

# Agricultural Reinsurance Issues

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# Introduction

- ▶ Reinsurance is simply insurance taken by insurers (the cedent)
- ▶ Reinsurance transfers both risk and premium to other insurers and provides diversification of risks and substitutes for equity or debt
- ▶ It plays a unique role in crop insurance due to the involvement of the government through subsidized reinsurance and through the extensive involvement of the private reinsurance industry
- ▶ My objectives:
  - ▶ Outline the basic principles of reinsurance
  - ▶ Discuss some of the typical arrangements and terminology
  - ▶ Give an overview of the US Standard Reinsurance Agreement (SRA)

## Acknowledgements:

Much of my material is drawn from other sources, including:

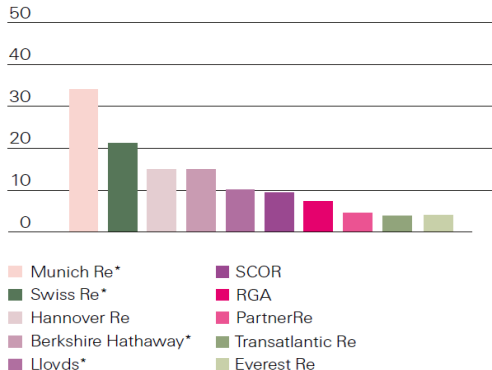
- ▶ Aon-Benfield
- ▶ Beth Collins of Guy Carpenter  
(<http://www.casact.org/education/reinsure/2011/handouts/C7-Collins.pdf>)
- ▶ Dennis Shields of CRS
- ▶ Dr. Erich Kasten ARC Agriculture Reinsurance Consultants
- ▶ AM-Best
- ▶ Swiss-Re

# The Reinsurance Industry

- ▶ Today there are above 200 reinsurance companies, with the top 10 accounting for 50% of premium (Source: SwissRe)

**World's biggest reinsurance companies, 2011**

Net premiums, USD bn

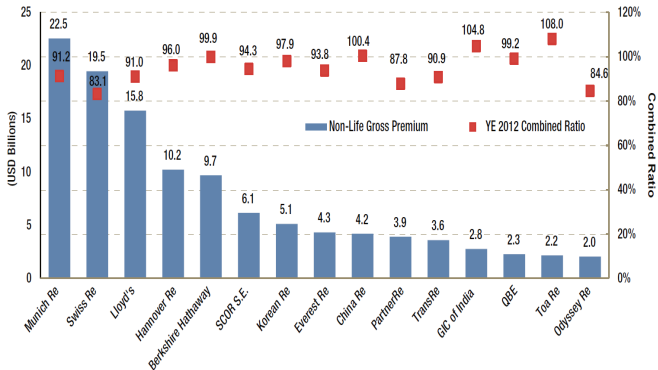


\* Reinsurance segment only

Source: Swiss Re, Economic Research & Consulting

# The Reinsurance Industry

## Global Reinsurance Market – Top 15 Ranked on Non-Life Gross Premium Written (2012)



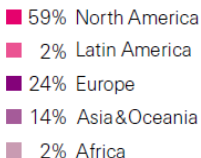
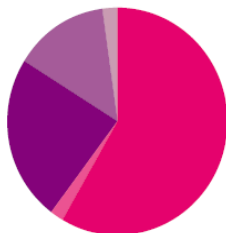
Source: A.M. Best data & research

Source: AMBest

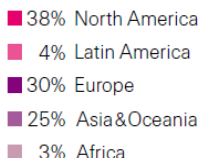
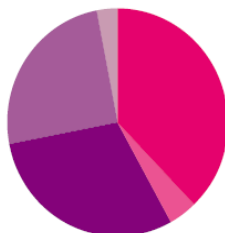
# The Reinsurance Industry

- ▶ Reinsurance markets focused on life and P&C in North America (Source: SwissRe)

USD 53 bn

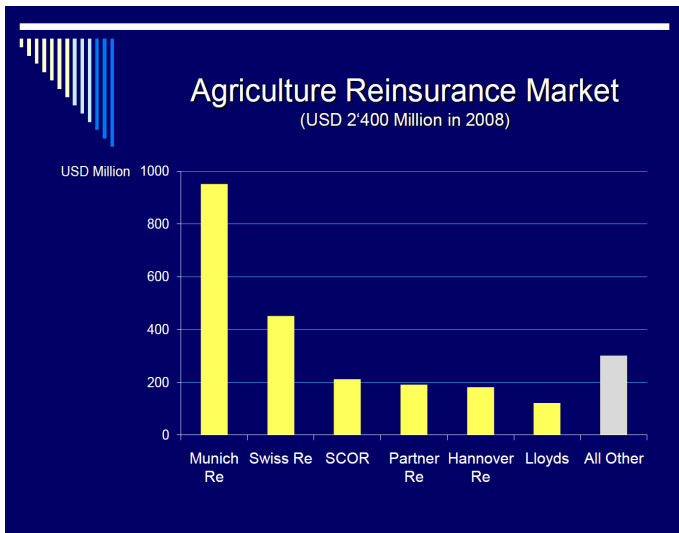


USD 170 bn



Source: Swiss Re, Economic Research & Consulting

# Agricultural Reinsurers

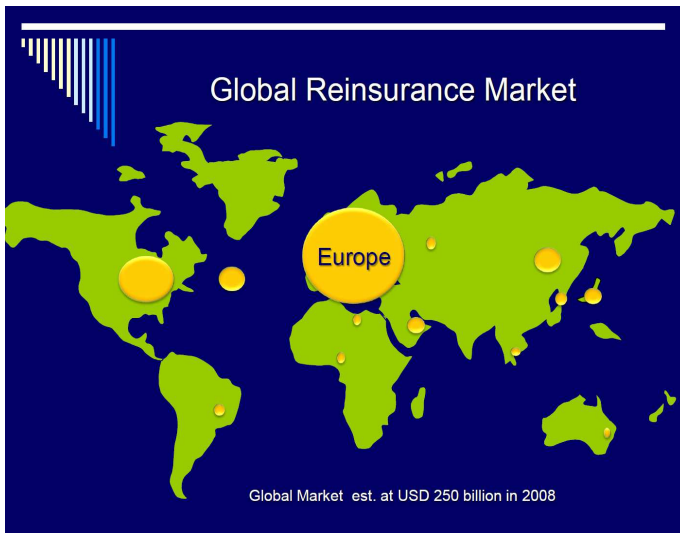


Source: Kasten

*Goodwin (NCSU): October 7, 2013*

**Agricultural Reinsurance**

# Agricultural Reinsurers



Source: Kasten

*Goodwin (NCSU): October 7, 2013*

**Agricultural Reinsurance**

# Background on the US Industry

Crop Insurer	Abbreviation	2012		2011		2010	
		Premium	Market Share	Premium	Market Share	Premium	Market Share
Rural Community Insurance Services	RCIS	2,574,261	22.6%	2,756,372	22.3%	1,776,259	22.9%
Rain and Hail, LLC	R&H	2,354,115	20.7%	2,603,529	21.1%	1,776,749	22.9%
NAU Country Insurance Co.	NAU	1,502,461	13.2%	1,821,959	14.7%	1,134,944	14.6%
Great American Insurance Co.	GAIC	957,780	8.4%	1,045,618	8.5%	676,164	8.7%
ARMtech Insurance Services, Inc.	ARMtech	882,705	7.7%	868,744	7.0%	536,807	6.9%
Producers Agriculture Insurance Company	ProAg	637,120	5.6%	758,148	6.1%	496,704	6.4%
Farmers Mutual Hail Ins Co of IA	FMH	489,668	4.3%	549,419	4.4%	315,874	4.1%
CGB Diversified Services	CGB	439,657	3.9%	344,459	2.8%	159,068	2.1%
John Deere Insurance Co.	JDRP	374,179	3.3%	411,837	3.3%	263,009	3.4%
ADM Crop Risk Services	ADM	286,658	2.5%	269,133	2.2%	110,016	1.4%
Heartland Crop Insurance Company	HCI	280,583	2.5%	336,719	2.7%	232,074	3.0%
AgriLogic Insurance Services	AgriLogic	204,428	1.8%	180,916	1.5%	10,688	0.1%
Hudson Insurance Company	Hudson	181,222	1.6%	145,956	1.2%	91,102	1.2%
American Agricultural Ins. Co.	Am Ag	138,031	1.2%	151,116	1.2%	97,847	1.3%
Country Mutual Insurance Co.	Country	93,818	0.8%	115,439	0.9%	74,071	1.0%
<b>Total</b>		<b>11,396,685</b>		<b>12,359,366</b>		<b>7,751,375</b>	

Source: Aon-Benfield

# Background on the US Industry

Insurance Plan	Market Share	Premium	Policies	Avg Premium/Policy	Subsidy	Subsidy % of Premium	Acres	Avg Acres/Policy
RP	77.5%	8,593,485,189	1,241,299	6,923	5,405,397,463	62.9%	175,662,177	142
APH	8.0%	892,102,420	266,248	3,351	571,264,860	64.0%	14,563,614	55
YP	7.0%	781,644,610	477,304	1,638	525,868,306	67.3%	33,440,383	70
GRIPH	1.9%	214,396,907	11,829	18,125	94,907,708	44.3%	2,419,846	205
RPHPE	1.5%	168,062,376	30,695	5,475	101,467,104	60.4%	5,108,170	166
RAINF	1.4%	158,921,080	20,322	7,820	86,103,334	54.2%	43,840,988	2,157
DOL	0.9%	98,129,666	24,908	3,940	69,386,294	70.7%	739,431	30
YDO	0.4%	41,530,698	10,465	3,969	24,885,781	59.9%	615,182	59
ARH	0.3%	36,182,256	2,340	15,463	20,843,462	57.6%	78,255	33
TDO	0.2%	24,407,515	4,100	5,953	18,410,220	75.4%	12,784	3
GRP	0.2%	24,052,150	11,302	2,128	12,848,036	53.4%	1,250,934	111
GRIP	0.2%	17,186,395	1,359	12,646	7,691,710	44.8%	258,508	190
AGR	0.1%	12,689,123	393	32,288	6,820,200	53.7%	-	-
PRV	0.1%	12,226,779	1,523	8,028	7,575,965	62.0%	161,516	106
VEGAT	0.1%	7,597,811	1,818	4,179	4,057,890	53.4%	4,250,628	2,338
AGRLT	0.0%	4,574,202	458	9,987	2,502,020	54.7%	-	-
AQU	0.0%	509,640	129	3,951	342,793	67.3%	-	-
<b>Total</b>	<b>100.0%</b>	<b>11,087,698,817</b>	<b>2,106,492</b>	<b>5,264</b>	<b>6,960,373,136</b>	<b>62.8%</b>	<b>282,402,416</b>	<b>134</b>

Source: Aon-Benfield

# Coinsurance

- ▶ Not reinsurance but a closely related risk sharing mechanism
- ▶ Risk is covered by a number of insurers, typically working through a broker
- ▶ A leading office calculates and collects premiums and manages pool shares
- ▶ A broker may fulfill many functions of the lead office

# Functions of Reinsurance

- ▶ Financing
- ▶ Diversification
- ▶ Stabilization
- ▶ Reduces need for debt accumulation
- ▶ Expands capacity (most states require that maximum retention must be less than 10% of surplus)
- ▶ Catastrophe protection
- ▶ Service provision (underwriting, auditing, modeling, research, etc.)
- ▶ May be used as premium arbitrage
- ▶ “Retrocession” = reinsurance by reinsurers

# Reinsurance Agreements

- ▶ Facultative:
  - ▶ “One-off Insurance”
  - ▶ Ad-hoc coverage of individual risk or collection of risks
  - ▶ Negotiated separately for each insurance contract
  - ▶ Usually purchased to cover risks insufficiently covered under treaty arrangements
- ▶ Treaty Reinsurance:
  - ▶ Ceding company and reinsurer execute contract to reinsure an entire class or book of business
  - ▶ Reinsurer accepts insurance terms as written by cedent without individual underwriting

# Reinsurance Types: Proportional

- ▶ Reinsurers take a stated percentage share of each policy and receive a share of premiums
- ▶ Reinsurer allows a ceding commission to the cedent to cover costs/profits
- ▶ Two basic types:
  - ▶ Quota Share—Reinsurer covers a predetermined share of each policy
  - ▶ Reinsurer's proportional coverage may differ by risks
  - ▶ Surplus Share (variable quota share)—Ceding company retains first layer of loss (depending on type of risk) with reinsurance attaching above the retention limit
  - ▶ Surplus share allows cedent to hold small policies and transfer risk of larger policies
  - ▶ With surplus share, reinsurer's share may differ by type and size of risk

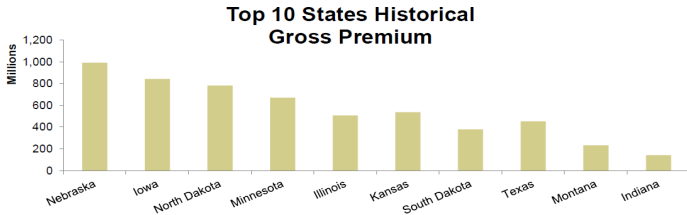
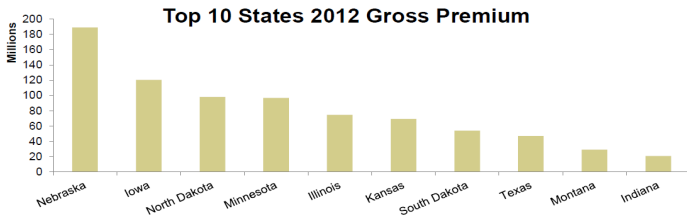
# Reinsurance Types: Non-Proportional or Excess

- ▶ Typically written in layers
- ▶ Pays on claims exceeding the retention
- ▶ Two basic types:
  - ▶ Excess of Loss
    - ▶ Per Risk XL (Working XL)—Excess of loss coverage on a single risk
    - ▶ Catastrophe XL—Excess of loss from multiple policy losses from one event
    - ▶ Aggregate XL—Targets accumulation or frequency of Loss
  - ▶ Stop Loss—Covers losses in excess of a threshold (common in classes of insurance)
- ▶ Stop Loss is common in crop insurance

# Reinsurance Brokers

- ▶ Brokers play a very important role in placing reinsurance
- ▶ Three major players (market shares confidential)
  - ▶ Guy-Carpenter
  - ▶ Aon-Benfield
  - ▶ Willis
- ▶ Remember that crop insurance is more than just federal MPCIC
- ▶ Hail
- ▶ Private add-ons
- ▶ It is often argued that government involvement is necessitated by systemic nature of agricultural risks and limits on reinsurance capacity
- ▶ Not a persuasive argument given size, scope, and scale of reinsurance industry
- ▶ Many other forms of reinsurance—cat bonds, default swaps, etc. (\$trillions in capacity)

# Crop Hail



Source: Aon-Benfield

# Crop Hail

## 2010 - 2012 Gross Premium

Company	2010	Market Share	2011	Market Share	2012	Market Share	3-year CAGR
RCIS	130,714,241	19.2%	163,239,828	19.4%	192,648,907	20.2%	7.7%
FMH	135,889,917	20.0%	148,885,843	17.7%	150,703,204	15.8%	3.1%
R&H	104,324,627	15.3%	124,584,401	14.8%	139,813,795	14.7%	6.1%
NAU	60,423,177	8.9%	125,147,297	14.9%	111,190,734	11.7%	27.5%
GAIC	51,660,119	7.6%	64,479,491	7.7%	70,594,723	7.4%	7.7%
ProAg	48,642,047	7.1%	49,284,680	5.9%	52,398,047	5.5%	0.4%
ARMTech	21,476,759	3.2%	32,159,185	3.8%	45,950,684	4.8%	14.4%
CGB	9,377,434	1.4%	15,477,862	1.8%	39,648,498	4.2%	18.2%
JDRP	28,556,236	4.2%	31,103,970	3.7%	35,036,161	3.7%	2.9%
HCI	13,141,482	1.9%	15,367,954	1.8%	21,892,139	2.3%	5.4%
Country	15,118,818	2.2%	18,509,212	2.2%	19,266,752	2.0%	7.0%
ADM	4,137,187	0.6%	7,018,419	0.8%	17,115,503	1.8%	19.3%
AgriLogic	195,349	0.0%	9,190,208	1.1%	16,701,571	1.8%	261.0%
AmAg	16,425,086	2.4%	18,167,027	2.2%	16,583,376	1.7%	3.4%
Hudson	7,829,018	1.1%	6,969,573	0.8%	8,231,260	0.9%	-3.8%
Grinnell	6,108,507	0.9%	7,215,428	0.9%	7,858,284	0.8%	5.7%
FBM		0.0%	4,305,024	0.5%	7,042,265	0.7%	
First Mutual	396,519	0.1%	462,270	0.1%	394,655	0.0%	5.2%
AgroNational	26,465,591	3.9%		0.0%		0.0%	
<b>Total</b>	<b>680,882,114</b>		<b>841,567,672</b>		<b>953,070,558</b>		<b>7.3%</b>

Source: Aon-Benfield

# The Standard Reinsurance Agreement

- ▶ Agreement between RMA and private insurance companies (AIPs)
- ▶ Determines expense reimbursements and risk-sharing by the government, including the terms under which the government provides subsidies and reinsurance
- ▶ 2008 Farm Bill specified need for new SRA
- ▶ Former SRA criticized as being too generous and costly
- ▶ Reimbursements based on percentage of premium (higher prices increased costs—\$881 million FY2004-2006 to \$1.6 billion in 2009)
- ▶ Company underwriting gains had also increased proportionally
- ▶ All companies had signed by July 13, 2010

# SRA Costs

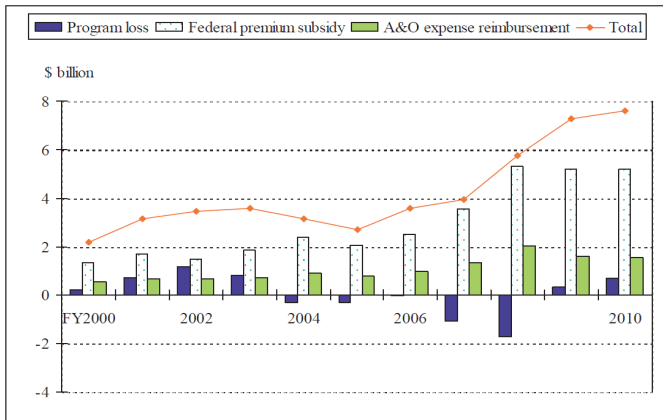
**Table I. Government Cost of Federal Crop Insurance**  
(millions of dollars)

Fiscal Year	Federal Premium Subsidy	Private Company A&O Expense Reimbursements <sup>a</sup>	Program Losses or (Gains) <sup>b</sup>	Other Costs <sup>c</sup>	Total Government Cost
2000	1,353	540	196	86	2,175
2001	1,707	648	725	82	3,162
2002	1,513	656	1,182	115	3,466
2003	1,874	743	822	149	3,588
2004	2,387	900	(305)	143	3,125
2005	2,070	783	(293)	139	2,699
2006	2,517	960	(31)	125	3,571
2007	3,544	1,341	(1,068)	123	3,940
2008	5,301	2,016	(1,717)	137	5,737
2009	5,198	1,602	340	131	7,271
2010 (forecast)	5,201	1,546	682	155	7,584

**Source:** U.S. Department of Agriculture, Risk Management Agency.

Source: CRS (Shields)

# SRA Costs



Source: U.S. Department of Agriculture, Risk Management Agency.

Source: CRS (Shields)

# Changes to SRA

- ▶ Reduced A&O Subsidy
- ▶ Eliminated developmental fund
- ▶ Changed Assigned Risk Fund to a National Residual Fund
- ▶ Changed SRA profit/loss sharing terms
- ▶ Introduced state groups (intended to encourage participation in underserved states)

# Specific Changes

- ▶ A&O subsidy reductions
  - ▶ 2008 (prior to 2008 Farm Bill) 20.50%
  - ▶ 2009 18.50%
  - ▶ 2011 16.25%
- ▶ Agent commission cap of 80% at state level with additional compensation up to 100% of A&O subsidy
- ▶ Beginning in 2011, delayed payout of A&O subsidy and underwriting gains (to Fall of current crop season for A&O and October of following season for underwriting gains)



# Guy Carpenter Side-by-Side Comparison

## 2005 SRA

- **Assigned Risk Fund**
  - Company's less desirable business - "Social Fund."
  - FCIC sets cession limits by state, based on loss history.
  - 75% to 85% of the business is proportionately ceded to FCIC.
- **Developmental Fund**
  - Accommodates business where "uncertainty" exists or where Assigned Risk limits are exceeded.
  - Up to 65% of gross premiums can be ceded to FCIC.
- **Commercial Fund**
  - Accommodates a Company's most profitable business.
  - Highest profit potential and highest risk potential.
  - Up to 50% of gross premiums can be ceded to FCIC.

## 2011 SRA

- **Assigned Risk Fund**
  - Maximum assignment per state shall not exceed 75% of the Company's total premium.
  - Company to retain a fixed 20% subject to the SRA non-proportional reinsurance.
  - Calculated on a by state basis.
- **Developmental Fund**
  - Eliminated
- **Commercial Fund**
  - States designated into (3) groups:
    - Group 1 = Most Profitable
    - Group 2 = All Other
    - Group 3 = Underserved
- **Other Changes**
  - Elimination of Buy Up, Catastrophe and Revenue Funds by State within the Commercial and Developmental Funds.

Source: Collins (Guy Carpenter)

# Guy Carpenter Side-by-Side Comparison

## 2005 SRA

- FCIC assumed a 5% Quota Share of the total gain or loss of a Company's book of business.
- Provision first introduced for the 2005 crop season.
- Due to the profitable nature of the business, this provision is the Government's way of reducing their cost to service and manage the MPCl program.

## 2011 SRA

- FCIC Quota Share increased to 6.5%.
- The Companies can recapture 1.5% of this gain based on their market share in the underserved states (Group 3).

Source: Collins (Guy Carpenter)

# Guy Carpenter Side-by-Side Comparison

**2005 SRA - Maximum Possible Underwriting Loss (MPUL): 197.09% (2009 Industry Premium)**

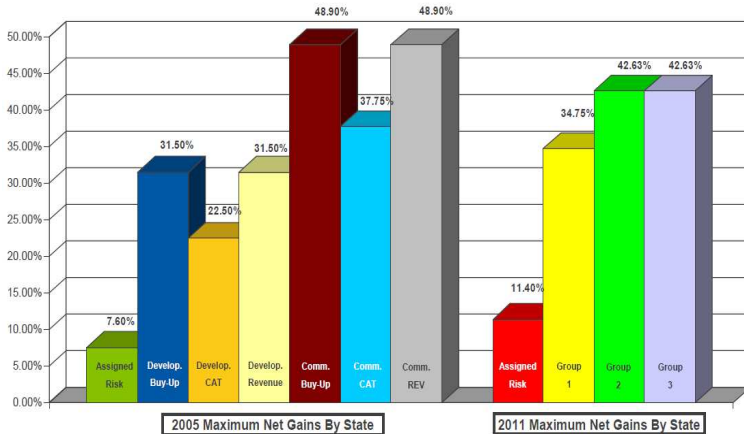
Individual State Loss Ratio	Assigned Risk	Developmental Fund			Commercial Fund		
		Buy Up	Cat	Revenue	Buy Up	Cat	Revenue
0.00%	2.00%	6.00%	4.00%	6.00%	11.00%	8.00%	11.00%
50.00%	9.00%	50.00%	30.00%	50.00%	70.00%	50.00%	70.00%
65.00%	15.00%	60.00%	45.00%	60.00%	94.00%	75.00%	94.00%
100.00%	5.00%	25.00%	25.00%	30.00%	50.00%	50.00%	57.00%
160.00%	4.00%	20.00%	20.00%	22.50%	40.00%	40.00%	43.00%
220.00%	2.00%	11.00%	11.00%	11.00%	17.00%	17.00%	17.00%
500.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

**2011 SRA - Maximum Possible Underwriting Loss (MPUL): 166.36% (2009 Industry Premium)**

Individual State Loss Ratio	Assigned Risk	Commercial Fund		
		SG 1	SG 2	SG 3
0.00%	3.00%	5.00%	5.00%	5.00%
50.00%	13.50%	40.00%	40.00%	40.00%
65.00%	22.50%	75.00%	97.50%	97.50%
100.00%	7.50%	65.00%	42.50%	42.50%
160.00%	6.00%	45.00%	20.00%	20.00%
220.00%	3.00%	10.00%	5.00%	5.00%
500.00%	0.00%	0.00%	0.00%	0.00%

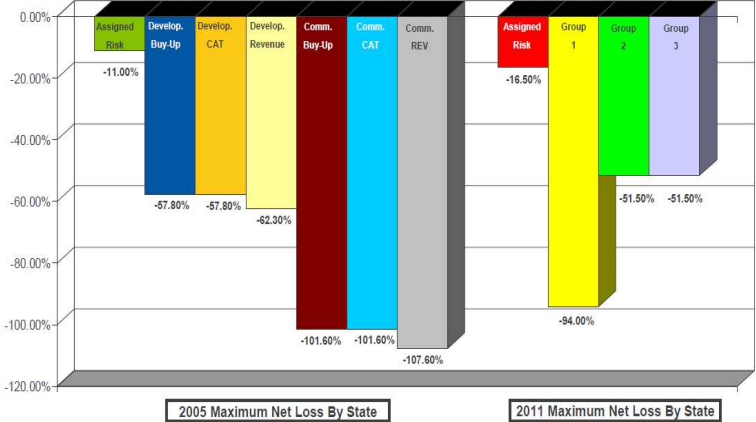
Source: Collins (Guy Carpenter)

# Guy Carpenter Side-by-Side Comparison—Max Net Gains



Source: Collins (Guy Carpenter)

# Guy Carpenter Side-by-Side Comparison—Max Net Losses



Source: Collins (Guy Carpenter)

# Studies of Rates of Return

- ▶ Milliman and Roberts contracted by USDA to evaluate impacts of SRA
- ▶ Defined reasonable rate of return as cost of capital or typical returns of P&C carriers
- ▶ 1989-2008 crop insurance returns estimated as 16.6% (3.8% above average industry reasonable rate of return)
- ▶ Industry commissioned Grant Thornton LLP to study
- ▶ Defined profitability relative to premium
- ▶ Estimated return as 14.2% for crop insurance, compared to 17.5% for P&C carriers