MORTGAGE BACKED SECURITIES

October 1999

FIGURE 2.1
Size of the Capital Markets
(as of December 1987)

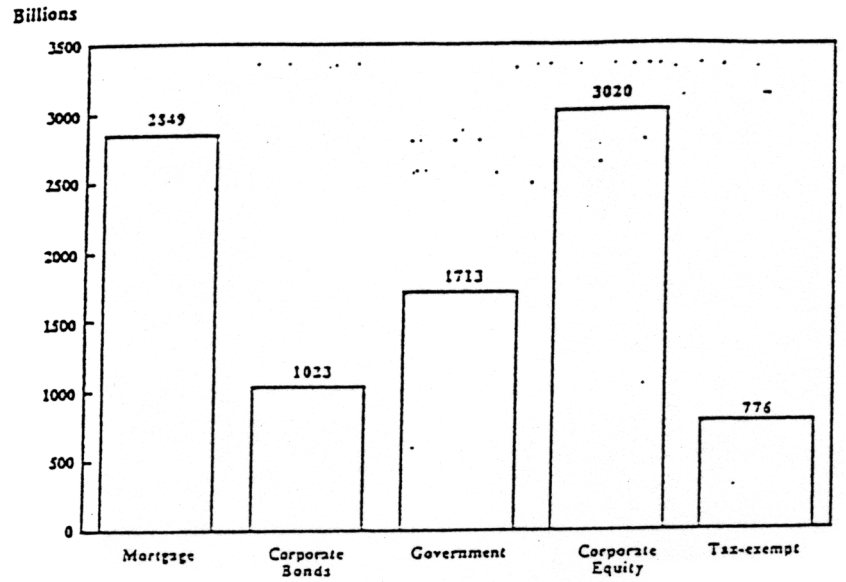
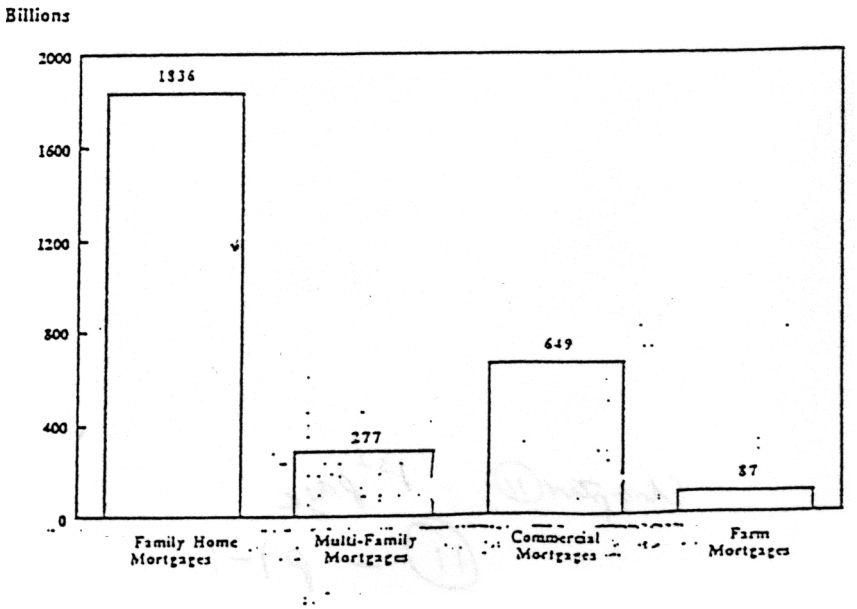
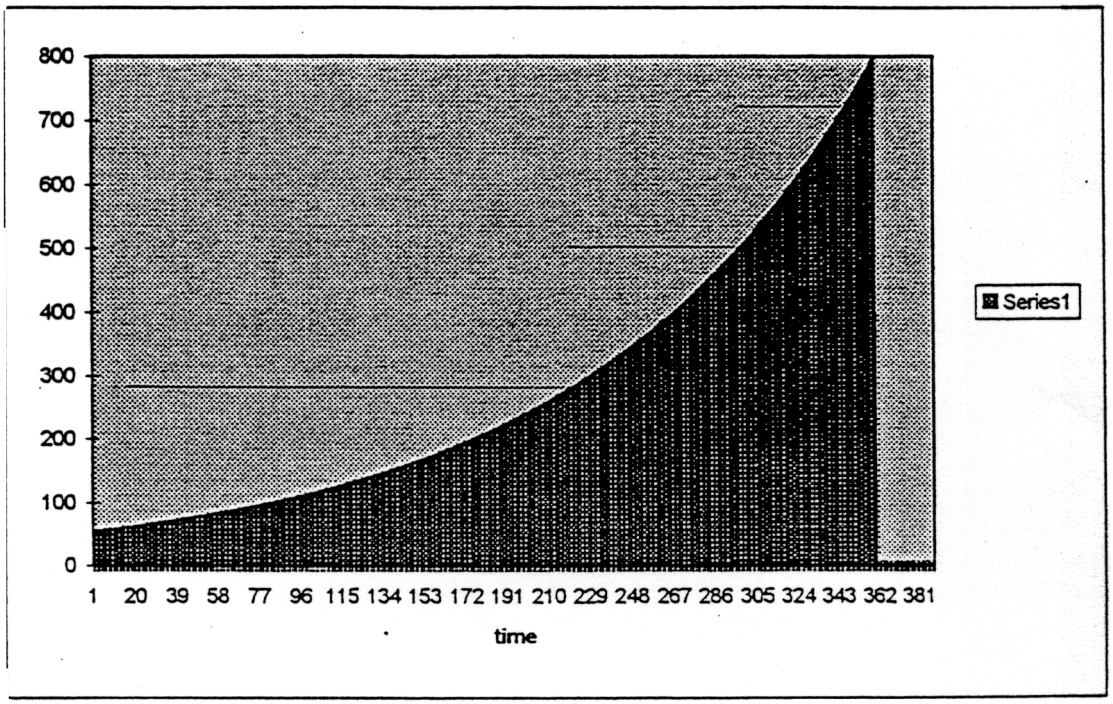


FIGURE 2.2
Composition of the Mortgage Market
(as of December 1987)



Comparison of Primary GNMA, FNMA, and FHLMC Pass-Through Programs

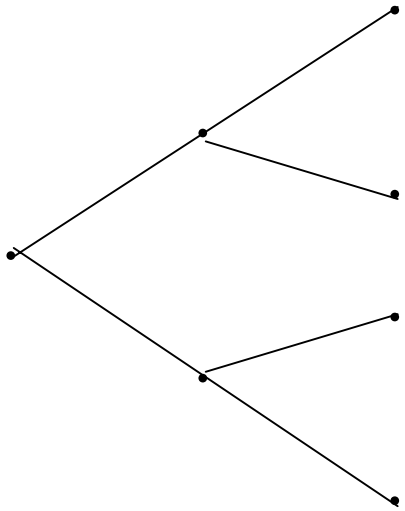
Feature	*GNMA-I*	*GNMA-II*	*FHLMC PC*	*FNMA MBS*
Collateral	Primarily single-family residential mortgages. Mortgages have FHA, VA, or FmHA default guarantees. Newly issued mortgages (less than two years old)	Same as GNMA-I	Mostly conventional loans (single-family fixed-rate mortgages without government guarantees). New or seasoned mortgages. Some seasoned FHA/VA pools	Similar to FHLMC
Maximum mortgage amount	$153,200	$153,200	$168,700 (50% more for Alaska, Hawaii, and Guam)	$168,700 (50% more for Alaska, Hawaii, and Guam)
Original term	15–30 years	15–30 years	10–30 years (wide range of underlying maturities)	10–30 years (wide range of underlying maturities)
Guarantee	Full faith and credit of U.S. government for timely payment of P&I guaranteed by GNMA	Same as GNMA-I	Timely payment of interest and eventual repayment of principal guaranteed by FHLMC	Timely payment of interest and principal guaranteed by FNMA
Minimum pool size	$1 million ($500,000 for manufactured housing)	$250,000 multiple-issuer pools $1 million level custom pools $350,000 manufactured housing custom pools	$1 million for Guarantor $50 million for Cash, $500,000 for ARMs, $250,000 for Baby pools	$1 million ($250,000 for FNMA Majors)
Maximum servicing spread (basis points)	50 bp (except manufactured housing and project pools)	50–150 bp	Cash 200 bp Guarantor 250 bp	250 bp
Payment delay				
Actual	14 days	19 days	44 days	24 days
Stated	45 days	50 days	75 days	55 days



time	pay	principal begining	end
1	54.62262	100000	99945.38
60	84.88496	95965.02	95880.14
120	132.9028	89562.65	89429.74
180	208.0834	79538.57	79330.49
240	325.7922	63844.06	63518.27
300	510.0866	39271.47	38761.38
360	798.6329	798.6273	-0.00559

PRICING OF GINNY MAES

STEP 1 Estimate of interest rate paths



(Paths must be arbitrage-free and result in positive interest rates.)

STEP 2 **Estimate prepayment at each node**

a. **Generally use historical data.**

b. **Prepayment not rational function of interest rate.**

1. **Bond Rate**

2. **Relationship between Bond Rate and "New" Mortgage Rate**

3. **Remaining Maturity**

4. **Prior Path**

5. **Season**

6. **Home Turnovers**

c. **Note for mortgages not path independent.**

STEP 3 **Estimate cash flows.**

Cash flows include prepayment and principal and interest.

STEP 4 **Discount at Treasury spot curve**

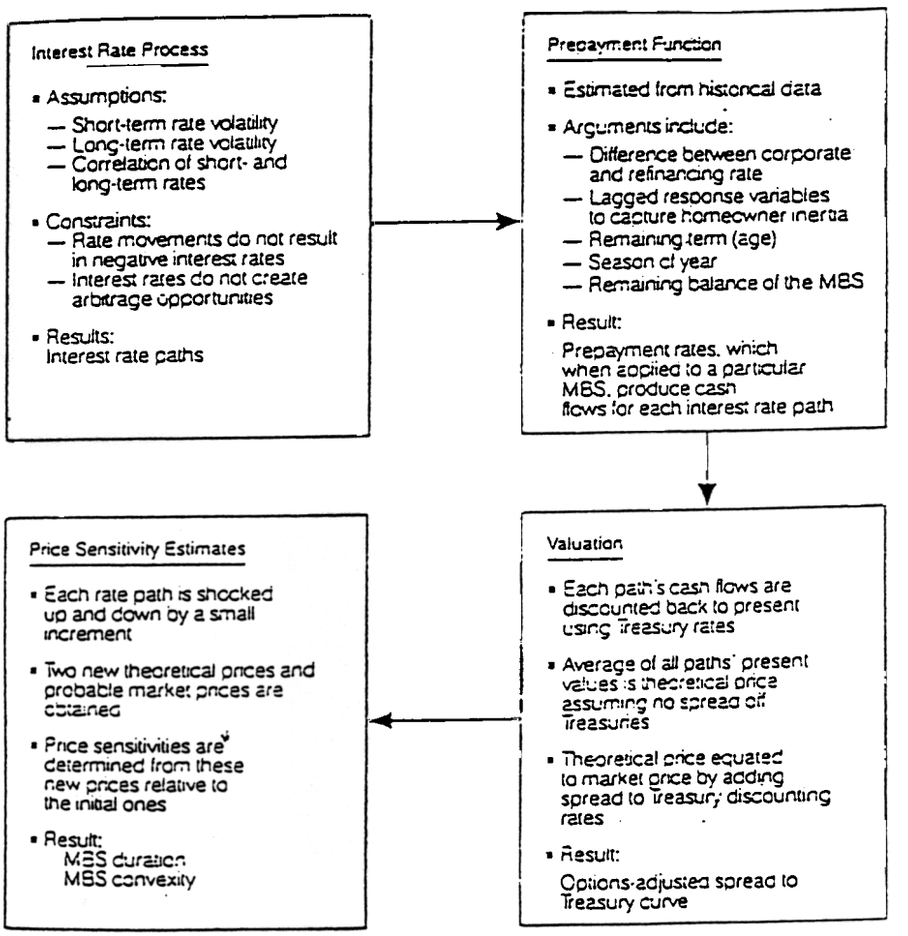
If no spread, this would give average market value. Generally believe spread. Thus discount so that model price fits actual price on average.

$(1+r+\Delta)$

Δ is OAS

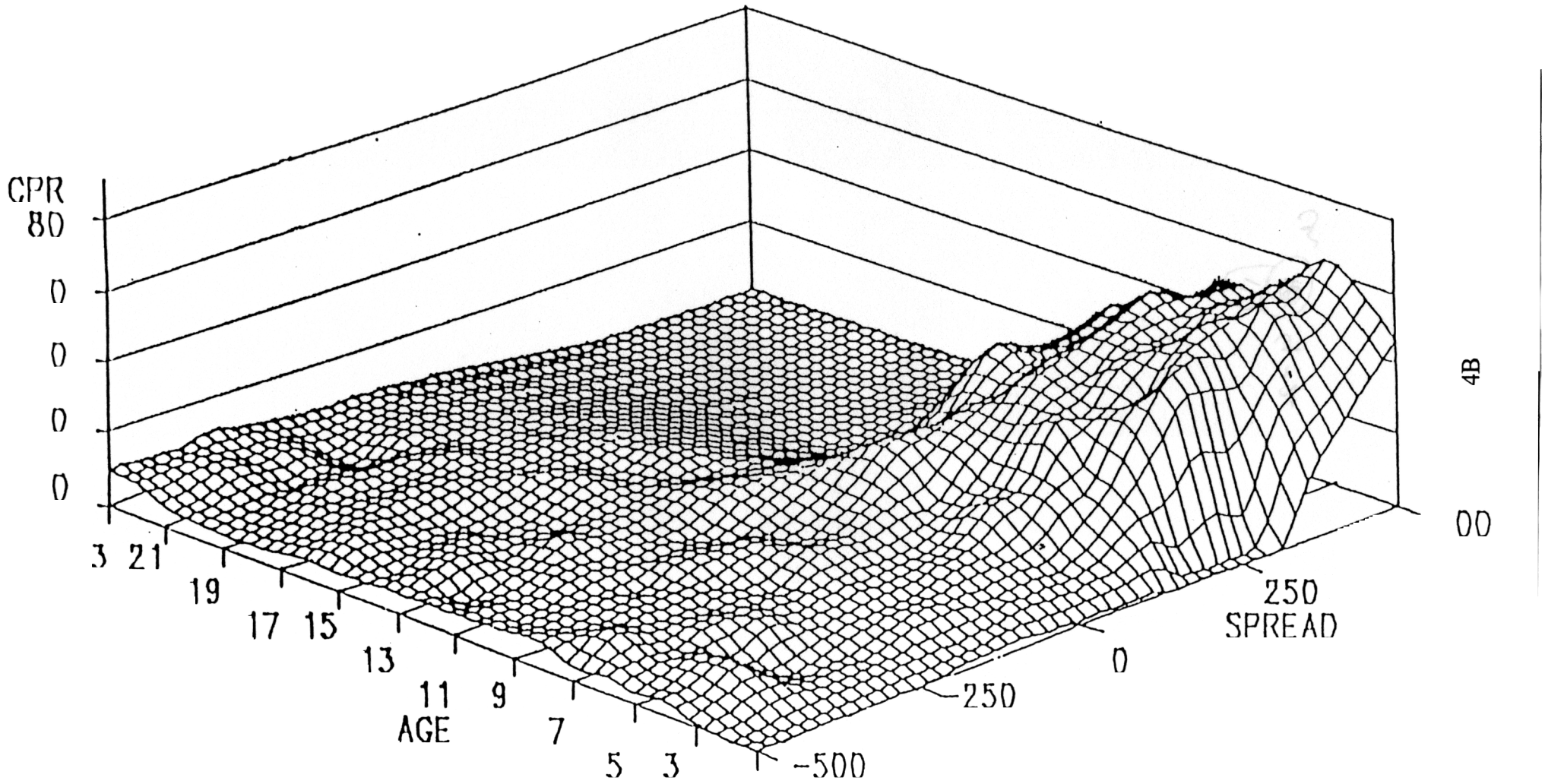
Do so fits on average in order to spot "mispriced bonds."

Exhibit 4
Steps Taken in an Options-based Model



PREPAYMENT RATE VERSUS AGE AND SPREAD

FOR FNMA 30 Y' AR CONV' NT DNA DUI ON A



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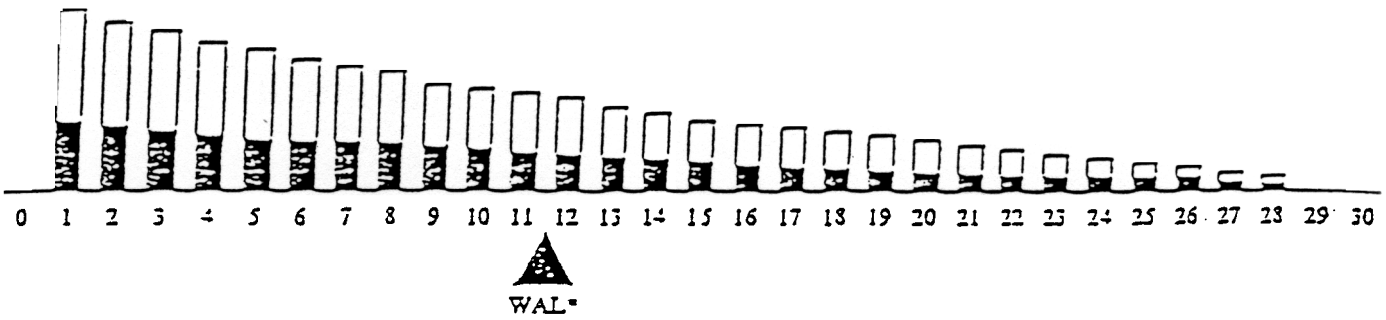
CPR N P RC NTAGE AG N Y AR.

EXHIBIT 5

CASH FLOWS OF A COLLATERALIZED MORTGAGE OBLIGATION

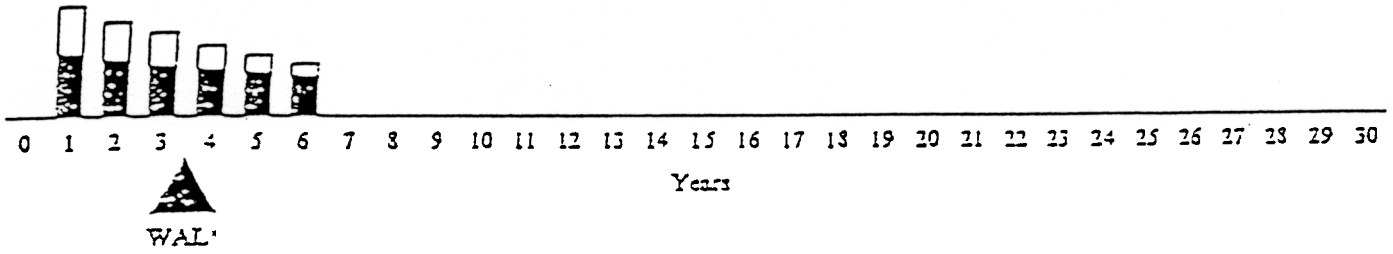
PANEL 5A

The Mortgage Pool With 6 Percent CPR



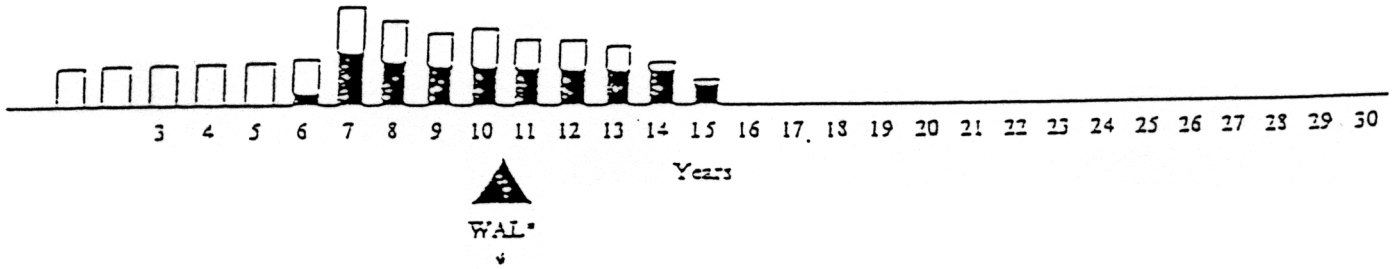
PANEL 5B

The Class A Tranche



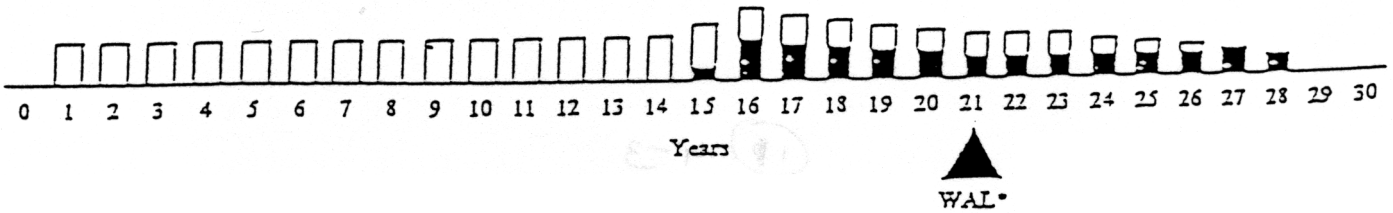
PANEL 5C

The Class B Tranche



PANEL 5D

The Class C Tranche



* WAL Weighted average life

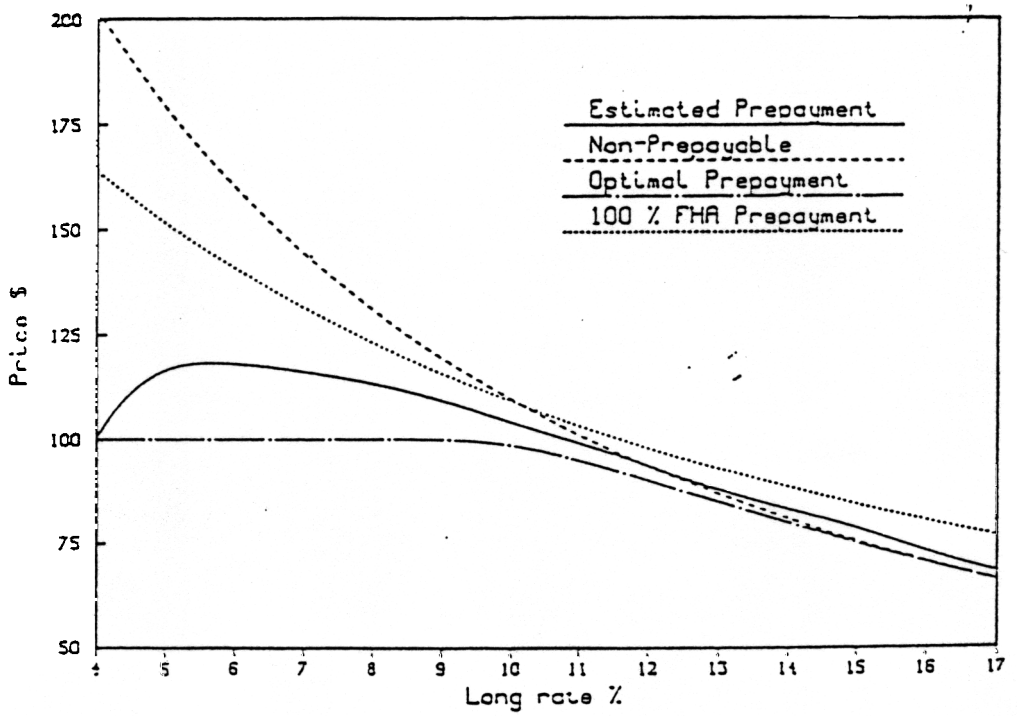


Figure 1. Prices per $100 principal of an eleven percent twenty-five-year default-free fully amortizing mortgage issued five years ago with ninety percent of its relative principal currently outstanding as a function of the long rate, l, for various prepayment assumptions.

Splitting mortgage payments into more valuable payment patterns

CMO

Simplest CMO splitting into multiple groups by payment

Example 1:

1. **$100 million Ginny Mae**

2. **Split into three tranches**

3. **A gets all principal payment until $40 million paid**

   B gets all principal payment after $40 million paid and before $70 million paid

   C gets remainder

4. **All tranches receive same interest rate**

Example 2:

Unequal interest payments.

1. **$100 million issue paying nine percent**

2. **B-1 receives 3% interest and principal of $50 million**

3. **B-2 receives 6% interest and principal of %50 million**

Exhibit 1
Structure of Stripped MBS Class B
From FNMA 9% Graduated Payment MBS

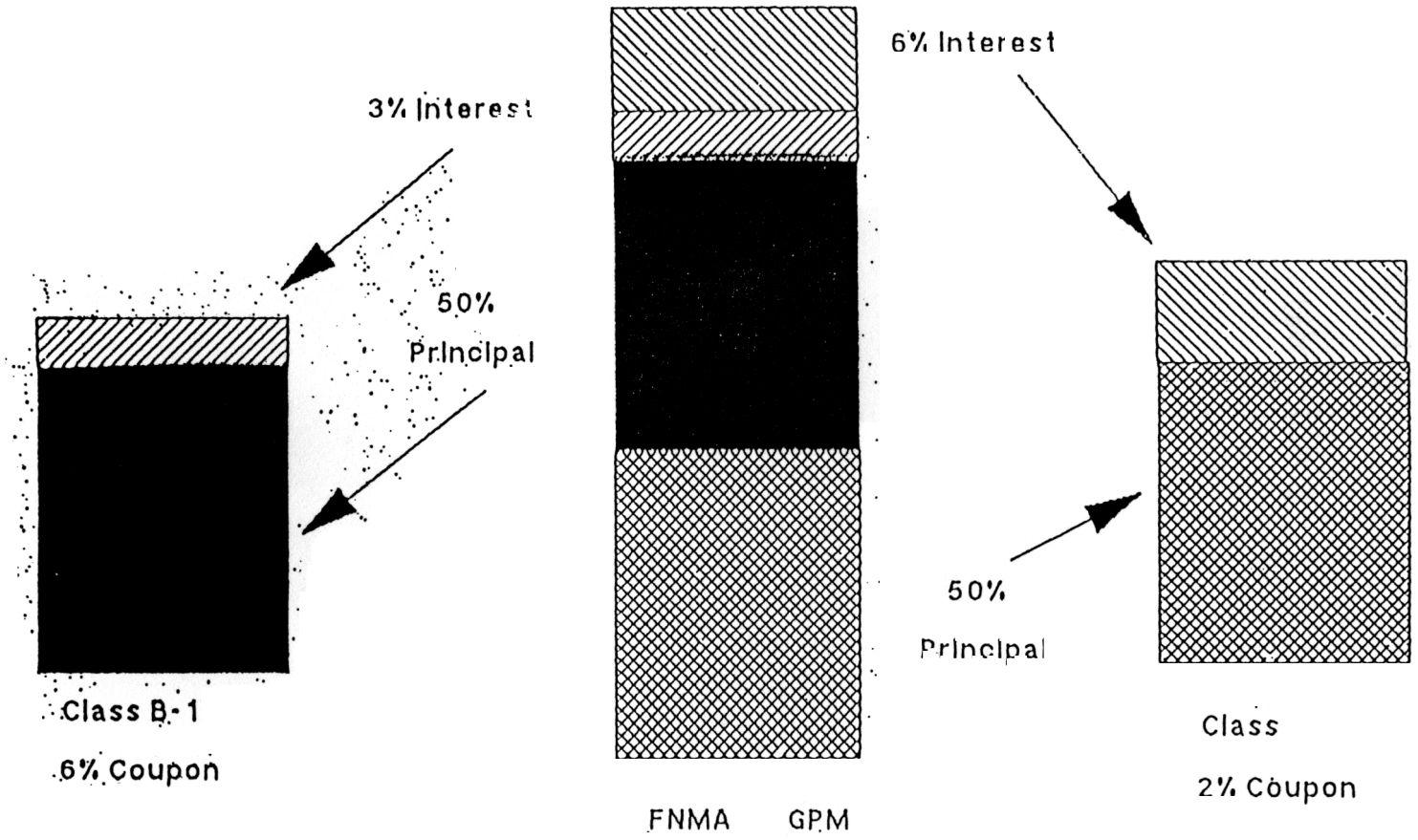
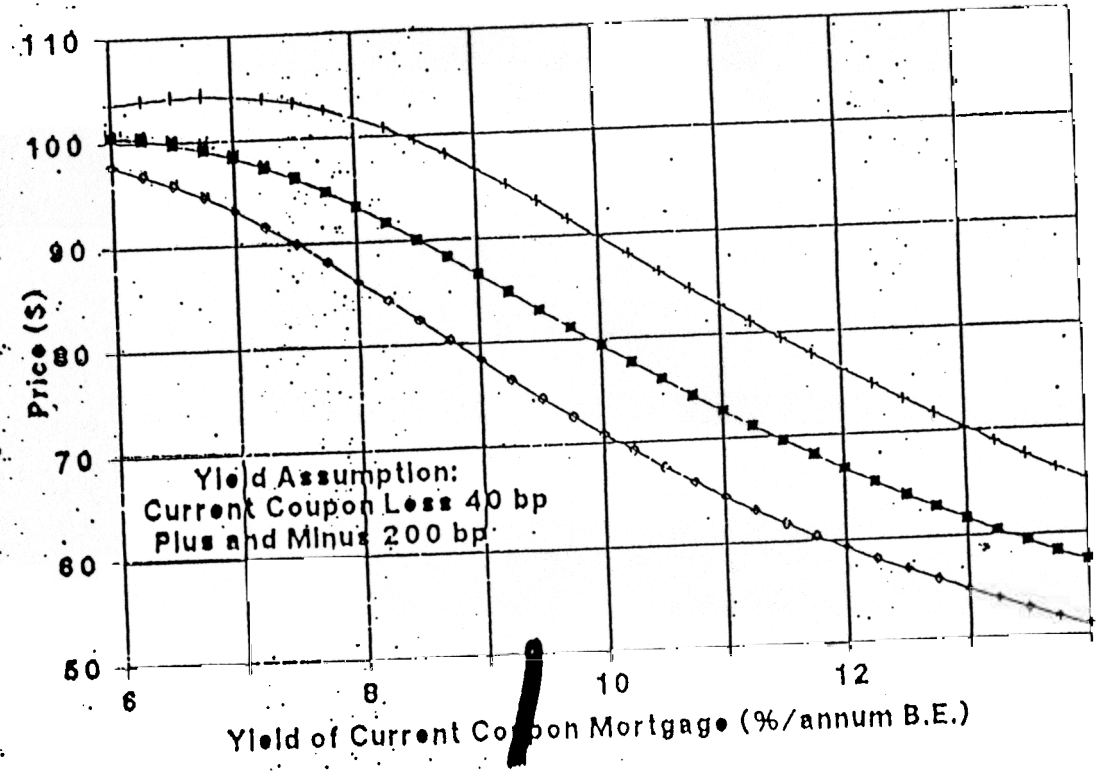


Exhibit 7

Stripped MBS, 6% Coupon

Class B-1 from FNMA 9% Graduated Payment MBS



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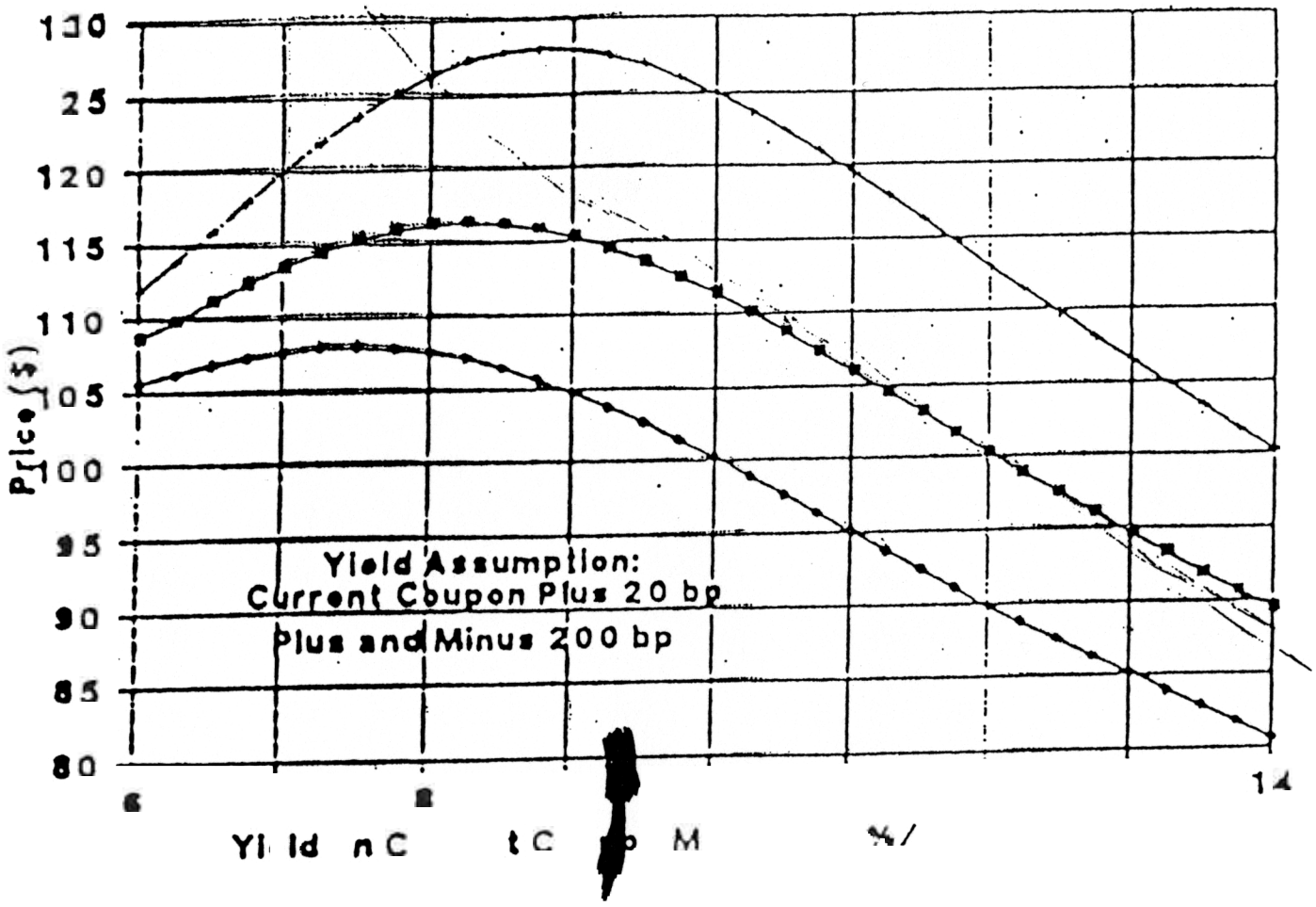
Exh b t 8

Str pped MBS 12% Coupon

C [illegible] rom FNMA % G adu ted P me M



9%

Exhibit 2
Structure of Stripped MBS Class A
From FNMA 11% MBS

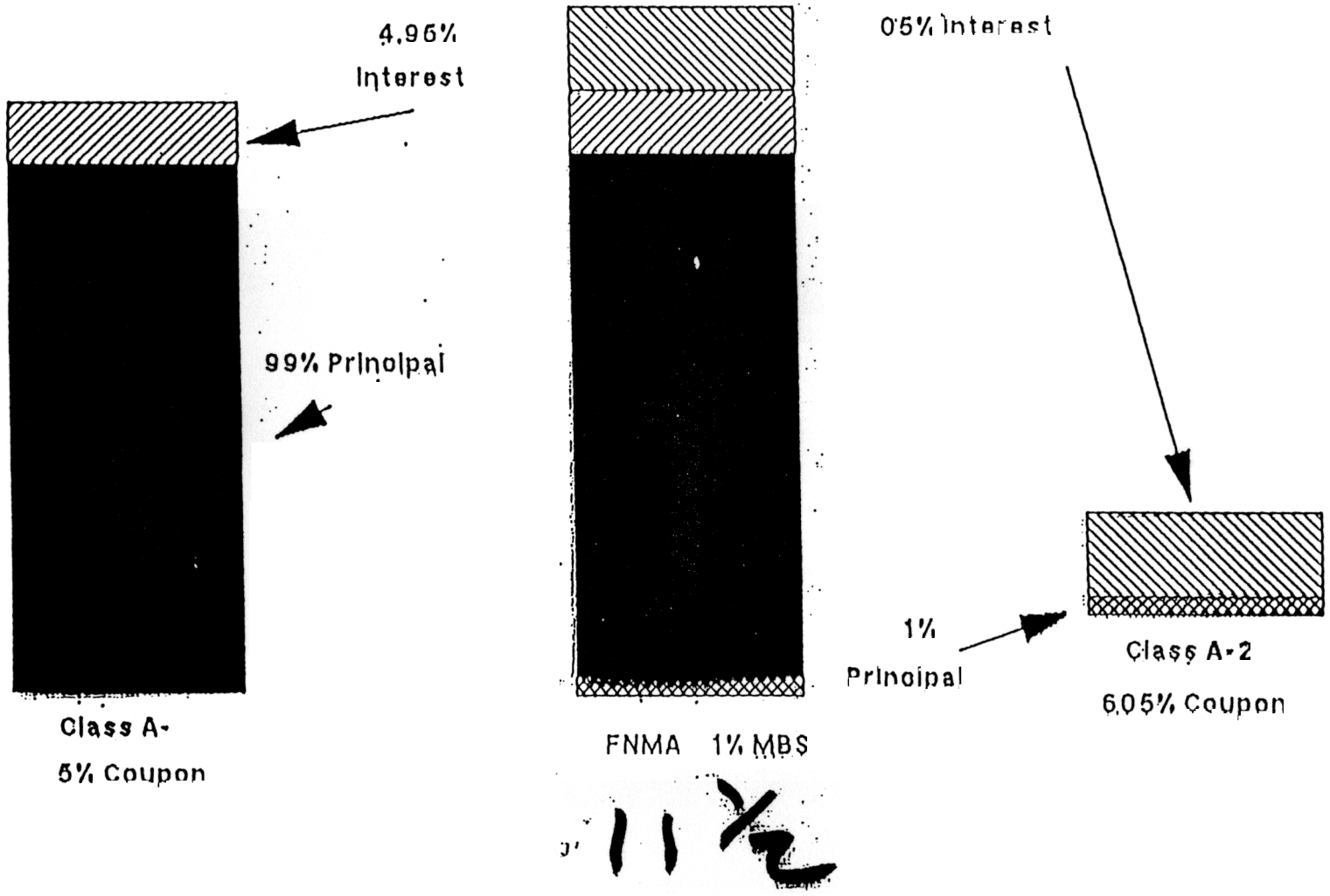


Exhibit 19

Stripped MBS, 6.5% Coupon

Class A-2 from FNMA 11% MBS

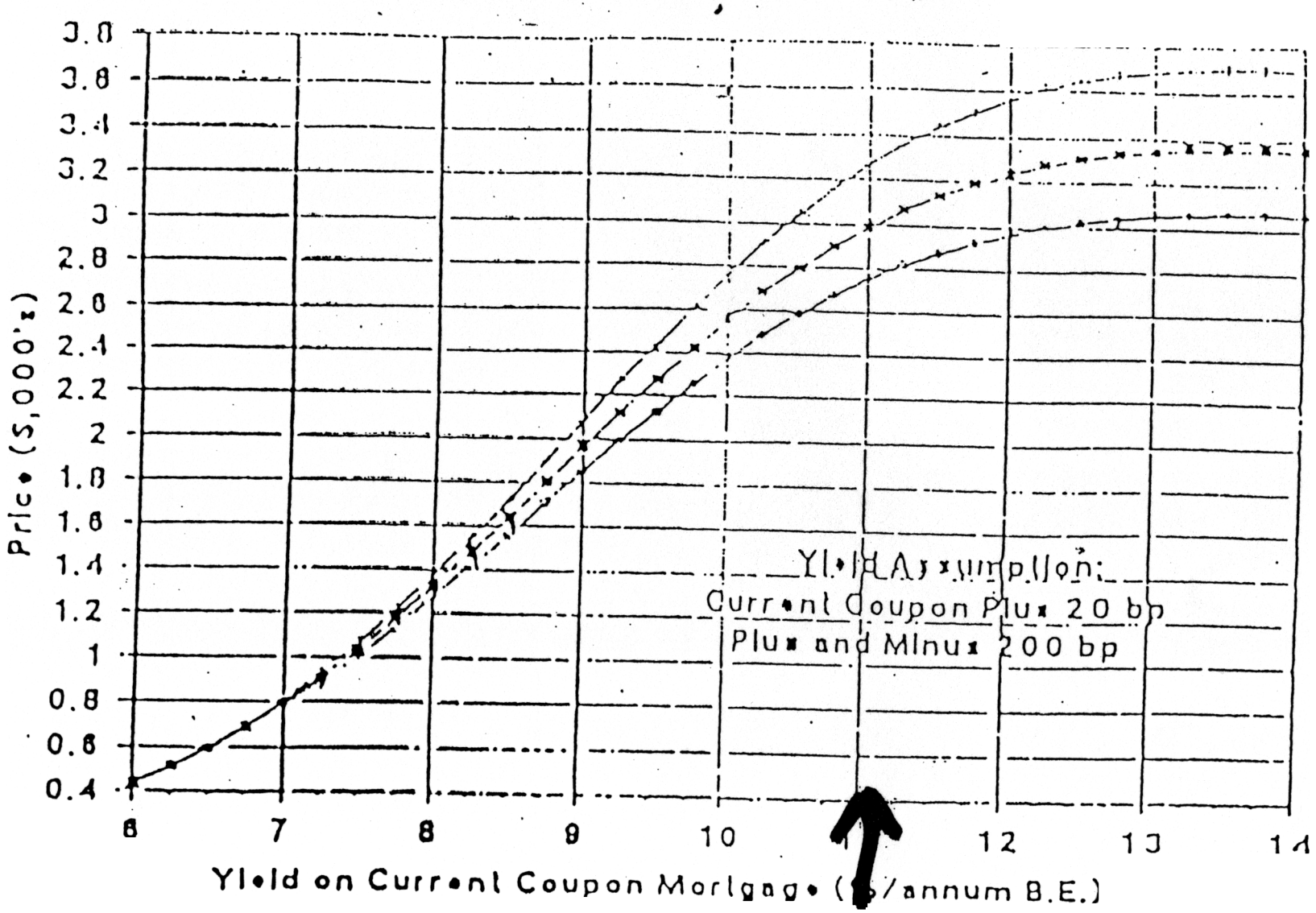
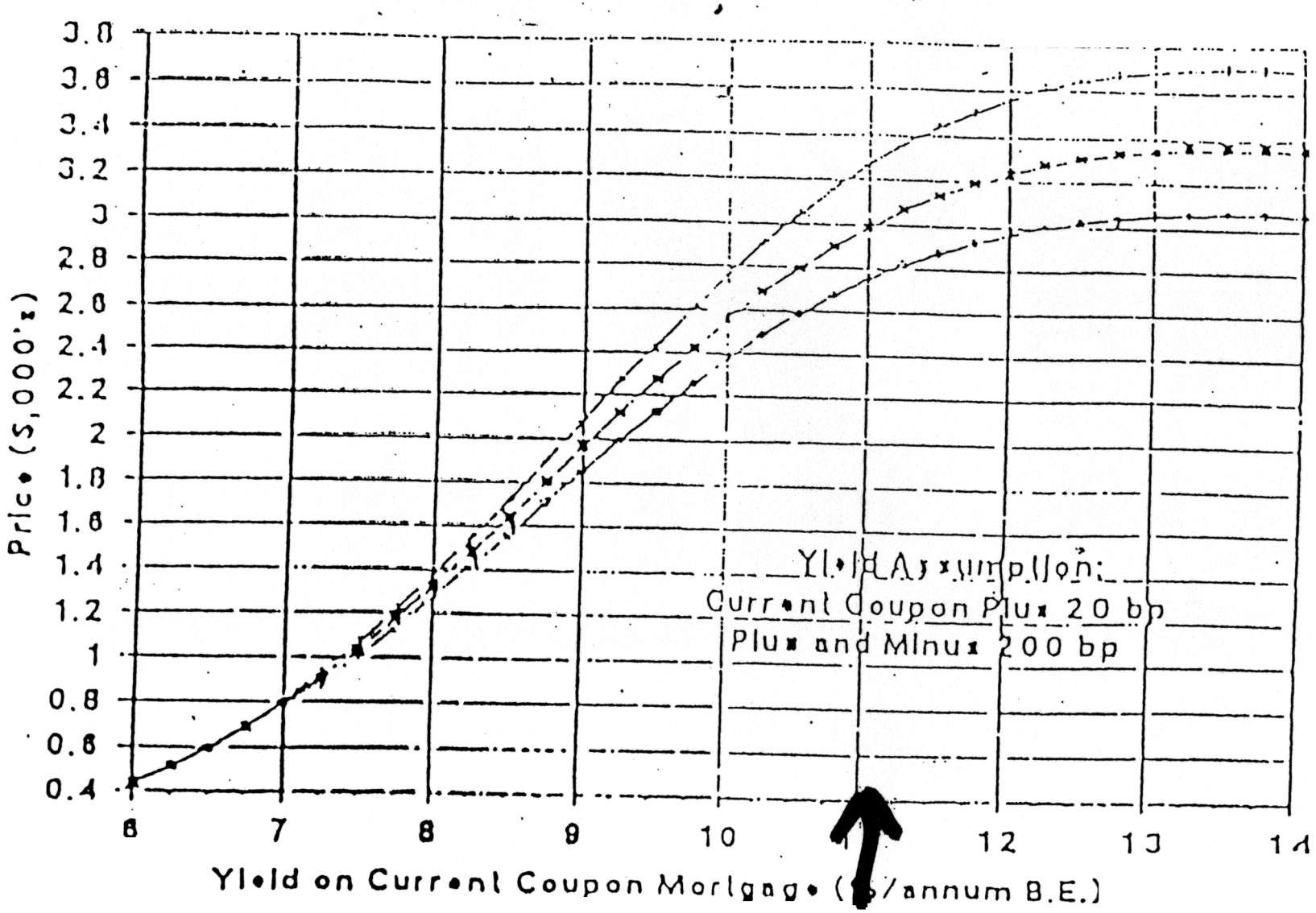


Exhibit 19

Stripped MBS, 6.5% Coupon

Class A-2 from FNMA 11% MBS



Mortgage

Assume for illustration annual payments

1,000,000	**principal**
4	**years**
.094626	**rate**
31,180.86	**payment**
.50	**probability**

Spot Rates

18.879

14.624

11.0999 **12.935**

8 **8.893**

5.544 **7.288**

3.448

1.924

Mortgage Value

			26,229.18
		50,687.58	
	75,476.03		**27,609.67**
102,413		**54,656.35**	
	83,374.41		**29,062.81**
		58,687.58	
			30,592.43
100,000	**72,281.73**	**54,508.35**	**28,485.40**