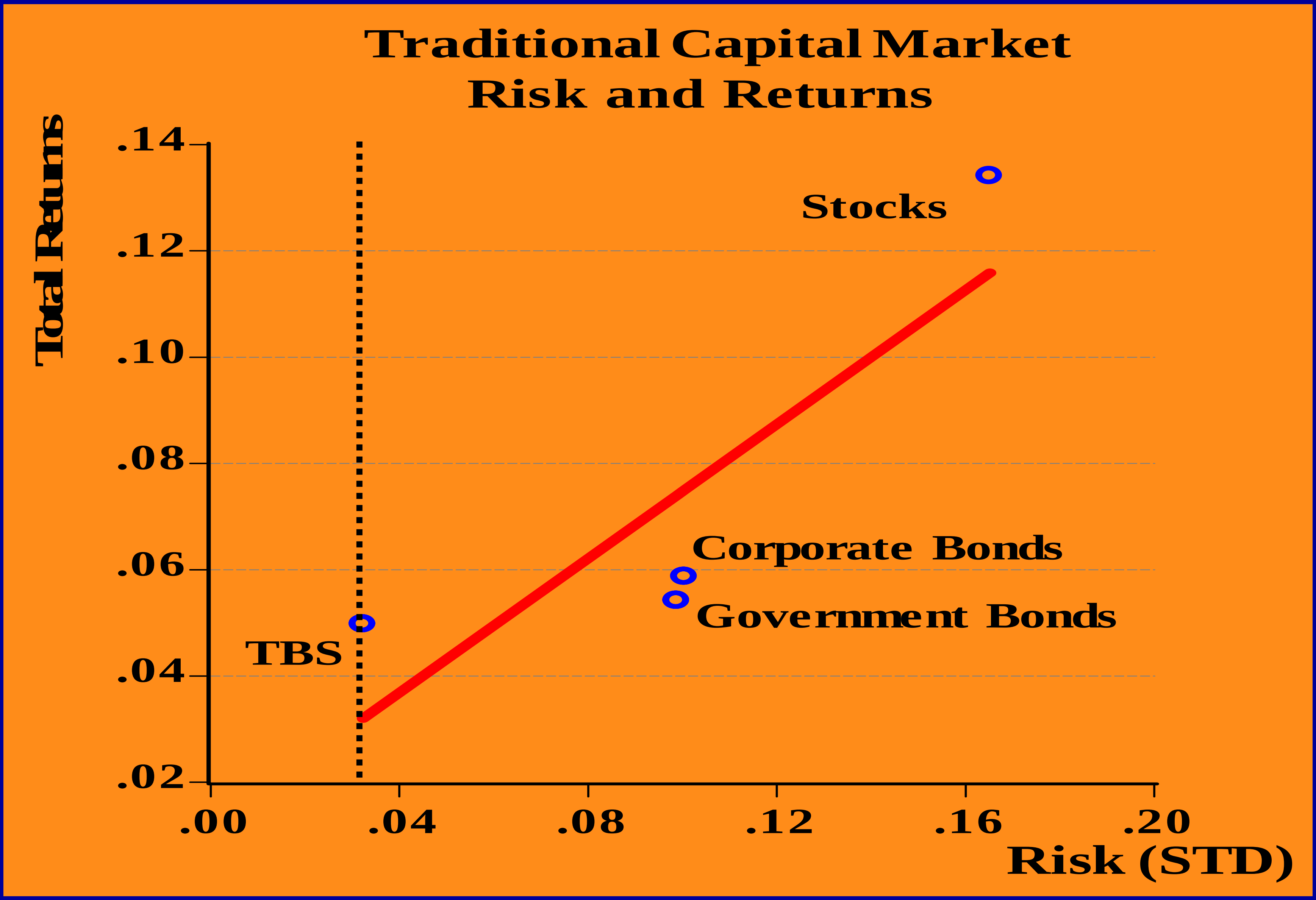
Diversification: Asset Structure in Evan & Archer Model



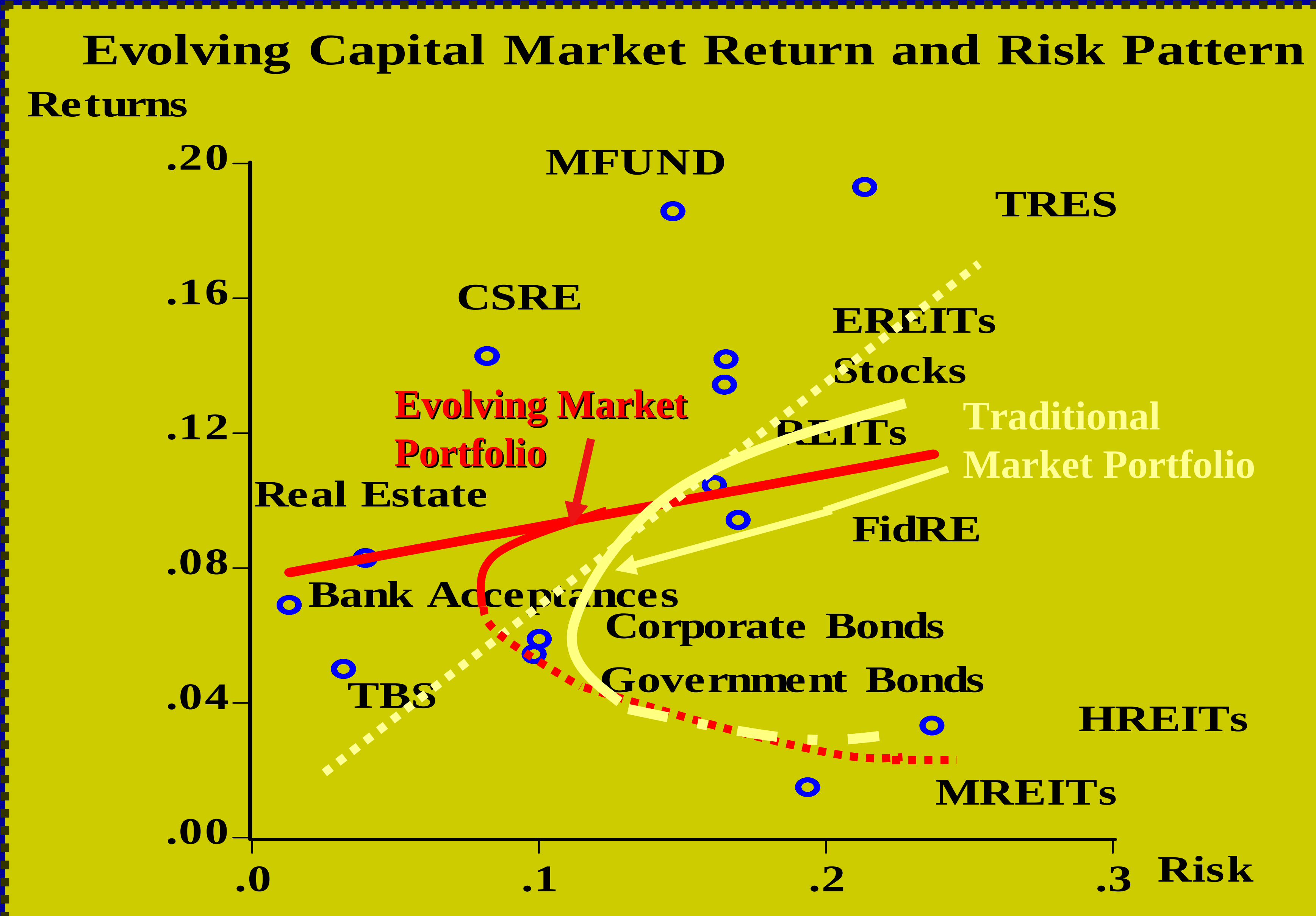

Risky Asset Risk Space Identity Grid
Risk
.6
.5
.4
.3
.2
.1
.0
Real Estate Securities Risk:
f(Asset Structure)
Asset Secant
Equitty Risk: f(Asset Structure).
2
4
6
8
10
12
14
16
18
20
22
Risk
Magnitude

Traditional CAPM: Stocks, Bonds and Bills & R E

Traditional CAPM: Stocks, Bonds and Bills



Evolving Capital Market: Risk-Return T/O



Evolving Capital Market: Risk-Return T/O

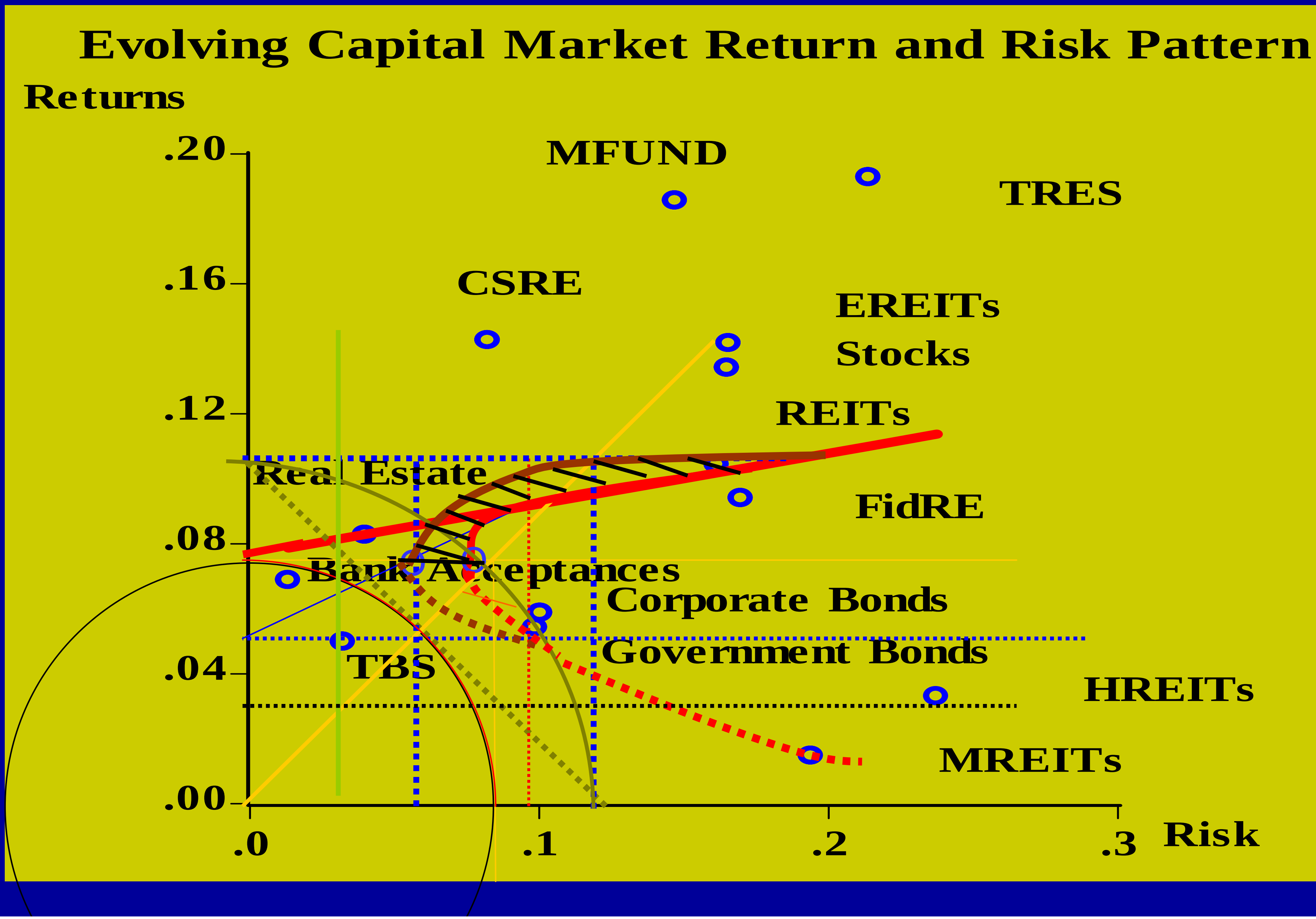
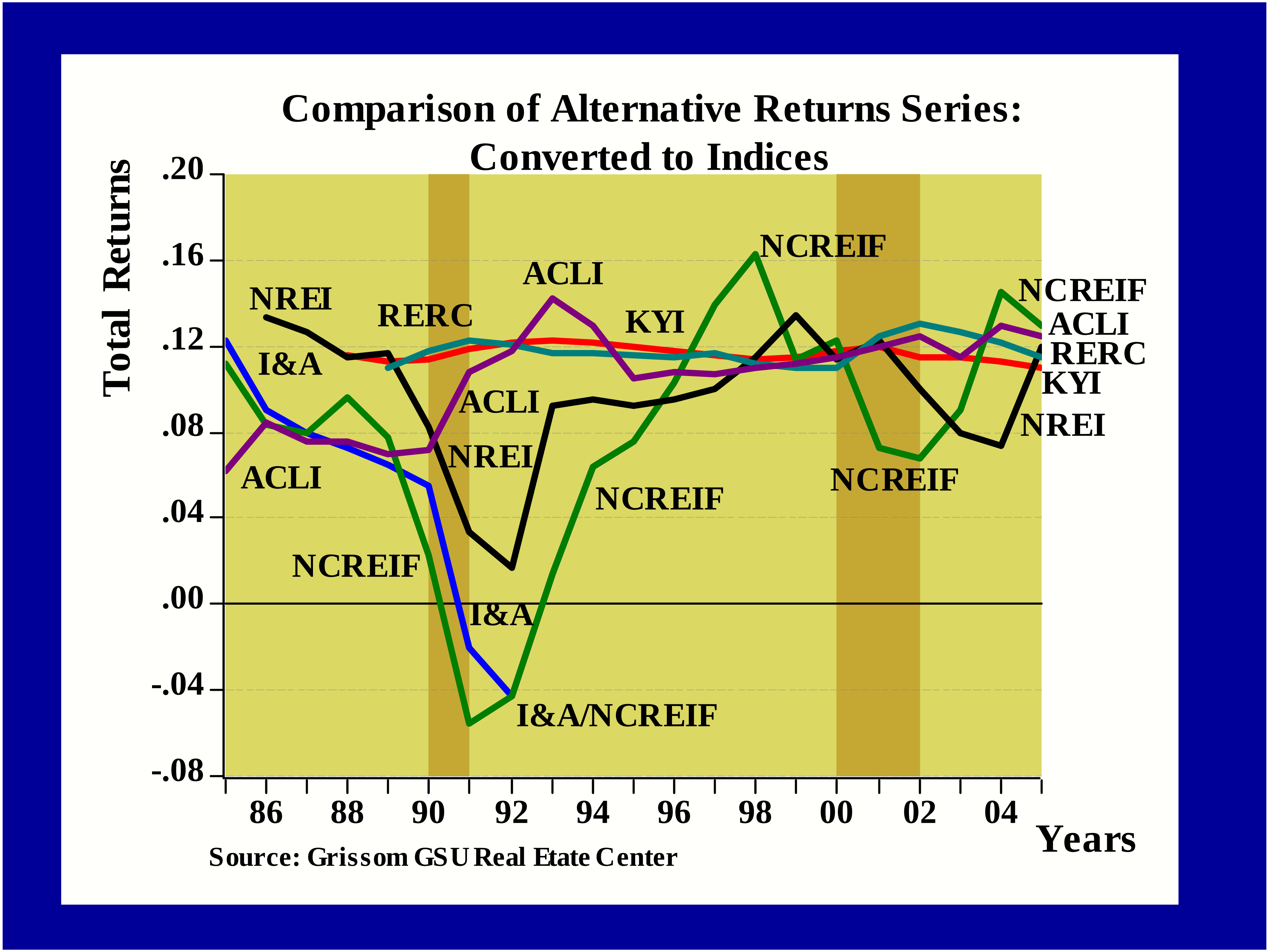


Table 4
Alternative Theories of Distribution

Traditional	Contemporary	Alternative
Labor	Labor: Entrepreneuership	CAPITAL: Real Technology Real Financial Entrepreneur Labor Land
Capital: Real Financial	Capital: Real Financial Land	
Land		
Entrepreneurship		



Comparison of Alternative Returns Series:
Converted to Indices
Total Returns
.20
.16
.12
.08
.04
.00
-.04
-.08
86
88
90
92
94
96
98
00
02
04
Years
NREI
RERC
I&A
ACLI
ACLI
KYI
NCREIF
ACLI
NREI
ACLI
NCREIF
NCREIF
I&A
I&A/NCREIF
NCREIF
NCREIF
ACLI
RERC
KYI
NREI
Source: Grissom GSU Real Etate Center