

Problem Set 4: PACs, TACs, Floaters, and Inverse Floaters

1. Planned Amortization Class (PAC). A PAC tranche and a companion/support bond are created out of a mortgage pass-through (MPT) that has a collateral of \$400 million with a coupon rate of 7.5%, an 8.125% WAC, and a WAM of 357 months. Of the \$400 million in collateral, the PAC has a par value of \$158.8 million and the par value of the support class is \$241.2 million. Both the PAC and Support bond have a coupon rate of 7.5%. The PAC bands used for the PAC sinking fund schedule of principal are 90%PSA and 300%PSA. The PAC has a one year lockout (there is no principal payments to the PAC bond class in the first year). If the actual prepayment speed is 150% PSA,

- What are the monthly cashflows to the PAC and support bond?
- What is the WAL for the PAC and for the support bond?
- What is the IRR for the PAC and the support bond if they are priced at \$155M for the PAC and \$235M for the support bond?

2. Target Amortization Class (TAC). A TAC tranche and a companion/support bond are created out of a mortgage pass-through (MPT) that has a collateral of \$400 million with a coupon rate of 7.5%, an 8.125% WAC, and a WAM of 357 months. Of the \$400 million in collateral, the TAC has a par value of \$350 million and the par value of the support class is \$50 million. Both the PAC and Support bond have a coupon rate of 7.5%. The TAC band used for the TAC sinking fund schedule of principal is 165%PSA. If the actual prepayment speed is 100% PSA,

- What are the monthly cashflows to the TAC and support bond?
- What is the WAL for the TAC and for the support bond?
- What is the IRR for the PAC and the support bond if they are priced at \$325M for the TAC and \$45M for the support bond?

3. Floater and Inverse Floater. A CMO consisting of an A Tranche and a B tranche are created out of a mortgage pass-through (MPT) that has a collateral of \$400 million with a coupon rate of 10.5%, an 11% WAC, and a WAM of 357 months. Of the \$400 million in collateral, the Class A bond has a par value of \$303.5 million and the par value of Tranche B is \$96.5 million. Both bond classes have a coupon rate of 10.5%. A floater and inverse floater is created out of Tranche B such that : i) the par value of the floater plus the par value of the inverse floater is equal to the par value of Tranche B, ii) the coupon leverage is 3, iii) the floor on the coupon rate associated with the inverse floater is set at 0% (this sets the maximum coupon rate for the floater), and iv) the weighted coupon of the floater and inverse floater equals the coupon rate on Tranche B. Assume that the path for mortgage rates, Tbill rates, and PSA are as follows:

Interest Rate Path

Year	Y1	Y2	Y3	Y4	Y5-Y7	Y8	Y9-Y14	Y15-End
MtgRates	0.105	0.130	0.150	0.170	0.130	0.115	0.095	0.080
Tbill	0.090	0.120	0.155	0.105	0.080	0.070	0.065	0.035
PSA	180	140	120	100	140	160	210	400

- What is the formula for the coupon rate on the inverse floater if the Tbill rate is the applicable rate and the coupon on the floater is $C_{FL} = \text{Tbill Rate} + 50$ basis points?
- What is the minimum coupon rate and the maximum coupon rate for the floater and inverse floater respectively?
- What are the monthly cashflows to Tranche A, the floater, and the inverse floater bond classes?
- What are the WALs for Tranche A, the floater, and the inverse floater bond classes?

