Reserving in a High Inflation Environment

Case Study: Argentina Auto

Casualty Actuaries of the South East

Atlanta, Georgia

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AIG Footprint

Alejandro Ortega
AIG
Latin America and the Caribbean
Chief Finance Actuary

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Competition

Multinationals

- Liberty
- QBE
- Zurich
- Mapfre
- Santander
- RSA
- Axa
- Generali
- Allianz

Local Insurers

- Aba Seguros (Mexico)
- Orbis (Argentina)
- Colpatria (Colombia)

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Products

Consumer

- Personal Auto
- Commercial Auto (Fleets)
- Personal Property
- Extended Warranty
- Travel Insurance
- A&H Products (eg. Cancer, AD&D)

Commercial

- Primary Casualty
- Excess Casualty
- Property
- Energy (Oil production)
- Marine (inland/ocean)
- Surety
- Trade Credit
- Management Liability
- Professional Liability

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Distribution

- Alpha Brokers (Marsh, Aon, Willis)
- Second Tier Brokers
- Local / Small Brokers
- Agencies
- Banks
- Utilities
- Online
- Direct to Consumer

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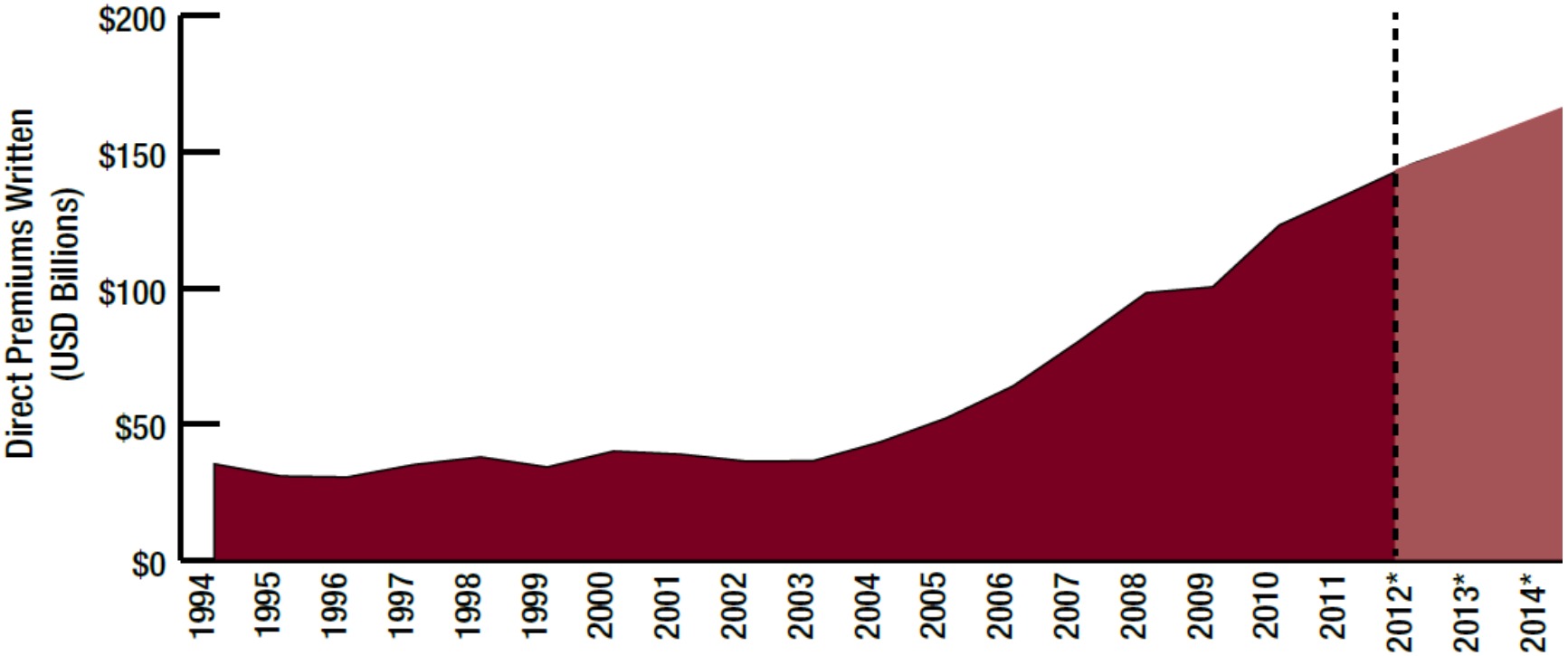
Size of Insurance Market in Latinamerica

2013 GPW $160 billion



* Premiums from 2012 to 2016 are projected.
Source: International Monetary Fund, and Axco Global Statistics, and A.M. Best research.

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Inflation

	Low Inflation	High Inflation
Short Tail	US First Party Auto Mexico Auto Mexico Casualty	Venezuela – All products Argentina – Personal Property
Long Tail	US Casualty Europe Casualty Europe Financial Lines	**Argentina Auto** Argentina Casualty

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Historical Inflation
Venezuela

High Inflation – Short Tail

- Claims that Pay in 3-4 Months, are not going to have a large deviation due to inflation in that short period
- We review average Claim Costs quarterly, and adjust as necessary
- Venezuela Payment Patterns for an Accident Quarter

Payments by Age for Accident Quarters						
	3	6	9	12	15-24	25+
Auto Personal	30%	48%	12%	5%	5%	1%
Personal Property	18%	62%	20%	0%	0%	0%
Casualty	1%	8%	17%	33%	40%	1%

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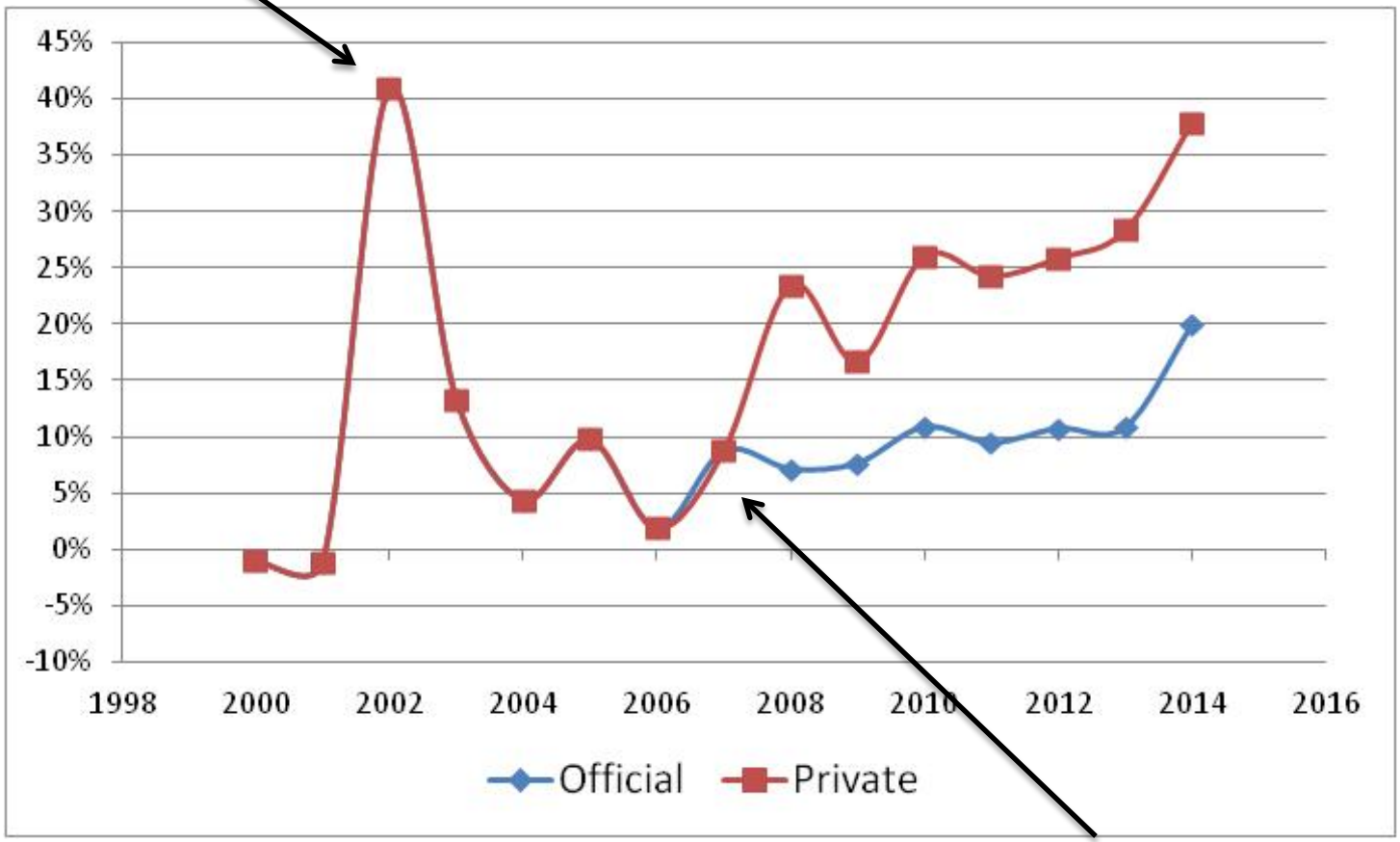
Historical Inflation
Argentina

2001 Currency Crisis



Gov't Reporting no longer reliable

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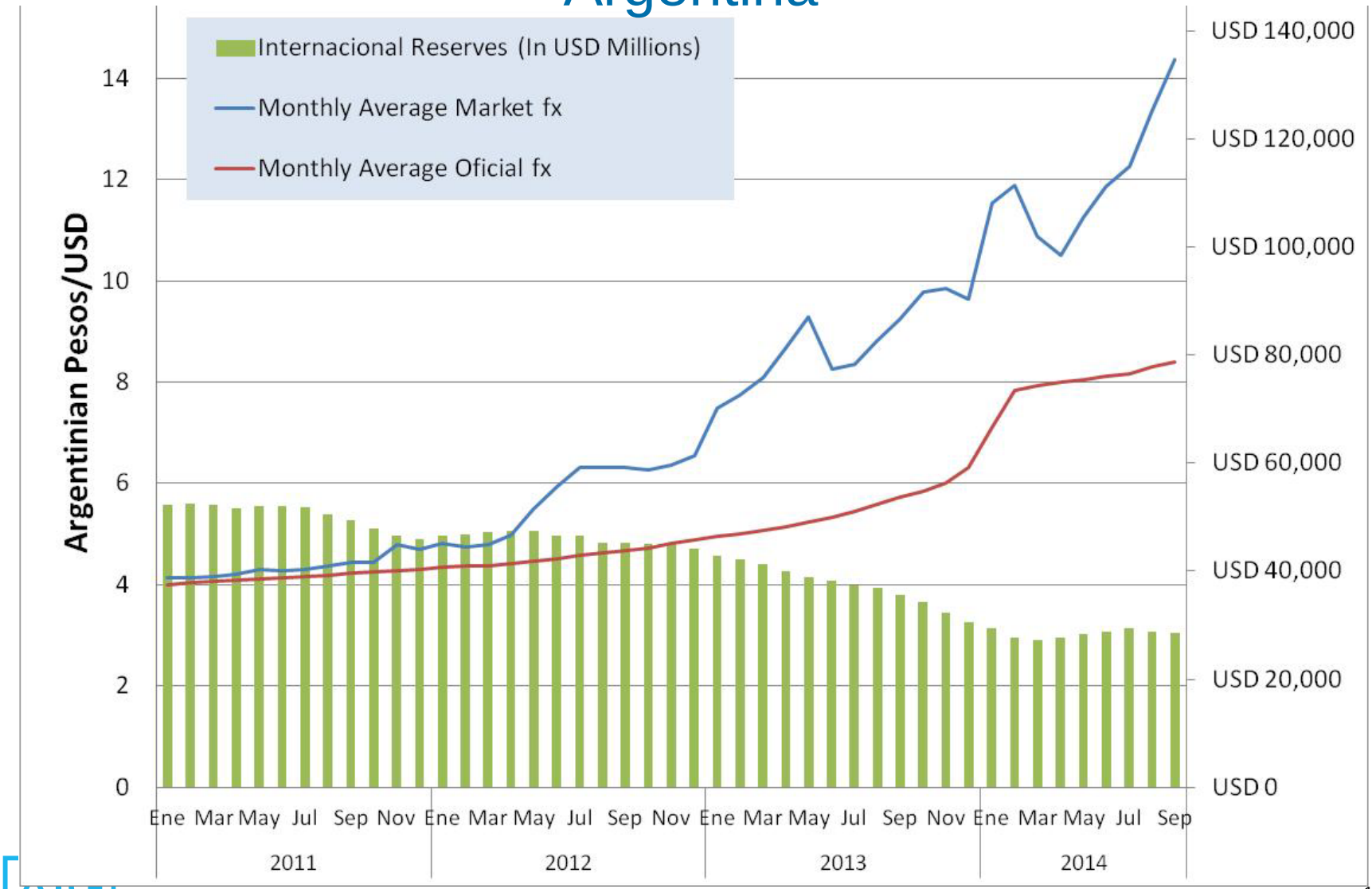
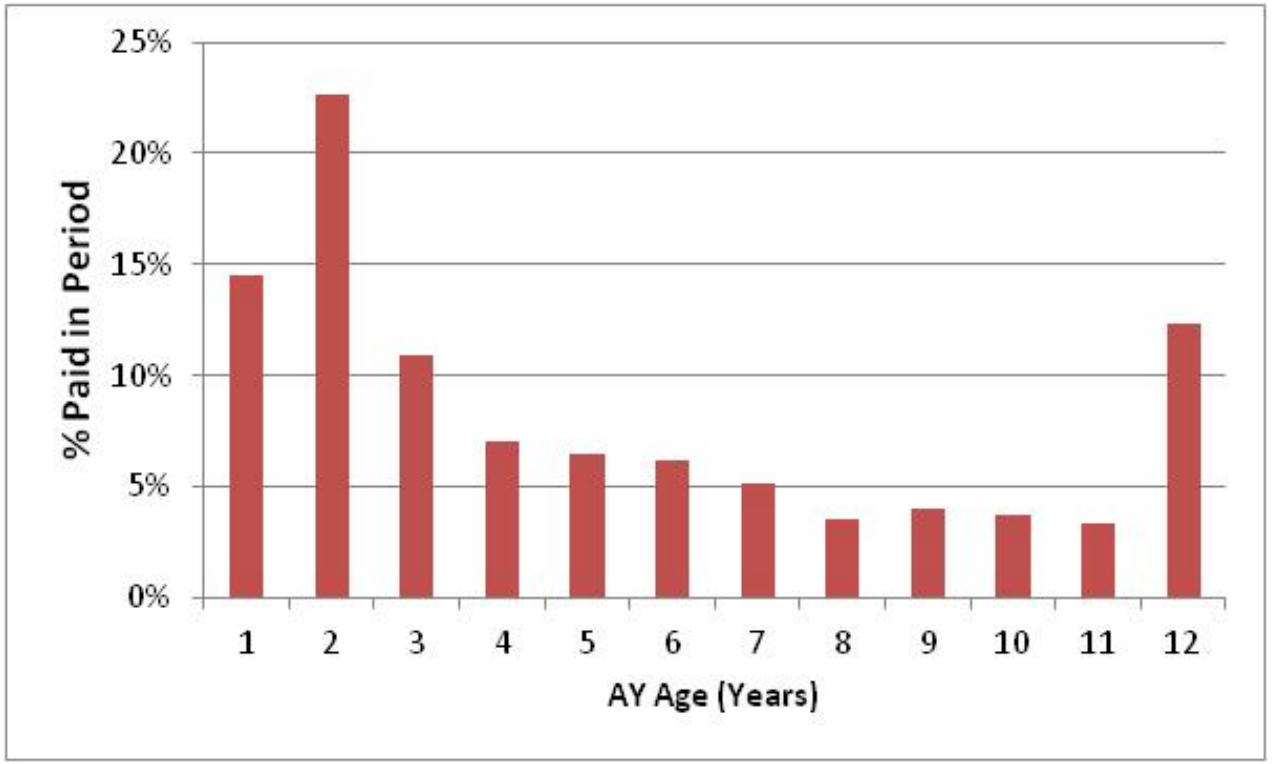
Historical Exchange Rate Argentina



High Inflation – Long Tail

- Auto – Third Party Bodily Injury
- First Party is short tailed
- The Inflation makes the tail even longer



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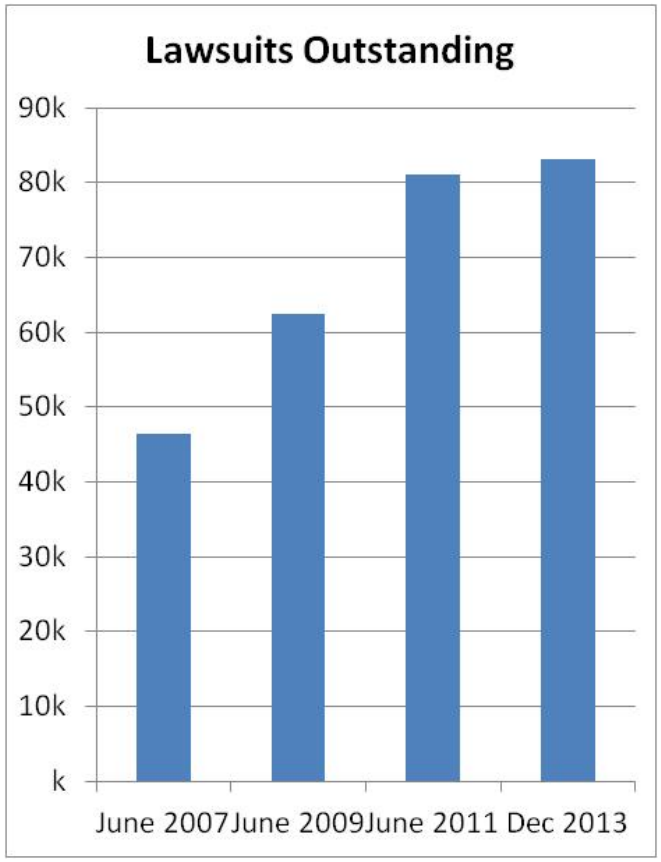
Drivers of the Tail – Lawsuits Outstanding

Company	June 2007	June 2009	June 2011	Dec 2013
Federacion Patronal	6,842	9,962	13,939	16,818
Caja Seguros	7,637	11,942	15,864	12,576
Provincia	6,222	7,763	8,242	7,691
QBE LA Buenos Aires	4,552	5,163	5,546	7,335
San Cristobal	2,978	4,637	5,396	6,526
Zurich Argentina	3,506	4,553	7,776	6,207
Seguros Rivadavia	2,640	3,109	3,955	6,104
Liderar	2,304	2,812	3,836	5,485
Aseg. Federal Arg	1,298	2,578	3,387	5,288
Segunda C.C.L	3,792	4,574	5,064	4,561
La Meridional (AIG)	4,647	5,348	8,166	4,533
Total	46,418	62,441	81,171	83,124



- Litigious Culture in Argentina
- Growing since ~2007

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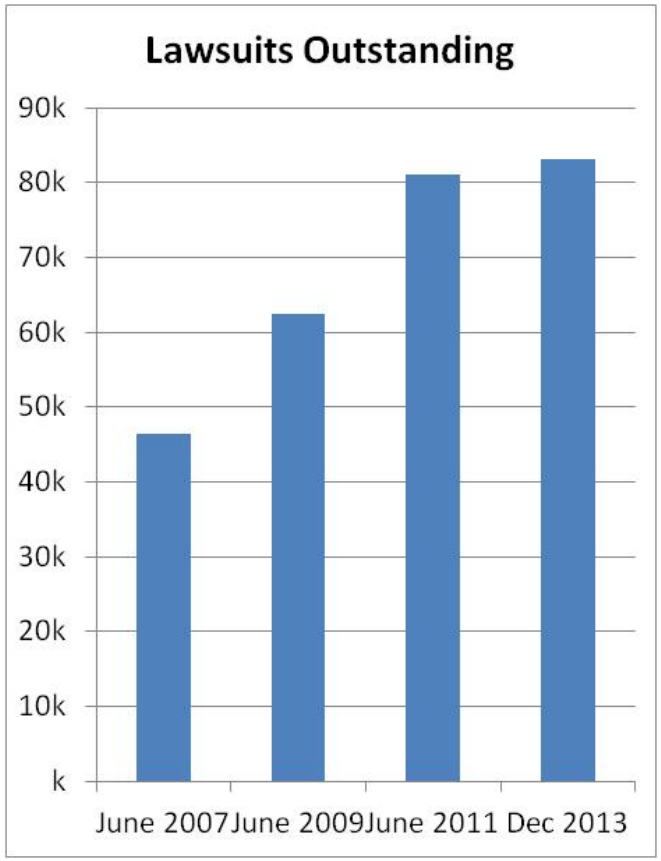
Drivers of the Tail – Lawsuits Outstanding

- Workers Compensation
- Judges are Consumer Friendly



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Assumptions of Chainladder

Thomas Mack

1. **Expected Incremental Losses** are **proportional** to losses Reported to Date
2. Losses in AY are **independent** of losses in other accident years
3. Variance of incremental losses is **proportional** to losses reported to date

- High and Changing Inflation produces Calendar Year Effect
- Litigious Growth also a CY Effect
- Assumptions 1 & 2 are demolished

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Assumptions of Chainladder

- Chainladder implicitly takes the inflation in the triangle and forecasts from there
- When inflation is changing – this is not appropriate
- We will end up with a methodology that allows us to forecast different levels of inflation

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How to set Reserves

- Adjust Paid Triangle for Inflation
- Adjust Incurred Triangle for Inflation
- Paid Only Triangle
- Average Severity to Date
- Future Closed Paid Claims x Future Severity

Closed Paid Claims

X

Severity

=

Unpaid Losses

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Fisher Lange

- Closed Claims are easy to estimate
- Allows different assumptions for future inflation (and interest)
- Granular Result
- Sensitivity Testing vs Case Reserves

Closed Paid Claims

X

Severity

=

Unpaid Losses

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Closed Claims

Forecast the Following

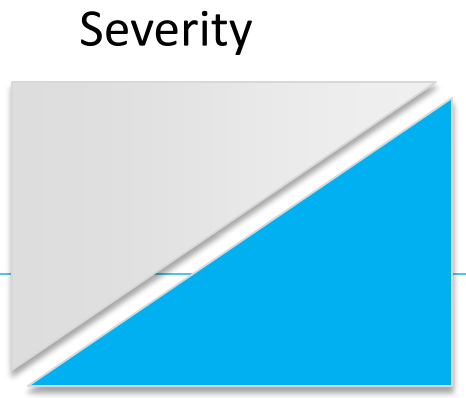
- Newly Reported Claims at each age
- % of Claims Closed Without Payment (CWP)
- % of Claims Closed With Amount (eg. Paid)

Closed Paid Claims

Severity

Underlying Components of Severity:

- % Disability awarded by the Court (similar to WC)
- Cost of a Point of Disability in each Jurisdiction (2,500 – 4,000 pesos)
- The final cost of the claim is proportional the product of these two
- Four General Categories of a Claim:
  - Indemnity
  - Treatment Expenses
  - Court and Attorney Fees
  - Interest and Inflation



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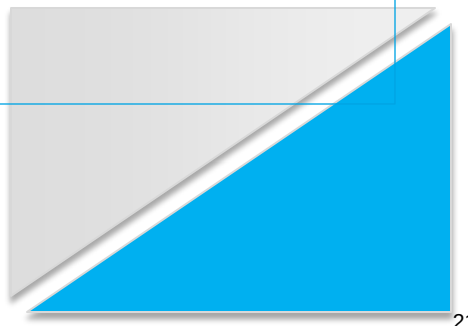
Severity

Interest Costs

- In addition to the base cost of the claim, the insurer must pay interest from the date of the accident
- A Claim occurring in 2009, and closing in 2014, we would pay 5 years of interest

Inflation (Calendar Year Trend)

- The base cost of this claim is based on the **Cost per Point** in **2014** – not, 2009



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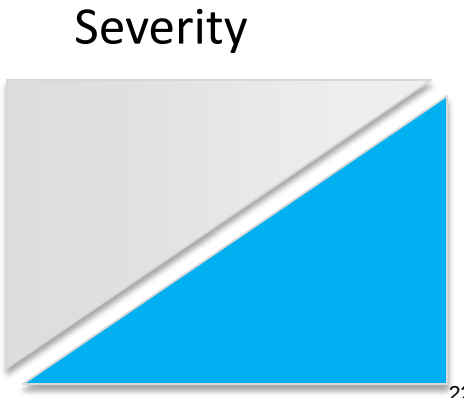
Severity

- We are paying for the time value of money – twice
- Our 2009 claim, in 2013 is 60 months old
- By waiting one more year to close it in 2014:
  - We pay an additional year of interest (~12%)
  - Cost of a Point is also increased (~9%)
  - Total cost of claim goes up about 22%



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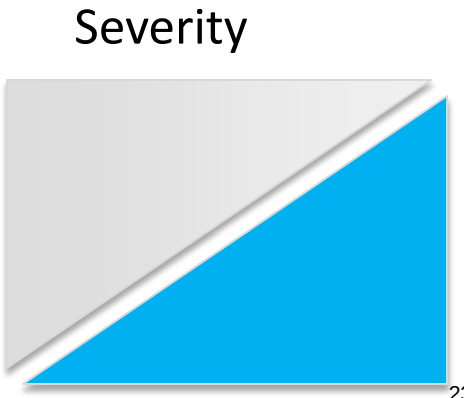
Severity

Forecasting Severity

- Forecast Severity on the Diagonal
- Forecast Down the Triangle using Inflation (CY Trend)
- Reasonability Check – going Across the Triangle for Interest, and Development Year Trend



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Severity

Pesos (000)

AY	12	24	36	48	60	72	84	96	108	120	132	144
2002				35	47	124	28	44	55	38	110	**265**
2003			57	144	51	24	37	127	55	107	**241**	292
2004		29	50	64	75	95	140	89	221	**217**	265	321
2005	10	18	55	68	103	74	70	164	**193**	238	291	353
2006	9	19	65	74	101	117	162	**175**	213	262	320	388
2007	11	17	43	70	95	182	**155**	193	234	288	352	427
2008	9	19	41	69	147	**144**	174	212	257	317	388	470
2009	7	20	49	73	**128**	158	191	233	283	349	426	517
2010	11	20	58	**86**	141	174	210	257	311	384	469	569
2011	10	24	**65**	95	155	192	231	282	342	422	516	626
2012	11	**28**	71	104	171	211	254	311	377	465	568	688
2013	**13**	30	78	114	188	232	280	342	414	511	624	757

Historical Severity
Selected Diagonal Severity
Forecast Severity

All scaled by a factor

Severity

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Closed Paid Claims

AY	12	24	36	48	60	72	84	96	108	120	132	144
2002	-	788	28	15	8	4	9	3	3	2	1	-
2003	623	323	51	8	16	11	11	2	5	5	4	3
2004	1,045	474	50	41	39	15	16	8	2	3	2	7
2005	1,444	855	129	66	37	25	22	16	17	9	7	20
2006	2,085	1,334	195	91	45	40	49	23	20	15	11	33
2007	2,705	1,436	219	78	83	60	17	23	21	16	12	36
2008	2,462	1,682	208	183	51	53	33	19	17	13	10	29
2009	2,007	1,309	317	134	92	51	35	20	18	14	10	31
2010	1,533	1,572	195	128	60	47	32	18	17	13	9	28
2011	1,913	1,182	247	99	55	43	30	17	16	12	9	26
2012	1,941	1,477	238	119	66	52	36	20	19	14	10	31
2013	2,374	1,463	254	127	70	55	38	21	20	15	11	33

Closed Paid Claims

Historical Closed Paid Claims
Forecast Severity Closed Paid Claims

All scaled by a factor

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Unpaid Losses

Reasonability Checks are Performed

- Compare Ultimate Losses to Prior Analysis
- Look at Loss per Exposure across accident years
- Compare Unpaid Losses to Case Reserves
- This method does not calculate IBNR, but rather Unpaid Losses

Unpaid Losses

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January 2014

- The Peso was losing about 7% per year against the USD from 2009-2011; or about 0.5% per month
- 2012: lost 1% per month
- 2013: lost 2% per month
- 2014 – January: 19%
  - Short Term Bonds went from 18% to 25%
- This caused us to revise the future inflation and interest assumptions
- The model allowed us to immediately have an estimate of Unpaid Losses

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Asset Liability Management

- The liability is almost exclusively Pesos
- Yet the high leverage in inflation and interest makes it tricky to hold pesos
- A strategy of holding USD, USD backed assets, inflation linked bonds, and short term fixed bonds
- Resulted in Net Investment Income in January 2014, that was higher than the increase in reserves

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High Inflation Environment

- Argentina has additional complications due to changing legal environment
- High Inflation is typically associated with a weak currency, and changing inflation
- Sometimes it is associated with Social Changes (eg. higher litigiousness)
- Understanding the underlying drivers of Claim Costs is Key
- Fisher-Lange allows you to forecast different levels of inflation and interest
- Great Tool for Sensitivity Testing

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