

June 19, 1998

Mr. Richard Roth, Jr.
State of California
Department of Insurance
300 South Spring St.
Los Angeles, CA 90013

RE: Alternatives for Reflecting Foreign Exchange Impacts in Schedule P

Dear Mr. Roth:

As you know, the data reported in Schedule P as it currently exists is impacted by changes in foreign exchange (FX) rates. Your committee has already begun addressing this issue through the proposed changes to Columns 13 and 26 of Schedule P, Part 1. Clearly, the intent of this proposed change is to provide better information about the year-to-year magnitude of exchange rate effects.

The American Academy of Actuaries Committee on Property Liability Financial Reporting has also been exploring this issue. For companies transacting a significant portion of their business in non-US currency, FX fluctuations can create distorted views of loss development and loss ratios throughout Schedule P. We have primarily concerned ourselves with the examination of different alternatives for the presentation of FX adjusted data adjusted in Schedule P, Parts 2, 3 and 4. We have developed five alternative approaches which build upon the CATF interest in more disclosure of FX impacts. We are proposing that one of these alternatives be selected as the manner in which FX impacts are to be reflected in Schedule P, with one caveat: **that only those companies for whom FX is a material concern be required to comply with the selected alternative.** We currently have no specific recommendations for what might be a reasonable materiality threshold. However, a reasonable option might be to follow the materiality threshold similar to what has been proposed in SSAP #81 for Canadian insurance operations¹. Instead of the threshold applying just to Canadian business, we would suggest that only those companies whose total foreign business exceeds the 10% threshold be required to provide the additional information on FX.

¹ SSAP #81 recommends one procedure for Canadian insurance operations that result in less than 10% of an insurance company's admitted assets, less than 10% of the insurance company's liabilities and less than 10% of a company's net premium, and a different procedure for Canadian operations that are in excess of one or more of these thresholds.

The alternatives are:

1. **Status quo** – Make no additional adjustments and include no additional columns due to FX in the current Schedule P.
2. **Modified status quo** – Status quo plus a footnote to Schedule P, Part 2, identifying any material amount of 1 and/or 2 year development due to FX rate fluctuation.
3. **Accident year FX rate adjustment** – Display certain items adjusted to their accident year FX rate level. By accident year FX rate level, we mean the FX rate level in effect at the start² of each accident year. Items to adjust would be incurred losses, paid losses, if paid development patterns are a concern, and earned premiums, if loss ratios are a concern. The adjusted items would reflect the final result (e.g., accident year incurred losses) if all payments and reserves are translated to U.S. dollars using the FX rate in effect at the start of the accident year. This would result in at least 10 different FX rates being reflected in Schedule P, one for each accident year shown for each underlying functional currency.
4. **Valuation date FX rate adjustment** – Display certain items adjusted to the current valuation date FX rate level. Items to adjust would be incurred losses, paid losses, if paid development patterns are a concern, and earned premiums, if loss ratios are a concern. The adjusted items would reflect the final result (e.g., loss ratios) if all payments, loss reserves, and unearned premium reserves are translated to U.S. dollars using the FX rate existing as of the statement valuation date. This would result in a single FX rate being reflected in Schedule P for each underlying functional currency.
5. **Beginning reserve FX rate adjustment** – Reflect adjustments made to offset the impact of FX on loss reserves. The incremental adjustment for a time period would equal the beginning loss reserve at the beginning FX level minus the same reserve at the ending FX level. Cumulative adjustments would equal the sum of the calendar year adjustments for all time periods up to the statement valuation date. It is worth noting that in performing these calculations, it may be necessary to calculate the incremental adjustments periods more frequently than once a year, possibly as frequently as monthly or quarterly.

² A minor technical aspect still open to discussion is which currency conversion rate to use; the one in effect at the start, the middle or the end of calendar year in which the accident year begins.

Each alternative has a series of benefits and drawbacks that are described in the subsequent pages. Additionally, an example is used with each alternative to assist in the explanation. The evaluation criteria against which these alternatives were measured are as follows:

- The elimination of any FX generated loss ratio distortion. This is important if one is analyzing historic profitability, and wants to eliminate or isolate the impact of FX.
- The elimination of any FX generated distortion to reported adverse loss reserve development. This is important if one is analyzing historic reserve strength, and wants to eliminate or isolate the impact of FX.
- The elimination of any FX generated distortion to loss development patterns. This is important if one wants to use the Schedule P loss triangles (paid, incurred or both) to test current reserve strength and examine historical loss development.
- The ability of the alternative to handle the “prior” year in Schedule P. This is an issue because the “prior” year includes losses from a number of accident years, with the historical data for this “bucket” changing character each statement year. For example, in the 1997 blank, the “prior” year was defined as **accident years 1987 & Prior**, with Schedule P – Part 2-4 showing development of the reserve as of **12-88** for these “prior” years. In the 1998 blank, “prior” will be defined as **accident years 1988 and prior**, and runoff for this new definition of “prior” will now be measured from **12-89**.
- The ability to reconcile data within Schedule P to calendar year financial results.
- The requirement to retain historical data. Methods that build off of previously reported history tend to be less expensive to complete and generally result in fewer reporting errors. The opposite is true of methods that change the history each statement year.
- Method simplicity. Simpler methods generally are less expensive and have fewer reporting errors, plus any errors that slip by are more apt to be noticed by the user.
- The ability to handle “dead” currencies, such as those made obsolete by the Euro.
- The impact of hyperinflation. In countries that experience hyperinflation, the local currency can lose its relevance as a measure of value, with the U.S. dollar frequently replacing the local currency to measure value. In such a situation, development in U.S. dollars, based in the transaction date FX rate, is generally stable, while development in the local currency is frequently erratic. It should be

noted that SSAP #81, “Foreign Currency Transactions and Translations” specifies just such a procedure for the reporting of transactions in a country with hyperinflation.³ This procedure is intended to remove the FX impact of the hyperinflating currency.

The example to be used is as follows:

Assume a company has been writing policies in Japan since 1990. Each year the company writes policies for 100,000,000 yen, with a loss and loss adjustment expense ratio of 80%. Losses are paid out evenly over five years. All reserves are treated as bulk reserves, which are set at the correct level each year. Unearned premium reserves at the end of each year are 50,000,000 yen. Calendar year earned premium equals 50,000,000 yen in 1990 and 100,000,000 yen thereafter.

Furthermore, assume foreign exchange rates affect this data as follows, unless otherwise stated in a particular alternative:

- Loss reserves are converted to US currency at the exchange rate in effect at year-end.
- Loss payments are made on June 30 every year and are converted to US currency at the exchange rate in effect on June 30.
- Written premium is converted to US currency at the exchange rate in effect on June 30.
- Unearned premium is converted to US currency at the exchange rate in effect on December 31.

Table 1

	Total Incurred Loss before FX Conversion							
	1990	1991	1992	1993	1994	1995	1996	1997
1990	40,000,000	40,000,000	40,000,000	40,000,000	40,000,000	40,000,000	40,000,000	40,000,000
1991		80,000,000	80,000,000	80,000,000	80,000,000	80,000,000	80,000,000	80,000,000
1992			80,000,000	80,000,000	80,000,000	80,000,000	80,000,000	80,000,000
1993				80,000,000	80,000,000	80,000,000	80,000,000	80,000,000
1994					80,000,000	80,000,000	80,000,000	80,000,000
1995						80,000,000	80,000,000	80,000,000
1996							80,000,000	80,000,000
1997								80,000,000

³ SSAP 81 refers to the use of the “functional” currency of the reporting parent when reporting transactions in a hyperinflationary economy. US dollars are an example of one possible functional currency, but there could be others. If a currency other than US dollars is used as the functional currency, the issues laid out in the remainder of this paper with regard to FX impacts would apply to any exchange rate fluctuations between US dollars and the functional currency.

Table 2

Cumulative Paid Losses before FX Conversion								
	1990	1991	1992	1993	1994	1995	1996	1997
1990	8,000,000	16,000,000	24,000,000	32,000,000	40,000,000	40,000,000	40,000,000	40,000,000
1991		16,000,000	32,000,000	48,000,000	64,000,000	80,000,000	80,000,000	80,000,000
1992			16,000,000	32,000,000	48,000,000	64,000,000	80,000,000	80,000,000
1993				16,000,000	32,000,000	48,000,000	64,000,000	80,000,000
1994					16,000,000	32,000,000	48,000,000	64,000,000
1995						16,000,000	32,000,000	48,000,000
1996							16,000,000	32,000,000
1997								16,000,000

Table 3

Bulk Reserves before FX Conversion								
	1990	1991	1992	1993	1994	1995	1996	1997
1990	32,000,000	24,000,000	16,000,000	8,000,000	0	0	0	0
1991		64,000,000	48,000,000	32,000,000	16,000,000	0	0	0
1992			64,000,000	48,000,000	32,000,000	16,000,000	0	0
1993				64,000,000	48,000,000	32,000,000	16,000,000	0
1994					64,000,000	48,000,000	32,000,000	16,000,000
1995						64,000,000	48,000,000	32,000,000
1996							64,000,000	48,000,000
1997								64,000,000

The conversion rates being applied to the original currency premiums, loss payments and loss reserves are the actual yen/dollar exchange rates that were in effect at the end of June and December of each of the years from 1990 through 1997. They are as follows:

Year	6-30-xx rate	12-31-xx rate
1989		143.685
1990	153.696	133.889
1991	139.748	128.040
1992	126.835	124.041
1993	107.412	109.913
1994	102.526	100.182
1995	84.635	101.850
1996	108.960	113.981
1997	114.286	129.734

Table 4

	Converted Total Incurred Loss							
	1990	1991	1992	1993	1994	1995	1996	1997
1990	291,055	296,738	301,360	319,635	324,879	324,879	324,879	324,879
1991		614,336	627,609	680,738	705,366	734,704	734,704	734,704
1992			642,107	711,816	750,584	777,306	767,055	767,055
1993				731,238	784,145	808,252	781,281	780,907
1994					794,895	816,386	772,696	755,277
1995						817,422	757,013	722,548
1996							708,340	656,830
1997								633,317

Table 5

	Converted Cumulative Paid Losses							
	1990	1991	1992	1993	1994	1995	1996	1997
1990	52,051	109,297	172,371	246,850	324,879	324,879	324,879	324,879
1991		114,492	240,640	389,599	545,657	734,704	734,704	734,704
1992			126,148	275,107	431,165	620,212	767,055	767,055
1993				148,959	305,017	494,064	640,907	780,907
1994					156,058	345,105	491,948	631,948
1995						189,047	335,890	475,890
1996							146,843	286,843
1997								140,000

240,640 = $\frac{16,000,000 \text{ yen}}{12 - 31 - 91 \text{ FX rate}} + \frac{16,000,000 \text{ yen}}{12 - 31 - 92 \text{ FX rate}}$

Table 6

	Converted Bulk Reserves							
	1990	1991	1992	1993	1994	1995	1996	1997
1990	239,004	187,441	128,990	72,785	0	0	0	0
1991		499,844	386,969	291,139	159,709	0	0	0
1992			515,958	436,709	319,419	157,094	0	0
1993				582,279	479,128	314,188	140,374	0
1994					638,837	471,281	280,749	123,329
1995						628,375	421,123	246,659
1996							561,497	369,988
1997								493,317

386,969 = $\frac{48,000,000 \text{ yen}}{12 - 31 - 92 \text{ FX rate}}$

Table 7

	Written Premium	Earned Premium	Unearned Premium	Converted WP	Converted EP	Converted UPR
1989			0			
1990	100,000,000	50,000,000	50,000,000	650,635	277,191	373,444
1991	100,000,000	100,000,000	50,000,000	715,574	698,514	390,503
1992	100,000,000	100,000,000	50,000,000	788,426	775,836	403,093
1993	100,000,000	100,000,000	50,000,000	930,995	879,182	454,905
1994	100,000,000	100,000,000	50,000,000	975,362	931,176	499,092
1995	100,000,000	100,000,000	50,000,000	1,181,544	1,189,718	490,918
1996	100,000,000	100,000,000	50,000,000	917,768	970,016	438,670
1997	100,000,000	100,000,000	50,000,000	874,998	928,263	385,404

$$874,998 = \frac{100,000,000 \text{ yen}}{6 - 30 - 97 \text{ FX rate}}$$

$$928,263 = 438,670 + 874,998 - 385,404$$

$$385,404 = \frac{50,000,000 \text{ yen}}{12 - 31 - 97 \text{ FX rate}}$$

Option 1: Status Quo

Under this option, Schedule P, Parts 2-4 would reflect the values shown in the Tables 4-6, the three “converted” tables, with no further adjustments. Furthermore, the one and two year development tests and the current loss ratio estimation would look as follows:

Table 8

Accident Year	Development		Loss Ratio
	1 year	2 year	
1990	0	0	117%
1991	0	0	105%
1992	0	(10,251)	99%
1993	(375)	(27,345)	89%
1994	(17,420)	(61,109)	81%
1995	(34,465)	(94,874)	61%
1996	(51,510)		68%
1997			68%
TOTAL	(103,768)	(193,579)	

If the same calculations had been performed in the original currency, there would have been no loss development and the loss ratio would have been 80% each year.

Additionally, the loss development patterns that could be calculated from the incurred and paid loss development histories in Tables 4 and 5 would look as follows:

Table 9

Incurred Loss Development Triangle							
	0-1 year	1-2 years	2-3 years	3-4 years	4-5 years	5-6 years	6-7 years
1990	1.020	1.016	1.061	1.016	1.000	1.000	1.000
1991	1.022	1.085	1.036	1.042	1.000	1.000	
1992	1.109	1.054	1.036	0.987	1.000		
1993	1.072	1.031	0.967	1.000			
1994	1.027	0.946	0.977				
1995	0.926	0.954					
1996	0.927						

In contrast, the incurred loss development pattern in the original currency is 1.000 for all development periods across all accident years.

Table 10

Paid Loss Development Triangle							
	0-1 year	1-2 years	2-3 years	3-4 years	4-5 years	5-6 years	6-7 years
1990	2.100	1.577	1.432	1.316	1.000	1.000	1.000
1991	2.102	1.619	1.401	1.346	1.000	1.000	
1992	2.181	1.567	1.438	1.237	1.000		
1993	2.048	1.620	1.297	1.218			
1994	2.211	1.426	1.285				
1995	1.777	1.417					
1996	1.953						

In contrast, the paid loss development pattern across all accident years in the original currency is:

<u>0-1 year</u>	<u>1-2 years</u>	<u>2-3 years</u>	<u>3-4 years</u>	<u>4-5 years</u>	<u>5-6 years</u>	<u>6-7 years</u>
2.000	1.500	1.333	1.250	1.000	1.000	1.000

Pros of Option 1

- No new “prior” year problem.
- No new burden relative to retaining historical data.
- Simple – no additional work to complete.
- Shows the development pattern including FX, which is the true financial impact if all assets are invested in US dollars.

- Maintains consistency between calendar year/accident year data in Schedule P and calendar year data in the rest of the Annual Statement

Cons of Option 1

- Will result in loss ratio distortion when FX effects are significant for the company as a whole.
- Will result in distorted views of historic reserve strength when FX effects are significant for the company as a whole.
- Will result in distorted development patterns when FX effects are significant for the company as a whole.

Option 2: Modified Status Quo

The information displayed in the Schedule P tables would look the same as what would be displayed under Option 1. The only difference would be the potential addition of a footnote that notes the impact of FX on the one and two year reserve development tests. In the example above, if the company exceeded the materiality threshold, a footnote would be added to Schedule P that notes FX adjustments were responsible for (\$103,768) and (\$193,579) of the total one and two year development. In order for these calculations to be made, the company would need to maintain records of the prior year-ending reserve levels, the current calendar year payment amounts and the current year-ending reserve levels in the individual foreign currencies. The one-year calculation would involve a comparison of what the current incurred loss valuation would have been, had there been no FX changes to what the current valuation actually is, given the FX changes. The two-year calculation would equal the one-year calculation from the previous year plus the one-year calculation from the current year, assuming there has been no changes to the company content in the Annual Statement (i.e. no changes in any pooling relationships in which the company participates or retrospective restatements of company loss history).

Pros of Option 2

- Identifies any material distortion to reported adverse loss reserve development of companies with significant volumes of non-US business, allowing the user of the annual statement to include or exclude the impact of FX on 1 or 2 year reserve development, at their option.
- No “prior” year problem.
- Requires minimal detailed historical data (only prior two years).
- Simple – minimal additional work for those companies needing to complete the footnote.
- Minimal to no concerns with “dead” currencies.
- Maintains consistency between calendar year/accident year data in Schedule P and calendar year data in the rest of the Annual Statement.

Cons of Option 2

- Does not provide a long term development year history of FX effects.
- Will result in loss ratio distortion when FX effects are significant for the company as a whole.
- Will result in distorted views of historic reserve strength when FX effects are significant for the company as a whole.
- Will result in distorted development patterns when FX effects are significant for the company as a whole.
- Could produce misleading answers in a footnote in a hyperinflation scenario.

Option 3: Accident Year FX Rate Adjustment

This option would require the insurance company to maintain a record of currency conversion rates by accident year for each currency in which business is transacted.

Under this option, revised Schedule P Parts 2, 3 and 4 would be created. Each of these revised Parts would restate the accident year history at the currency conversion rate that was in effect at the start of that accident year. Examples of the revised Schedule P Parts 2, 3 and 4 are shown in Appendix Tables 1-3.

Table 11

Accident Year	Development		Loss Ratio
	1 year	2 year	
1990	0	0	80%
1991	0	0	80%
1992	0	0	80%
1993	0	0	80%
1994	0	0	80%
1995	0	0	80%
1996	0		80%
1997			80%
TOTAL	0	0	

Under this alternative, the one and two year development calculations and the loss ratio calculation are the same as they would have been, had the calculations been done in their original currencies.

Additionally, the loss development patterns that could be calculated from the incurred and paid loss development histories in Appendix Tables 1 and 2 would look as follows:

Table 12

Accident Year FX Method Incurred Loss Development Triangle							
	0-1 year	1-2 years	2-3 years	3-4 years	4-5 years	5-6 years	6-7 years
1990	1.000	1.000	1.000	1.000	1.000	1.000	1.000
1991	1.000	1.000	1.000	1.000	1.000	1.000	
1992	1.000	1.000	1.000	1.000	1.000		
1993	1.000	1.000	1.000	1.000			
1994	1.000	1.000	1.000				
1995	1.000	1.000					
1996	1.000						

Table 13

Accident Year FX Method Paid Loss Development Triangle							
	0-1 year	1-2 years	2-3 years	3-4 years	4-5 years	5-6 years	6-7 years
1990	2.000	1.500	1.333	1.250	1.000	1.000	1.000
1991	2.000	1.500	1.333	1.250	1.000	1.000	
1992	2.000	1.500	1.333	1.250	1.000		
1993	2.000	1.500	1.333	1.250			
1994	2.000	1.500	1.333				
1995	2.000	1.500					
1996	2.000						

Pros of Option 3

- Eliminates any FX loss ratio distortion.
- Eliminates any FX distortion to reported adverse loss reserve development.
- Does not require restating historical data, except possibly for the “prior” year line.
- Relatively simple to maintain, once fully implemented.

Cons of Option 3

- Only partially fixes FX distortion to loss development patterns. Within one accident year, the adjusted patterns would be correct. However, across accident years the adjusted patterns would display the effects of different FX rates, making loss trend comparisons inaccurate. Also, if the adjusted triangles reflected a composite of multiple underlying currencies, the composite loss development patterns would be distorted by changes in the relative mix of currencies. An example of this is shown in Appendix Tables 4 and 5.
- Method does not directly solve the problem of adjusting the “prior” year. If the “prior” year is treated as the accident year immediately preceding the oldest year shown, then the historical data by currency for the last 10 calendar years would

have to be retained, to allow restating the beginning “prior” year reserve in Schedule P – Part 2 and 4. (NOTE: If the focus is on loss ratios, then perhaps the “prior” year could remain unadjusted, as loss ratios are not shown for the “prior” year anyway.)

- Method does not directly solve the problem of currency elimination, such as the phase-out of current European currencies in favor of the Euro. One could produce an artificial FX rate for a “dead” currency by using the change in FX rates for the successor currency and the translation rate at time of conversion from “dead” to successor currency, but it is questionable how reliable such a process would be. It is also questionable how meaningful such a result would be.
- Adjusted Schedule P, Parts 2, 3 and 4 would no longer reconcile to the calendar year accounting exhibits in the rest of the Annual Statement.

Option 4: Valuation Date FX Rate Adjustment

This option would require the insurance company to maintain a historical transaction record of paid and outstanding losses in the original currency and to annually restate the history to US dollars at the current conversion rate.

This option is similar to Option 3, except that the FX adjustment is being done at the current valuation date’s rate, not at the rate in effect at the start of each accident year. As with Option 3, revised Schedule P Parts 2, 3 and 4 would be created. Each of these revised Parts would restate the accident year history at the current conversion rate. Examples of restated Part 2, 3, and 4 triangles are shown in Appendix Tables 6-8.

Table 14

Accident Year	Development		Loss Ratio
	1 year	2 year	
1990	0	0	80%
1991	0	0	80%
1992	0	0	80%
1993	0	0	80%
1994	0	0	80%
1995	0	0	80%
1996	0		80%
1997			80%
TOTAL	0	0	

Under this alternative, the one and two year development calculations and the loss ratio calculation are the same as they would have been, had the calculations been done in their original currencies.

Additionally, the loss development patterns that could be calculated from the incurred and paid loss development histories in Appendix Tables 6 and 7 would look as follows:

Table 15

Valuation Date FX Method Incurred Loss Development Triangle							
	0-1 year	1-2 years	2-3 years	3-4 years	4-5 years	5-6 years	6-7 years
1990	1.000	1.000	1.000	1.000	1.000	1.000	1.000
1991	1.000	1.000	1.000	1.000	1.000	1.000	
1992	1.000	1.000	1.000	1.000	1.000		
1993	1.000	1.000	1.000	1.000			
1994	1.000	1.000	1.000				
1995	1.000	1.000					
1996	1.000						

Table 16

Valuation Date FX Method Paid Loss Development Triangle							
	0-1 year	1-2 years	2-3 years	3-4 years	4-5 years	5-6 years	6-7 years
1990	2.000	1.500	1.333	1.250	1.000	1.000	1.000
1991	2.000	1.500	1.333	1.250	1.000	1.000	
1992	2.000	1.500	1.333	1.250	1.000		
1993	2.000	1.500	1.333	1.250			
1994	2.000	1.500	1.333				
1995	2.000	1.500					
1996	2.000						

Pros of Option 4

- Eliminates any FX loss ratio distortion.
- Eliminates any FX distortion to reported adverse loss reserve development.
- Eliminates any FX distortion to loss development patterns, including when multiple currencies are mixed. A demonstration of this is shown in Appendix Tables 9 and 10.
- No problem with “prior” year.

Cons of Option 4

- Requires the restatement of historical data each year, effectively requiring the most data retention of any of the methods so far. To perform the restatement required a company would need to retain the historical development data for the last 10 calendar years by accident year by currency. (NOTE: While this may seem burdensome, it is exactly the same data requirement needed to perform an actuarial analysis, as this method mirrors common actuarial techniques for handling FX. Therefore, companies should not have a hard time performing these adjustments on data they use for actuarial analyses. They would still have

a difficult time, however, where the data they report came from a third party such as a pool.)

- Could require translating payments from a long dead currency to an active currency.
- Adjusted Schedule P, Parts 2, 3 and 4 would no longer reconcile to the calendar year accounting exhibits in the rest of the Annual Statement.

Option 5: Beginning Reserve FX Rate Adjustment

Under this option, a revised Schedule P Part 2 would be created. Schedule P Part 2 as it is currently set up includes FX-driven calendar period incurred loss fluctuations. These fluctuations are caused by revaluing foreign currency loss reserves into dollars during the calendar period at a different exchange rate than was used to convert the foreign currency loss reserves at the start of the calendar period. The revised schedule would restate the accident year incurred loss history by reversing these calendar period fluctuations through the creation of offsetting transactions.⁴

An example of one such offset adjustment might be as follows: Suppose a claim occurred in 1996 and was reserved for 1,000,000 yen at 12-31-96. The conversion rate at 12-31-96 was 113.981 yen/dollar. This claim is paid at 6-30-97, when the yen/dollar conversion rate was 114.286. The FX offset is \$23 US⁵. Note that this example assumes offset adjustments occur at least semi-annually.

A second example might be as follows: Instead of paying the 1,000,000 yen claim on June 30, 1997, the claim remains open through December 31, 1997. At the 12-31-97 exchange rate, the claim is equivalent to \$7,708 US. The FX offset is \$1,065.

A third example might be as follows: Instead of paying the 1,000,000 yen claim on June 30, 1997, the claim remains open through December 31, 1997. However, the claim has been re-evaluated during 1997 and is now reserved for 1,500,000 yen. At the 12-31-97 exchange rate, the claim is equivalent to \$11,562 US. The FX offset is still \$1,065. Of the 1,500,000 yen reserve, 1,000,000 yen was originally converted to dollars at the 12-31-96 exchange rate. The FX impact on this piece of the 1,500,000 yen reserve at 12-31-97 is \$1,065. The rest of the reserve, which was established during 1997 will be converted to

⁴ The theoretically correct FX-reversal transactions should be kept in loss reserves up until the claim is paid, at which time the FX-reversal transactions would be moved from reserves to paid losses. As a practical matter, though, this is a very difficult step to program into some insurance companies' recordkeeping systems. An alternative is to process all FX-reversal transactions through paid losses. Appendix Tables 11 and 12 show examples of what revised Schedule P, Parts 2 and 3 might look like if all such transactions were processed through paid losses.

⁵ In US dollars at 12/31/96, the 1,000,000 yen reserve was equal to \$8,773. When the claim was paid on 6/30/97, the US dollar value of the 1,000,000 yen claim payment was equal to \$8,750. The \$23 difference was due solely to a change in the yen-dollar exchange rates between December 31, 1996 and June 30, 1997.

dollars for the first time at the 12-31-97 exchange rate. There is no FX distortion on this piece of the reserve.

Conceptually, this method is very close to the accident year FX rate adjustment method. The reason is that the adjustment based on beginning reserves is equivalent to an adjustment of paid losses and ending reserves, assuming no reserve strengthening (based on original currency valuation). If the time period used for the incremental calculation is small enough, and no local currency reserve strengthening occurs, this method will produce an equivalent result to the accident year FX rate adjustment method. Therefore the principal difference between this method and the accident year FX method is that this method values reserve additions at the reserve addition date FX rate, while the accident year FX method values the reserve additions at the original accident year FX rate. Small differences will also arise from the inclusion of paid losses in the first twelve calendar months of each accident year at the exchange rate in effect when those losses were paid.

An example of the revised Schedule P, Part 2 is displayed in Appendix Table 11.

Table 17

Accident Year	Development		Loss Ratio
	1 year	2 year	
1990	0	0	89%
1991	0	0	86%
1992	0	0	81%
1993	0	0	79%
1994	0	0	81%
1995	0	0	69%
1996	0		77%
1997			72%
TOTAL	0	0	

This approach does not entirely eliminate the loss ratio distortion. Distortion exists because of timing differences between the recognition of incurred losses and earned premiums that result in different exchange rates being applied to each element. The smaller the calendar period time lag between which incremental reserve adjustments are made, the less distortion there will be.

Table 18**Beginning Reserve Method Incurred Loss Development Triangle**

	0-1 year	1-2 years	2-3 years	3-4 years	4-5 years	5-6 years	6-7 years
1990	1.000	1.000	1.000	1.000	1.000	1.000	1.000
1991	1.000	1.000	1.000	1.000	1.000	1.000	
1992	1.000	1.000	1.000	1.000	1.000		
1993	1.000	1.000	1.000	1.000			
1994	1.000	1.000	1.000				
1995	1.000	1.000					
1996	1.000						

Pros

- Eliminates most to all FX loss ratio distortion.
- Eliminates any FX distortion to reported adverse loss reserve development.
- No problem with “prior” year because the year-to-year adjustments are made incrementally and cumulated by adding one year’s increment to the prior year’s cumulative total, rather than annually restating a cumulative history.
- No restatement of historical data.
- No problem with “dead” currencies. In the year in which a currency “dies” a conversion to a replacement currency will be needed. Once the conversion is done, the future incremental adjustments will be made in the replacement currency.
- Historical exhibits of paid and incurred loss can be reconciled with calendar year accounting statements, provided a record of the incremental FX adjustments is maintained.

Cons

- Only partially fixed FX distortion to loss development patterns. The adjusted patterns would now be inconsistent across accident years, as each accident year would be shown at a different FX rate.
- Does not produce a paid loss history that is free from FX distortions. Appendix Tables 12 and 13 present an example of a restated paid loss triangle, assuming all FX adjustments were processed through paid losses.
- Need to maintain records of incremental FX adjustments for data reconciliation purposes.

We appreciate the opportunity to share our thoughts with you on this subject. Should you have any questions or comments, please call me at (860) 543-7350.

Sincerely,

Jan Lommele, FCAS, MAAA
COPLFR Chairperson

Example: Impact on loss development patterns of data with multiple underlying currencies when using the Accident Year FX Rate Adjustment

Example includes as a second currency \$1,000,000 business written in US dollars. Like the business transacted in yen, the US-denominated business has been written since 1990, has an 80% loss ratio, all reserves are treated as bulk reserves and are established correctly at the end of each year. The only difference between the dollar-denominated business and the yen-denominated business is the loss payout pattern. The dollar denominated business pays out 30% in the first year, 25% in the second year, 20% in the third year, 15% in the fourth year and 10% in the fifth year.

Appendix Table 4

Cumulative Combined Paid Losses Converted at Starting AY FX Rate Level								
	1990	1991	1992	1993	1994	1995	1996	1997
1990	175,677	331,355	467,032	582,709	678,387	678,387	678,387	678,387
1991		359,502	679,004	958,506	1,198,008	1,397,510	1,397,510	1,397,510
1992			364,961	689,922	974,883	1,219,844	1,424,805	1,424,805
1993				368,990	697,979	986,969	1,235,958	1,444,948
1994					385,570	731,139	1,036,709	1,302,279
1995						399,709	759,419	1,079,128
1996							397,094	754,188
1997								380,374

Appendix Table 5

Paid Loss Development Triangle							
	0-1 year	1-2 years	2-3 years	3-4 years	4-5 years	5-6 years	6-7 years
1990	1.886	1.409	1.248	1.164	1.000	1.000	1.000
1991	1.889	1.412	1.250	1.167	1.000	1.000	
1992	1.890	1.413	1.251	1.168	1.000		
1993	1.892	1.414	1.252	1.169			
1994	1.896	1.418	1.256				
1995	1.900	1.421					
1996	1.899						

The differences between accident years arise from the different payout speeds between the dollar denominated business and the yen denominated business. Had the business in the two currencies paid out at the same rate, there would have been no differences in paid loss development factors by accident year.

Because this example assumes that all bulk reserves are set correctly at all times, the incurred loss development pattern does not show any differences by accident year. If there were differences in the time it takes to establish correct reserves, the incurred loss development patterns would also show different development patterns between accident years.

Example: Impact on loss development patterns of data with multiple underlying currencies when using the Valuation Date FX Rate Adjustment

The second currency is the same as was used in the example for Appendix Tables 4-5.

Appendix Table 9

Cumulative Combined Paid Losses Converted at Current FX Rate Level								
	1990	1991	1992	1993	1994	1995	1996	1997
1990	181,665	343,329	484,994	606,659	708,323	708,323	708,323	708,323
1991		363,329	686,659	969,988	1,213,317	1,416,646	1,416,646	1,416,646
1992			363,329	686,659	969,988	1,213,317	1,416,646	1,416,646
1993				363,329	686,659	969,988	1,213,317	1,416,646
1994					363,329	686,659	969,988	1,213,317
1995						363,329	686,659	969,988
1996							363,329	686,659
1997								363,329

Appendix Table 10

Cumulative Combined Paid Loss Development Triangle							
	0-1 year	1-2 years	2-3 years	3-4 years	4-5 years	5-6 years	6-7 years
1990	1.890	1.413	1.251	1.168	1.000	1.000	1.000
1991	1.890	1.413	1.251	1.168	1.000	1.000	
1992	1.890	1.413	1.251	1.168	1.000		
1993	1.890	1.413	1.251	1.168			
1994	1.890	1.413	1.251				
1995	1.890	1.413					
1996	1.890						

As can be seen from the paid loss development triangle displayed here, there is no difference between the accident year development factors. The Valuation Date FX Rate Adjustment method avoids the distortion that can exist in the Accident Year FX Rate Adjustment method when multiple currencies are mixed. The same holds true for incurred loss development patterns.

Exhibits using Accounting Model FX Rate Adjustment Option (Option 5)**Appendix Table 11**

	Beginning Reserve Method: Adjusted Incurred Losses							
	1990	1991	1992	1993	1994	1995	1996	1997
1990	291,055	291,055	291,055	291,055	291,055	291,055	291,055	291,055
1991		614,336	614,336	614,336	614,336	614,336	614,336	614,336
1992			642,107	642,107	642,107	642,107	642,107	642,107
1993				731,238	731,238	731,238	731,238	731,238
1994					794,895	794,895	794,895	794,895
1995						817,422	817,422	817,422
1996							708,340	708,340
1997								633,317

Explanation of adjusted incurred loss calculation:

Accident year 1993 claim development, as shown in the original Schedule P, Part 2 is composed of the following development history:

- Claim payment of 16,000,000 yen on 6-30-93. Converted to dollars at the rate of 107.412 yen per dollar
- Bulk reserve of 64,000,000 yen at 12-31-93. Converted to dollars at the rate of 109.913 yen per dollar.
⇒ 12-31-93 dollar denominated incurred value equals \$731,238.
- Additional claim payment of 16,000,000 yen on 6-30-94. Converted to dollars at the rate of 102.526 yen per dollar.
- Bulk reserve of 48,000,000 yen on 12-31-94. Converted to dollars at the rate of 100.182 yen per dollar.
⇒ 12-31-94 dollar denominated incurred value = \$784,145. This includes a FX impact of \$10,488 arising from the change in exchange rates on 16,000,000 yen between 12-31-93 and 6-30-94 and a FX impact of \$42,419 arising from the change in exchange rates on 48,000,000 yen between 12-31-93 and 12-31-94.
⇒ To offset this impact, a paid loss adjustment in the amount of (\$52,907) is processed by year-end 1994. The resulting revised Schedule P, Part 2 shows no FX impact on the incurred losses reported at year-end 1994 for accident year 1993.

Appendix Table 12

Beginning Reserve Method: Cumulative Adjusted Paid Losses								
	1990	1991	1992	1993	1994	1995	1996	1997
1990	52,051	103,613	162,065	218,270	291,055	291,055	291,055	291,055
1991		114,492	227,367	323,196	454,626	614,336	614,336	614,336
1992			126,148	205,398	322,688	485,013	642,107	642,107
1993				148,959	252,110	417,050	590,864	731,238
1994					156,058	323,614	514,147	671,566
1995						189,047	396,299	570,764
1996							146,843	338,352
1997								140,000

This table shows what the paid loss triangle would look like if it were viewed after including all of the FX adjustments, assuming all adjustment amounts were processed through paid losses. The table below shows the corresponding paid loss development factors.

Appendix Table 13

Beginning Reserve Method Paid Loss Development Triangle							
	0-1 year	1-2 years	2-3 years	3-4 years	4-5 years	5-6 years	6-7 years
1990	1.991	1.564	1.347	1.333	1.000	1.000	1.000
1991	1.986	1.421	1.407	1.351	1.000	1.000	
1992	1.628	1.571	1.503	1.324	1.000		
1993	1.692	1.654	1.417	1.238			
1994	2.074	1.589	1.306				
1995	2.096	1.440					
1996	2.304						
1997							