

The ABACUS 2007 AC-1 Deal Structure and Investment Incentives

Darrell Duffie

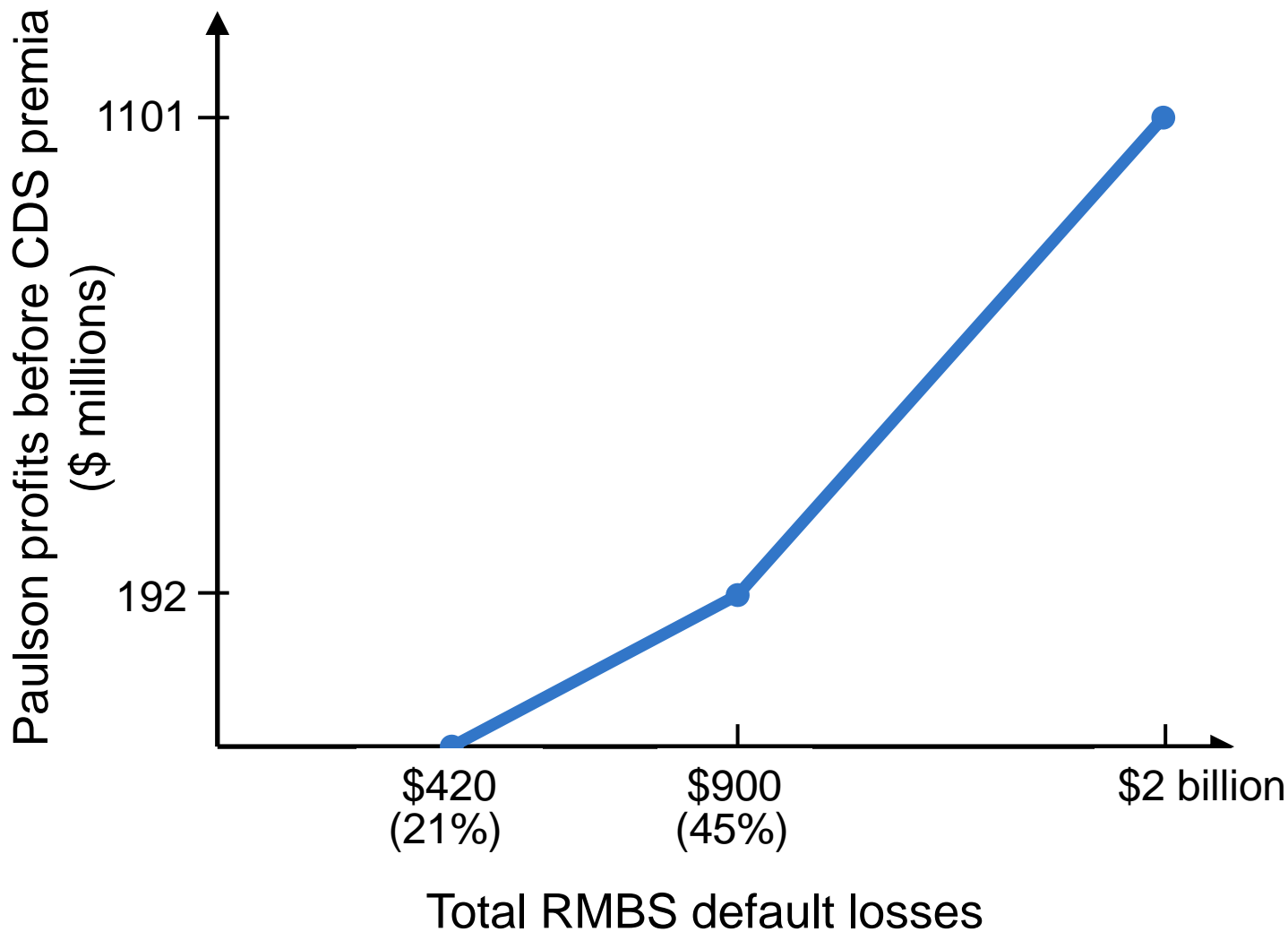
Graduate School of Business, Stanford University

April 27, 2010

Paulson's Short on Residential Mortgages

- ▶ Paulson asked Goldman to help Paulson arrange the effect of a short position on a portfolio of sub-prime and mid-prime residential mortgage-backed securities (RMBS).
- ▶ Paulson's position was through credit default swaps referencing a portfolio of 90 RMBS, each for a principal amount of \$22.22 million, for a total RMBS portfolio of \$2 billion.
- ▶ Goldman Sachs and the SEC have described the RMBS portfolio selection process.

How Paulson Profited from Mortgage Default Losses on ABACUS 2007 AC-1 Collateral Pool



Reference Portfolio

Security	Type	Notional Amount	CUSIP	Fitch	Moody's	S&P	Base WAL (yrs)	Dated Date	Legal Final	Servicer
ABFC 2006-OPT1 M8	Subprime	22,222,222	00075QAM4	BBB	Baa2	BBB	3.9	8/10/2006	9/25/2036	OOMC
ABFC 2006-OPT2 M8	Subprime	22,222,222	00075XAP2	BBB	Baa2	BBB	4.1	10/12/2006	10/25/2036	OOMC
ABSHE 2006-HE3 M7	Subprime	22,222,222	04541GXX3	BBB	Baa2	BBB	3.8	4/17/2006	3/25/2036	OOMC
ABSHE 2006-HE4 M7	Subprime	22,222,222	04544GAP4	BBB	Baa2	BBB	3.8	4/28/2006	5/25/2036	SPS
ACE 2006-FM2 M8	Midprime	22,222,222	00442CAN9		Baa2	BBB	4.5	10/30/2006	8/25/2036	WFB
ACE 2006-OP2 M9	Subprime	22,222,222	00441YAP7		Baa2	BBB-	4.3	10/30/2006	8/25/2036	WFB
ARSI 2006-W1 M8	Subprime	22,222,222	040104RQ6	BBB+	Baa2	BBB+	3.8	2/7/2006	3/25/2036	AQMC
CARR 2006-FRE1 M9	Subprime	22,222,222	144538AN5	BBB+	Baa2	A	3.8	6/28/2006	7/25/2036	FREM
CARR 2006-FRE2 M8	Subprime	22,222,222	14454AAN9		Baa2	BBB+	4.2	10/18/2006	10/25/2036	FREM
CARR 2006-NC1 M8	Midprime	22,222,222	144531FF2	BBB	Baa2	BBB+	3.6	2/8/2006	1/25/2036	NCMC
CARR 2006-NC2 M8	Subprime	22,222,222	14453FAM1	BBB	Baa2	BBB	3.8	6/21/2006	6/25/2036	CARR
CARR 2006-NC3 M9	Subprime	22,222,222	144528AN6	BBB-	Baa2	BBB-	4.0	8/10/2006	8/25/2036	NCMC
CARR 2006-OPT1 M8	Subprime	22,222,222	144531FV7	BBB+	Baa2	A-	3.6	3/14/2006	2/25/2036	OOMC
CMLTI 2006-AMC1 M8	Subprime	22,222,222	17309PAL0		Baa2	BBB	4.1	9/28/2006	9/25/2036	AQMC
CMLTI 2006-NC1 M8	Subprime	22,222,222	172983AN8		Baa2	BBB	3.8	6/29/2006	8/25/2036	WFB
CMLTI 2006-WFH2 M9	Subprime	22,222,222	17309MAN3		Baa2	BBB-	4.0	8/30/2006	8/25/2036	WFB
CMLTI 2006-WMC1 M8	Midprime	22,222,222	17307G2F4	A-	Baa2	BBB+	3.7	1/31/2006	12/25/2035	WFB
CMLTI 2007-WFH1 M9	Subprime	22,222,222	17311CAM3		Baa2	BBB-	4.5	2/9/2007	1/25/2037	WFB
CWL 2006-24 M8	Subprime	22,222,222	23243HAN1		Baa2	BBB	4.9	12/29/2006	5/25/2037	CHLS
FFML 2006-FF11 M8	Midprime	22,222,222	32028PAP0	BBB	Baa2	BBB	3.9	9/6/2006	8/25/2036	WFB
FFML 2006-FF12 M8	Midprime	22,222,222	32027GAN6	BBB	Baa2	BBB	4.2	8/25/2006	9/25/2036	ALS
FFML 2006-FF14 M8	Midprime	22,222,222	32027LAP0	BBB	Baa2	BBB	4.2	9/25/2006	10/25/2036	AURA
FFML 2006-FF15 M8	Midprime	22,222,222	32028GAP0	BBB	Baa2	BBB	4.3	10/25/2006	11/25/2036	AURA
FFML 2006-FF16 M8	Midprime	22,222,222	320275AN0		Baa2	BBB+	4.3	11/30/2006	12/25/2036	NCHL
FFML 2006-FF17 M8	Midprime	22,222,222	32028KAP1	BBB	Baa2	BBB	4.4	11/25/2006	12/25/2036	ALS
FFML 2006-FF7 M8	Midprime	22,222,222	320277AP1	BBB	Baa2	BBB	3.6	5/31/2006	5/25/2036	WFB
FFML 2006-FF9 M8	Midprime	22,222,222	320276AP3	BBB+	Baa2	BBB+	3.7	7/7/2006	6/25/2036	WFB
FHLT 2006-A M7	Subprime	22,222,222	35729RAN6	BBB+	Baa2	BBB	3.9	5/10/2006	5/25/2036	WFB
FHLT 2006-B M8	Midprime	22,222,222	35729QAN8	BBB+	Baa2	BBB	4.4	8/3/2006	8/25/2036	WFB
FMIC 2006-2 M8	Midprime	22,222,222	31659EAM0		Baa2	BBB+	4.1	7/6/2006	7/25/2036	WFB
FMIC 2006-3 M8	Midprime	22,222,222	316599AN9		Baa2	BBB	4.4	10/27/2006	11/25/2036	WFB
GSAMP 2006-FM2 M8	Midprime	22,222,222	36245DAN0		Baa2	BBB+	4.0	9/29/2006	9/25/2036	WFB
HEAT 2006-3 M8	Midprime	22,222,222	437084UZ7	BBB+	Baa2	BBB+	3.5	3/30/2006	7/25/2036	SPS
HEAT 2006-5 M8	Midprime	22,222,222	437096AQ3	BBB+	Baa2	BBB+	3.8	6/25/2006	10/25/2036	WFB
HEAT 2006-6 M8	Midprime	22,222,222	437097AP3	A-	Baa2	A-	4.0	8/1/2006	11/25/2036	SPS
HEAT 2006-7 M8	Midprime	22,222,222	43709NAP8	BBB+	Baa2	BBB+	4.2	10/3/2006	1/25/2037	SPS
HEAT 2006-8 M8	Midprime	22,222,222	43709QAP1	BBB	Baa2	BBB+	4.4	12/1/2006	3/25/2037	SPS
IXIS 2006-HE3 B2	Midprime	22,222,222	46602UAM0	BBB	Baa2	BBB	4.8	9/29/2006	1/25/2037	WFB
JPMAC 2006-CW2 MV8	Midprime	22,222,222	46629BBA6	BBB	Baa2	BBB	4.3	8/8/2006	8/25/2036	CWHL
JPMAC 2006-FRE1 M8	Midprime	22,222,222	46626LFV7	BBB	Baa2	BBB	3.6	1/27/2006	5/25/2035	JPM
JPMAC 2006-WMC3 M8	Midprime	22,222,222	46629KAP4	BBB	Baa2	BBB	4.3	9/14/2006	8/25/2036	JPM
LBMLT 2006-11 M8	Midprime	22,222,222	542512AN8		Baa2	BBB	4.7	12/14/2006	12/25/2036	WMB
LBMLT 2006-4 M8	Midprime	22,222,222	54251MAN4		Baa2	A-	3.9	5/9/2006	5/25/2036	WMB
LBMLT 2006-6 M8	Midprime	22,222,222	54251RAN3	BBB+	Baa2	BBB+	4.2	7/26/2006	7/25/2036	WMB
LBMLT 2006-7 M8	Midprime	22,222,222	54251TAN9	BBB+	Baa2	A-	4.2	8/30/2006	8/25/2036	WMB

As of February 26, 2007. Goldman Sachs neither represents nor provides any assurances that the actual Reference Portfolio on the Closing Date or any future date will have the same characteristics as represented above. See the final Offering Circular for the Initial Reference Portfolio.

Reference Obligations are designated as "Midprime" herein if the weighted average FICO score of the underlying collateral that secures such Reference Obligation is greater than 625. All other Reference Obligations are designated as "Subprime" herein.

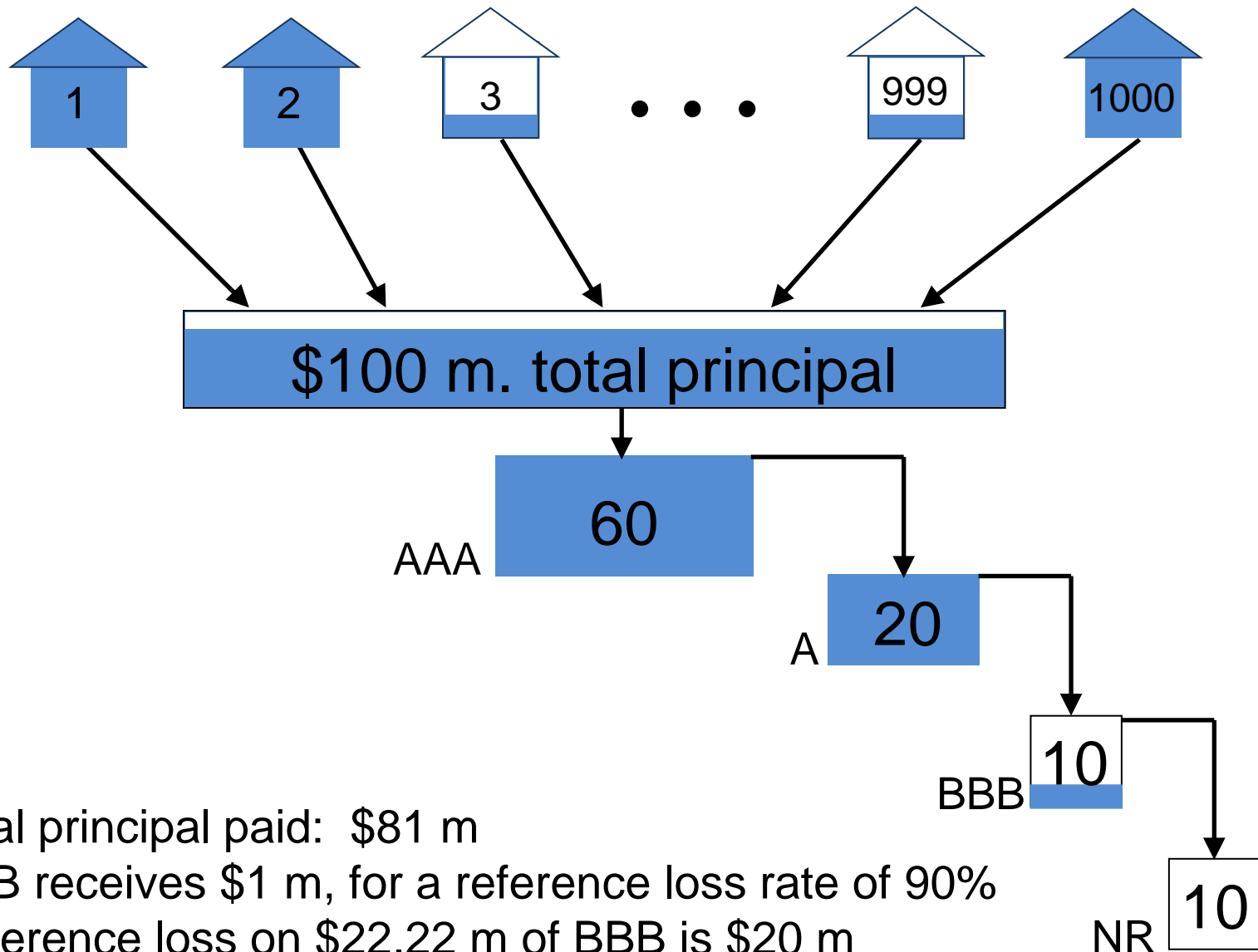
Reference Portfolio

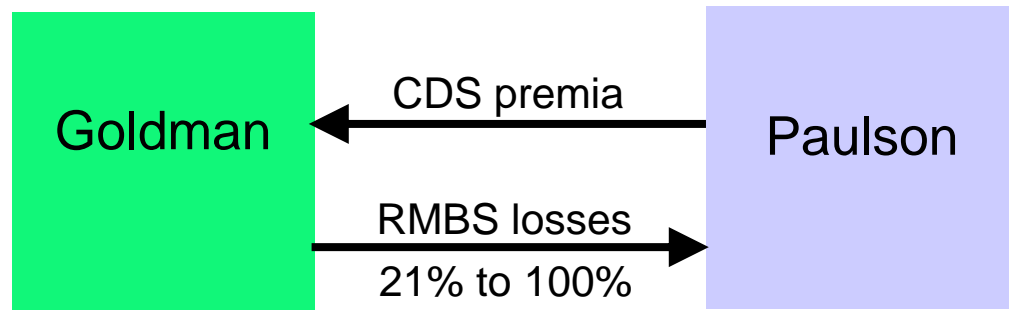
Security	Type	Notional Amount	CUSIP	Fitch	Moody's	S&P	Base WAL (yrs)	Dated Date	Legal Final	Servicer
LBMLT 2006-WL1 M8	Midprime	22,222,222	542514RD8		Baa2	BBB	3.1	2/8/2006	1/25/2036	LBMC
MABS 2006-HE5 M9	Subprime	22,222,222	576455AN9		Baa2	BBB-	4.5	12/28/2006	11/25/2036	WFB
MABS 2006-NC2 M9	Subprime	22,222,222	55275BAP2	BBB	Baa2	BBB-	4.2	9/28/2006	8/25/2036	WFB
MABS 2006-WMC4 M8	Midprime	22,222,222	57645MAP7		Baa2	BBB+	4.6	11/30/2006	10/25/2036	WFB
MLMI 2006-WMC1 B2A	Midprime	22,222,222	59020U4H5		Baa2	BBB+	3.6	2/14/2006	1/25/2037	WCC
MSAC 2006-HE7 B2	Subprime	22,222,222	61750MAP0		Baa2	BBB	4.9	10/31/2006	9/25/2036	CWHL
MSAC 2006-HE8 B2	Midprime	22,222,222	61750SAP7		Baa2	BBB	5.1	11/29/2006	10/25/2036	WFB
MSAC 2006-NC4 B2	Subprime	22,222,222	61748LAN2	BBB	Baa2	BBB	4.5	6/23/2006	6/25/2036	WFB
MSAC 2006-NC5 B3	Midprime	22,222,222	61749BAQ6		Baa2	BBB-	5.3	11/28/2006	10/25/2036	CWHL
MSAC 2006-WMC1 B2	Midprime	22,222,222	61744CXV3	BBB+	Baa2	A-	4.2	1/26/2006	12/25/2035	JPM
MSAC 2006-WMC2 B2	Midprime	22,222,222	61749KAP8	BBB	Baa2	BBB	4.7	6/28/2006	7/25/2036	WFB
MSAC 2007-NC1 B2	Subprime	22,222,222	617505AN2		Baa2	BBB	5.3	1/26/2007	11/25/2036	CWHL
MSC 2006-HE2 B2	Midprime	22,222,222	617451FD6	BBB	Baa2	BBB+	4.5	4/28/2006	3/25/2036	WFB
MSIX 2006-2 B2	Midprime	22,222,222	617463AM6		Baa2	BBB	5.0	11/28/2006	11/25/2036	SAX
NHEL 2006-5 M8	Subprime	22,222,222	66988YAN2		Baa2	BBB+	4.0	9/28/2006	11/25/2036	NOVA
NHELI 2006-FM1 M8	Midprime	22,222,222	65536HCF3		Baa2	BBB+	3.3	1/30/2006	11/25/2035	WFB
NHELI 2006-FM2 M8	Midprime	22,222,222	65537FAN1	BBB+	Baa2	BBB+	4.1	10/31/2006	7/25/2036	WFB
NHELI 2006-HE3 M8	Subprime	22,222,222	65536QAN8	BBB+	Baa2	BBB+	4.0	8/31/2006	7/25/2036	WFB
OOMLT 2007-1 M8	Subprime	22,222,222	68400DAP9		Baa2	BBB	4.3	1/24/2007	1/25/2037	OOMC
SABR 2006-FR1 B2	Midprime	22,222,222	81375WJY3	BBB+	Baa2	A-	4.6	2/23/2006	11/25/2035	HSC
SABR 2006-FR3 B2	Subprime	22,222,222	813765AH7	BBB+	Baa2	BBB	5.0	8/3/2006	5/25/2036	HSC
SABR 2006-HE2 B2	Subprime	22,222,222	81377AAM4	BBB+	Baa2	BBB	4.1	9/28/2006	7/25/2036	HSC
SAIL 2006-4 M7	Subprime	22,222,222	86360WAM4	BBB	Baa2	BBB	4.1	6/25/2006	7/25/2036	ALS
SASC 2006-EQ1A M8	Subprime	22,222,222	86360RAN3		Baa2	BBB	5.2	7/17/2006	7/25/2036	AURA
SASC 2006-OPT1 M7	Subprime	22,222,222	86359UAN9	BBB	Baa2	BBB	3.7	4/25/2006	4/25/2036	AURA
SURF 2007-BC1 B2	Subprime	22,222,222	84752BAQ2		Baa2	BBB	4.9	1/24/2007	1/25/2038	WCC
SVHE 2006-EQ2 M8	Midprime	22,222,222	83611XAM6	BBB	Baa2	BBB	4.6	12/28/2006	1/25/2037	OLS
SVHE 2006-OPT1 M7	Subprime	22,222,222	83611MMF2	BBB+	Baa2	BBB	3.6	3/10/2006	3/25/2036	OOMC
SVHE 2006-OPT2 M7	Subprime	22,222,222	83611MMT2		Baa2	A-	3.6	4/7/2006	5/25/2036	OOMC
SVHE 2006-OPT3 M7	Subprime	22,222,222	83611MPR3		Baa2	BBB	3.7	5/12/2006	6/25/2036	OOMC
SVHE 2006-OPT5 M8	Subprime	22,222,222	83612CAN9		Baa2	BBB	4.2	6/19/2006	7/25/2036	OOMC
ABSHE 2006-HE7 M9	Subprime	22,222,222	04544QAP2	BBB-	Baa2	BBB-	4.4	11/30/2006	11/25/2036	SPS
BSABS 2006-HE9 M9	Subprime	22,222,222	07389MAP2		Baa2	BBB-	4.4	11/30/2006	11/25/2036	EMC
CMLT1 2007-AMC1 M8	Subprime	22,222,222	17311BAL7		Baa2	BBB	4.6	3/9/2007	12/25/2036	CWHL
FFML 2007-FF1 B2	Midprime	22,222,222	32028TAN7		Baa2	BBB	4.8	1/26/2007	1/25/2038	HLS
HASC 2006-HE2 M8	Midprime	22,222,222	44328BAP3	BBB+	Baa2	BBB+	4.3	12/5/2006	12/25/2036	CMB
HEAT 2007-1 M8	Midprime	22,222,222	43710LAN4	BBB	Baa2	BBB+	4.5	2/1/2007	5/25/2037	SPS
LBMLT 2006-8 M8	Midprime	22,222,222	54251UAN6		Baa2	A-	4.4	9/21/2006	9/25/2036	WMB
LBMLT 2006-9 M8	Midprime	22,222,222	54251WAN2		Baa2	BBB+	4.4	10/12/2006	10/25/2036	WMB
MLMI 2006-HE6 B3	Subprime	22,222,222	59023XAN6		Baa2	BBB-	4.6	12/28/2006	11/25/2037	WCC
MLMI 2006-OPT1 B2	Subprime	22,222,222	59022VAN1		Baa2	BBB	3.9	9/26/2006	8/25/2037	OOMC
MSAC 2007-HE1 B2	Subprime	22,222,222	617526AP3		Baa2	BBB	5.2	1/26/2007	11/25/2036	SM
OOMLT 2006-3 M9	Subprime	22,222,222	68389BAM5		Baa2	BBB-	4.0	10/27/2006	2/25/2037	OOMC
SASC 2006-WF3 M9	Subprime	22,222,222	86361EAP6	BBB-	Baa2	BBB-	4.3	9/25/2006	9/25/2036	ALS
SVHE 2006-OPT4 M7	Subprime	22,222,222	83611YAM4		Baa2	BBB+	3.6	5/26/2006	6/25/2036	OOMC

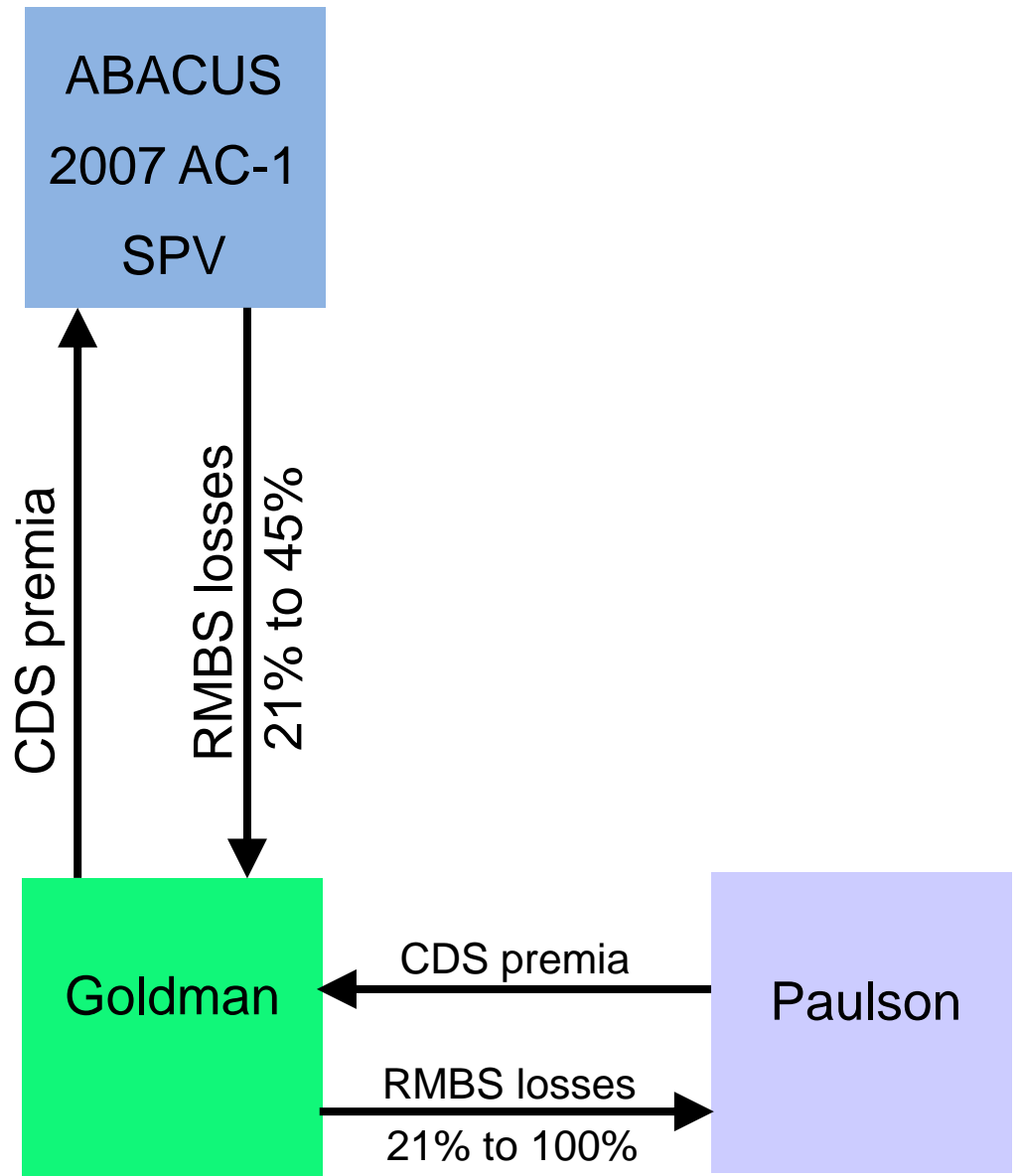
As of February 26, 2007. Goldman Sachs neither represents nor provides any assurances that the actual Reference Portfolio on the Closing Date or any future date will have the same characteristics as represented above. See the final Offering Circular for the Initial Reference Portfolio.

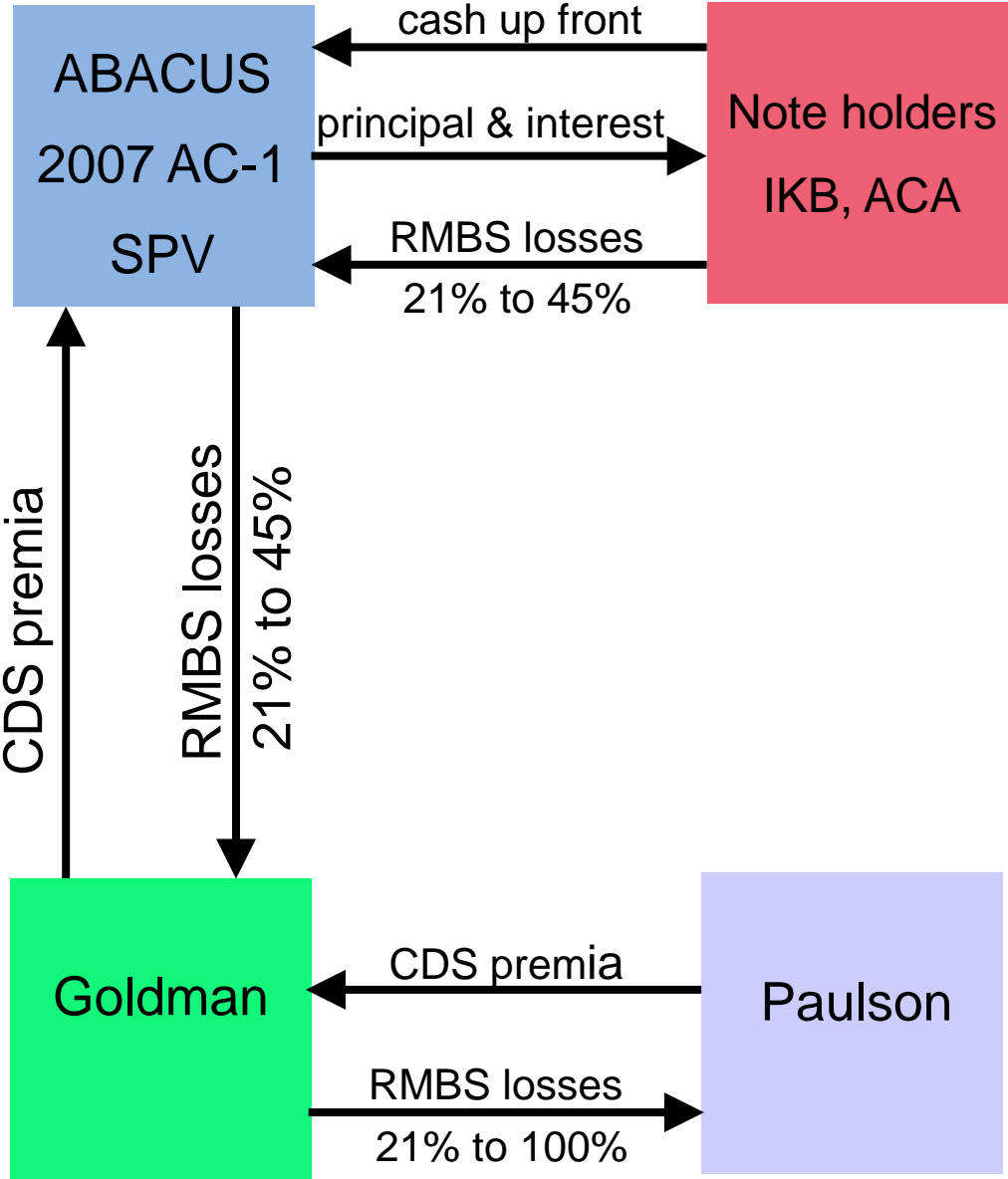
Reference Obligations are designated as "Midprime" herein if the weighted average FICO score of the underlying collateral that secures such Reference Obligation is greater than 625. All other Reference Obligations are designated as "Subprime" herein.

Illustrative Triple-B RMBS Reference Loss

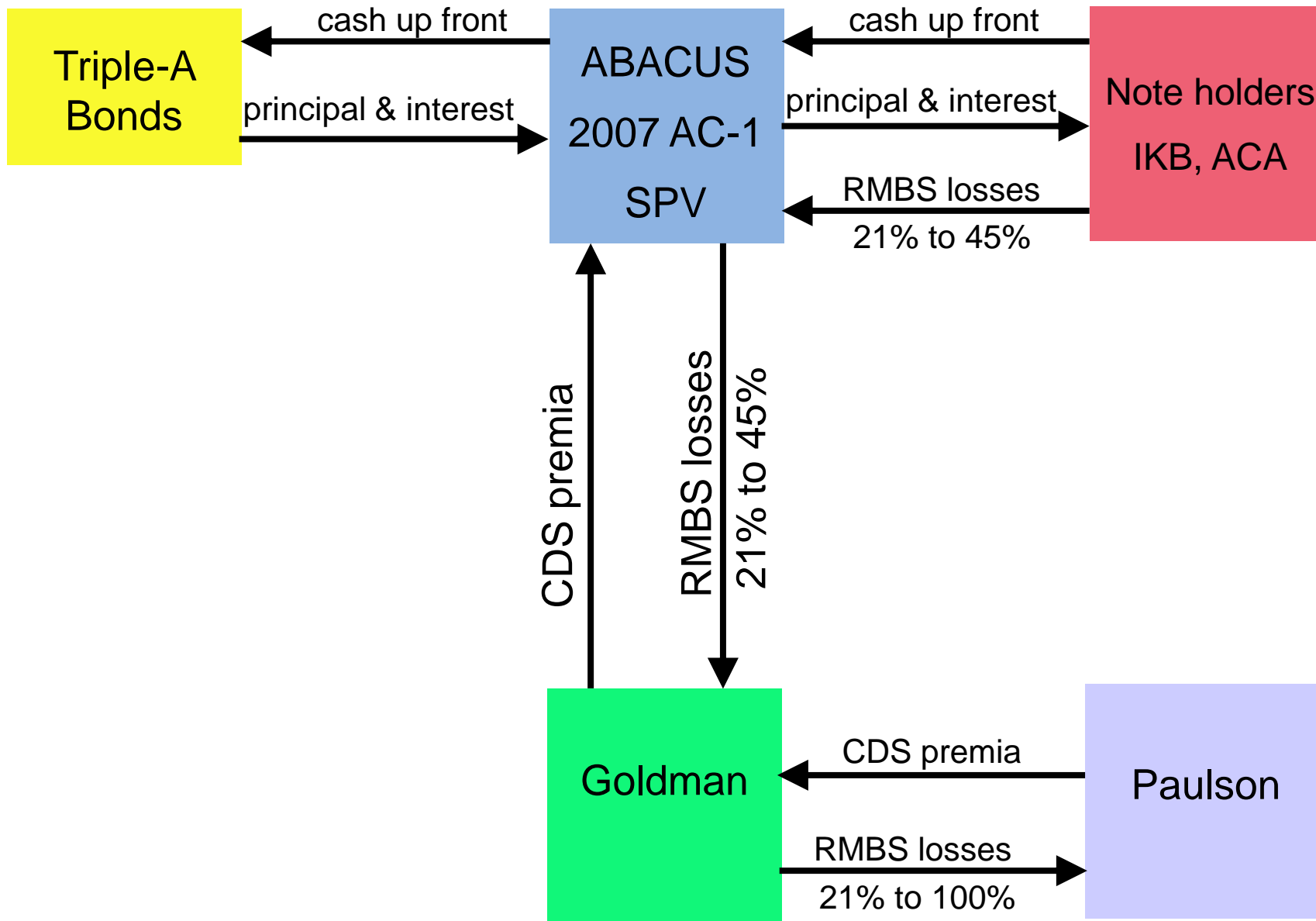


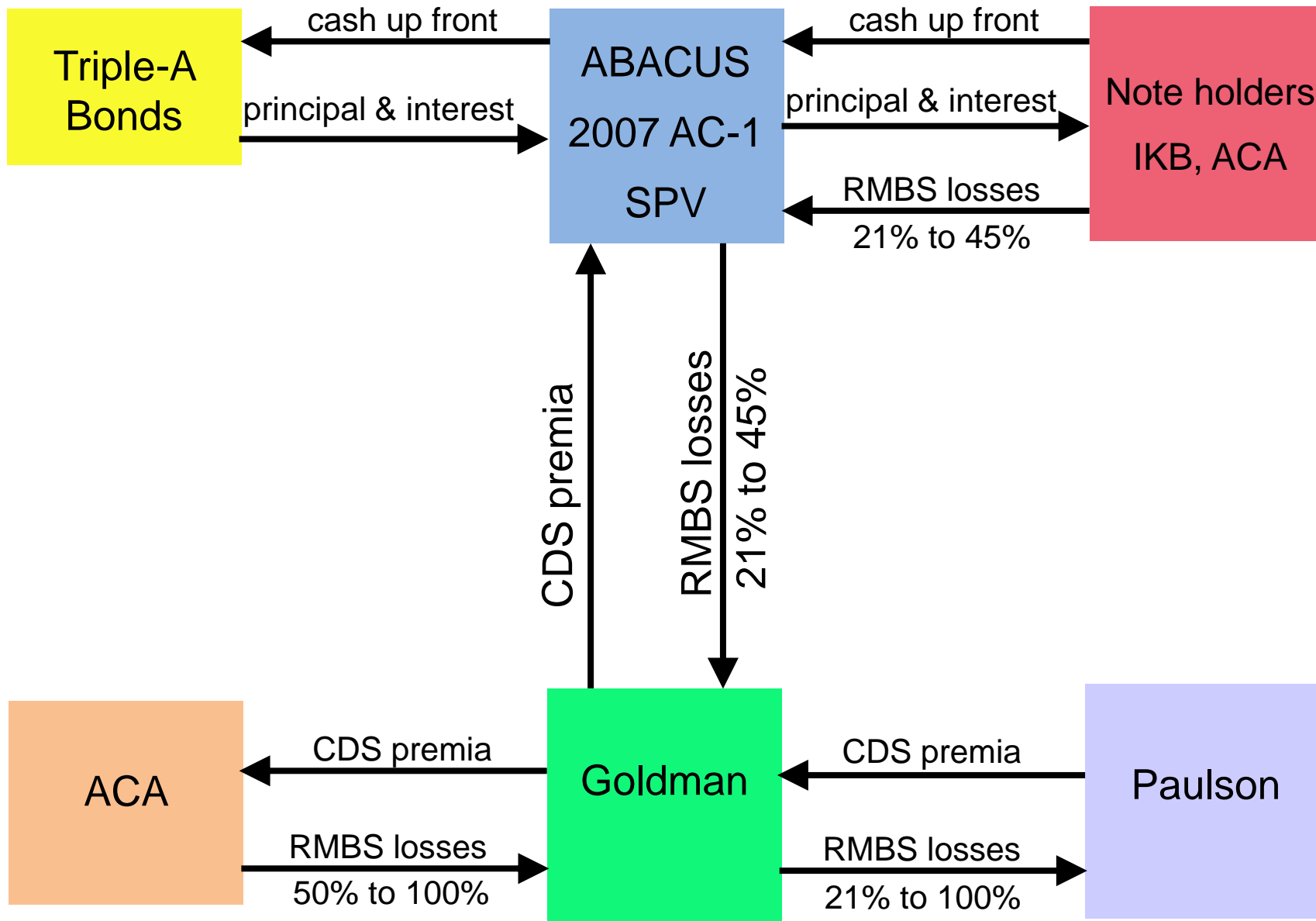


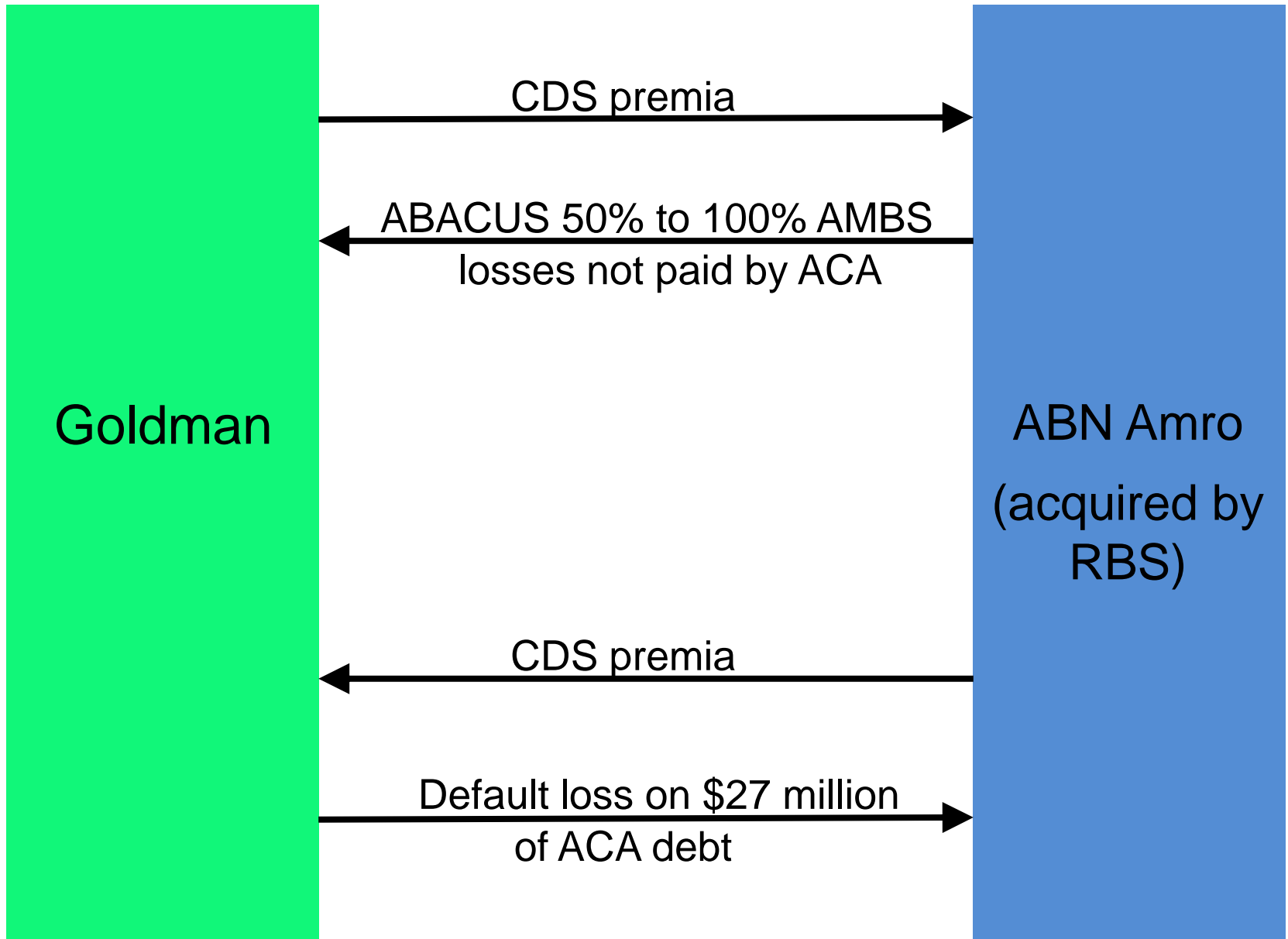




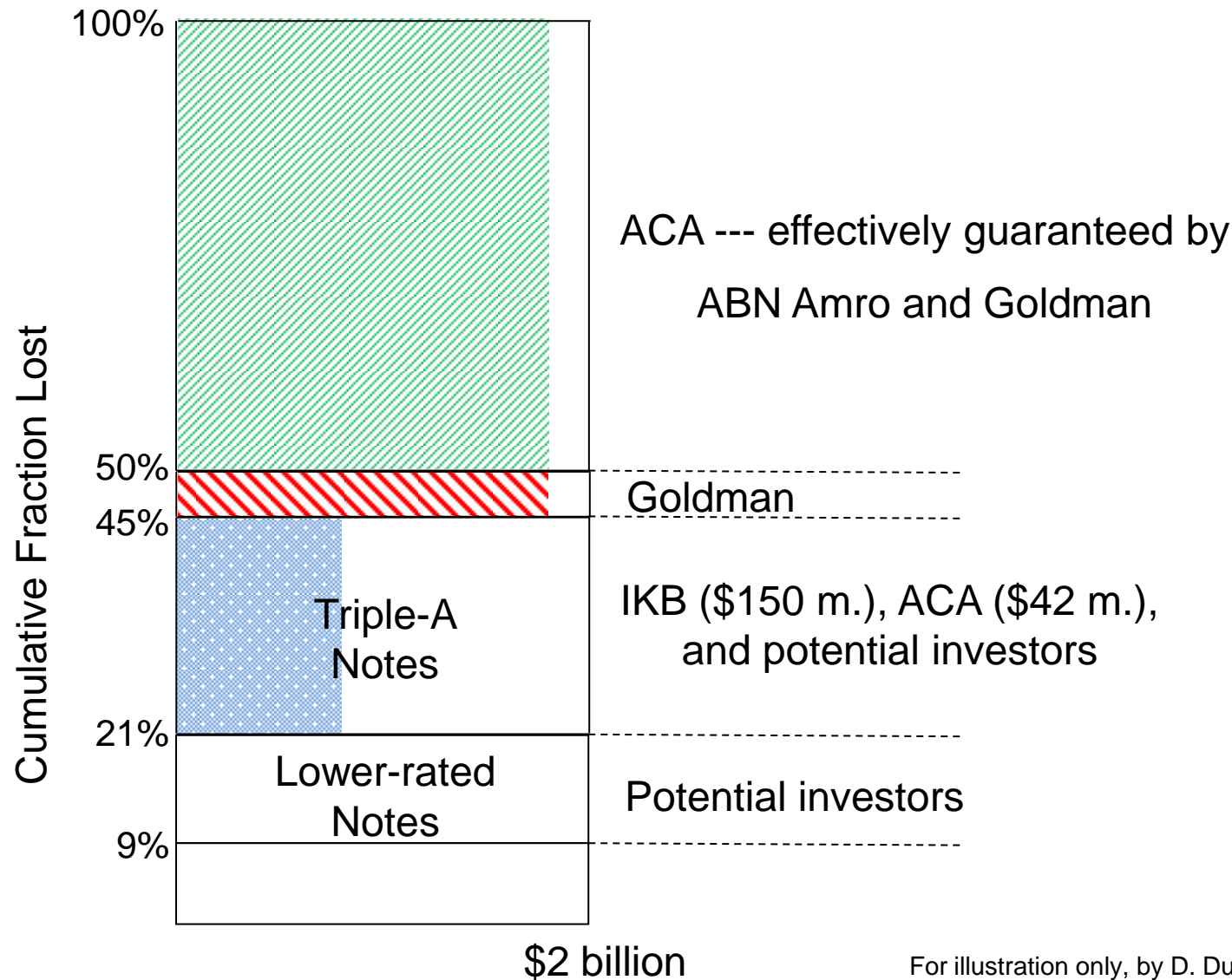
For illustration only, by D. Duffie, April 2010







Who pays default losses on \$2 billion ABACUS pool of 90 triple-B mortgage-backed securities?



Paulson's Incentives

- ▶ Suppose that Paulson predicted a general U.S. subprime meltdown, and wished to invest accordingly.
- ▶ The structure of the ABACUS 2007 AC-1 RMBS portfolio would meet Paulson's investment objective. Given a general sub-prime meltdown, the pool of mortgages underlying a given RMBS would likely suffer large losses, in which case the mezzanine tranche would be "wiped out."
- ▶ Diversification across the portfolio of 90 RMBS also helps meet this investment objective, because "noise" surrounding the idiosyncratic performance of individual pools would then be "averaged out," leaving mainly the essential macroeconomic performance of the sub-prime mortgage sector.
- ▶ Subject to diversification and a given CDS rate (his cost), Paulson would benefit from the selection of RMBS that he believed likely to have large default losses.

ACA and IKB Incentives

- ▶ Suppose that ACA predicted a general U.S. subprime meltdown would *not* occur, and wished to invest accordingly.
- ▶ The structure of the ABACUS 2007 AC-1 RMBS portfolio would meet ACA's investment objective. Absent a general sub-prime meltdown, the pool of mortgages underlying a given RMBS would not likely suffer large losses, in which case the mezzanine tranche would not be severely affected.
- ▶ Diversification across the RMBS portfolio also helps meet this investment objective, because “noise” surrounding the idiosyncratic performance of individual pools would then be “averaged out,” leaving mainly the essential macroeconomic performance of the sub-prime mortgage sector.
- ▶ Subject to diversification and a given CDS rate or senior ABACUS note yield (its income), ACA would benefit from the selection of RMBS likely to have small default losses.

Goldman's Incentives

- ▶ Goldman's role as an intermediary comes with a fee for arranging the deal. It's main objective is to find and match buyers and sellers.
- ▶ Goldman took the risk that it would have some "leftover" long position, which turned out to be RMBS portfolio losses between 45% and 50% of the total pool size.
- ▶ Fixing its fees and the CDS premia, Goldman had an incentive for the RMBS portfolio to be well diversified and likely to have at most moderate losses.
- ▶ Goldman also had an incentive to protect its reputation.