



Institute of Actuaries of Australia

XVth GENERAL INSURANCE SEMINAR

Evolution of the Industry

On Equalisation by Risk Based Capitation Reinsurance

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A short history spanning 17 years

- **1989** Previous Reinsurance arrangements for PHI
- **1995** Current Reinsurance arrangements for PHI
- **1996** Free relativities for four membership classes
- **1997** Industry Commission report
- **2000** Lifetime Health Cover introduced
- **2006** RBC Reinsurance to be introduced



Partial community rating for PHI

Free rating variables (insurer determines relativity)

1. Membership category
2. Insurance product

Mandatory rating variables (relativity prescribed by law)

1. Entry age
2. Dependant status
3. *Attained age* – *diffentiation prohibited*
4. *Gender* – *diffentiation prohibited*
5. ... – *diffentiation prohibited*



Mandatory rate relativity

$$r(\text{Entry age, Adult status}) = \text{"Adapted SEU"} =$$
$$= \begin{cases} 1 + 0.02 \cdot ((\text{Entry age} - 30)^+ \wedge 35) & \text{per contributing adult} \\ 0 & \text{per dependant} \end{cases}$$

SEU stands for Single Equivalent Unit



Optimal equalisation scheme: Per capita equalisation transfer is

Average benefit per Adapted SEU

$$\tilde{t}(\mathbf{x}) = \bar{b} \cdot r(\mathbf{x}) - d(\mathbf{x})$$

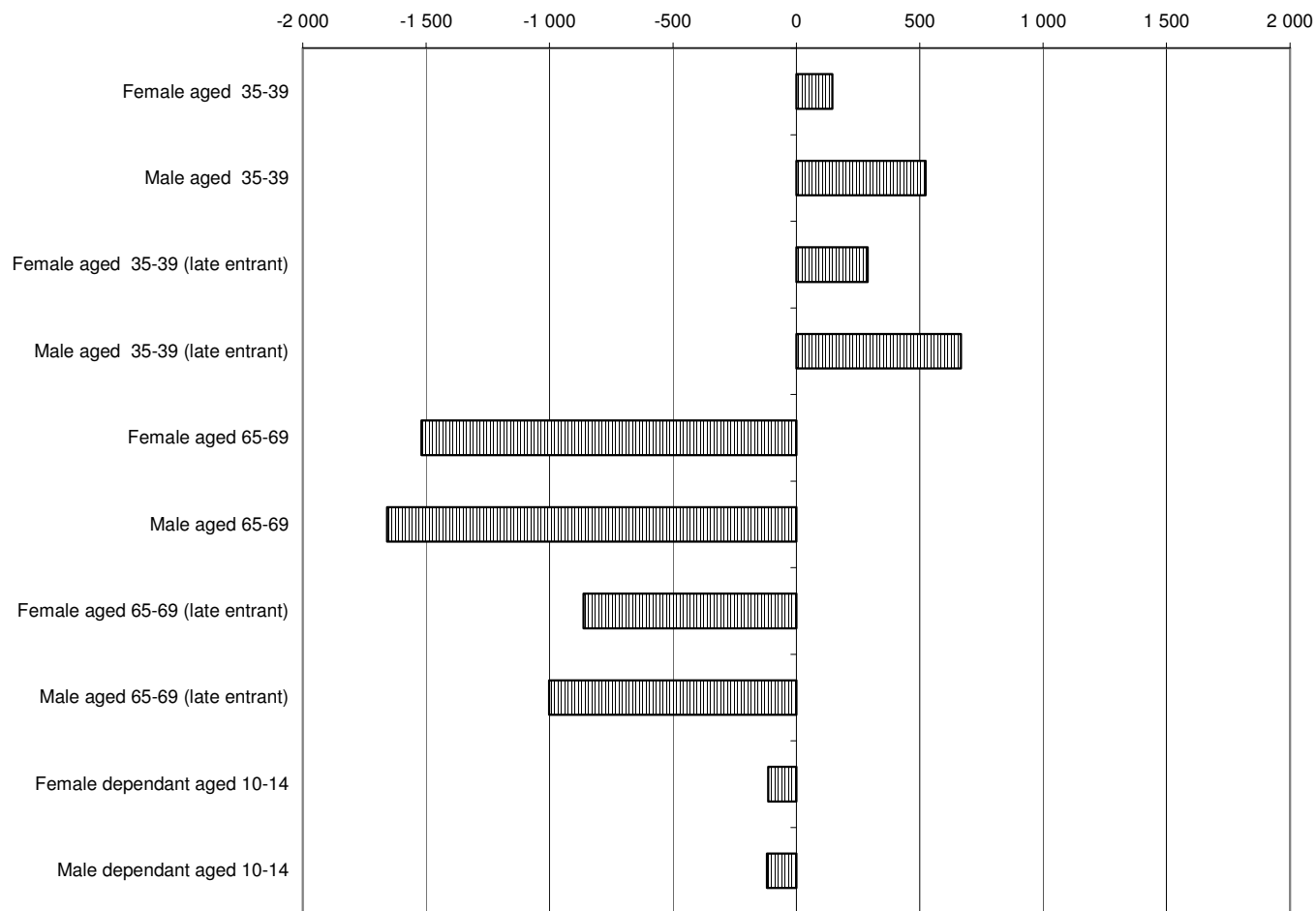
Adapted SEU

Risk / rating group

Capitation cost



Per capita equalisation transfer using Adapted SEU





Properties of equalisation using Adapted SEU

The per capita equalisation transfer would not depend on the membership category of the person.

Late entrants who are subject to the LHC loading would be charged more as net payors, subsidised less as net payees.



The problem with RBC Reinsurance

The proposed RBC Reinsurance fails to make allowance for changes to community rating that have been made since 1996:

- **Health insurers are free to set premium relativities for four different membership categories.**
- **Health insurers are obliged to apply premium loadings for late entrants to Lifetime Health Cover.**



RBC Reinsurance: Per capita equalisation transfer is

Average benefit per Ordinary SEU

$$\tilde{t}^*(\mathbf{x}) = \bar{b}^* \cdot r^*(\mathbf{x}) - d(\mathbf{x})$$

Ordinary SEU

Risk / rating group

Capitation cost



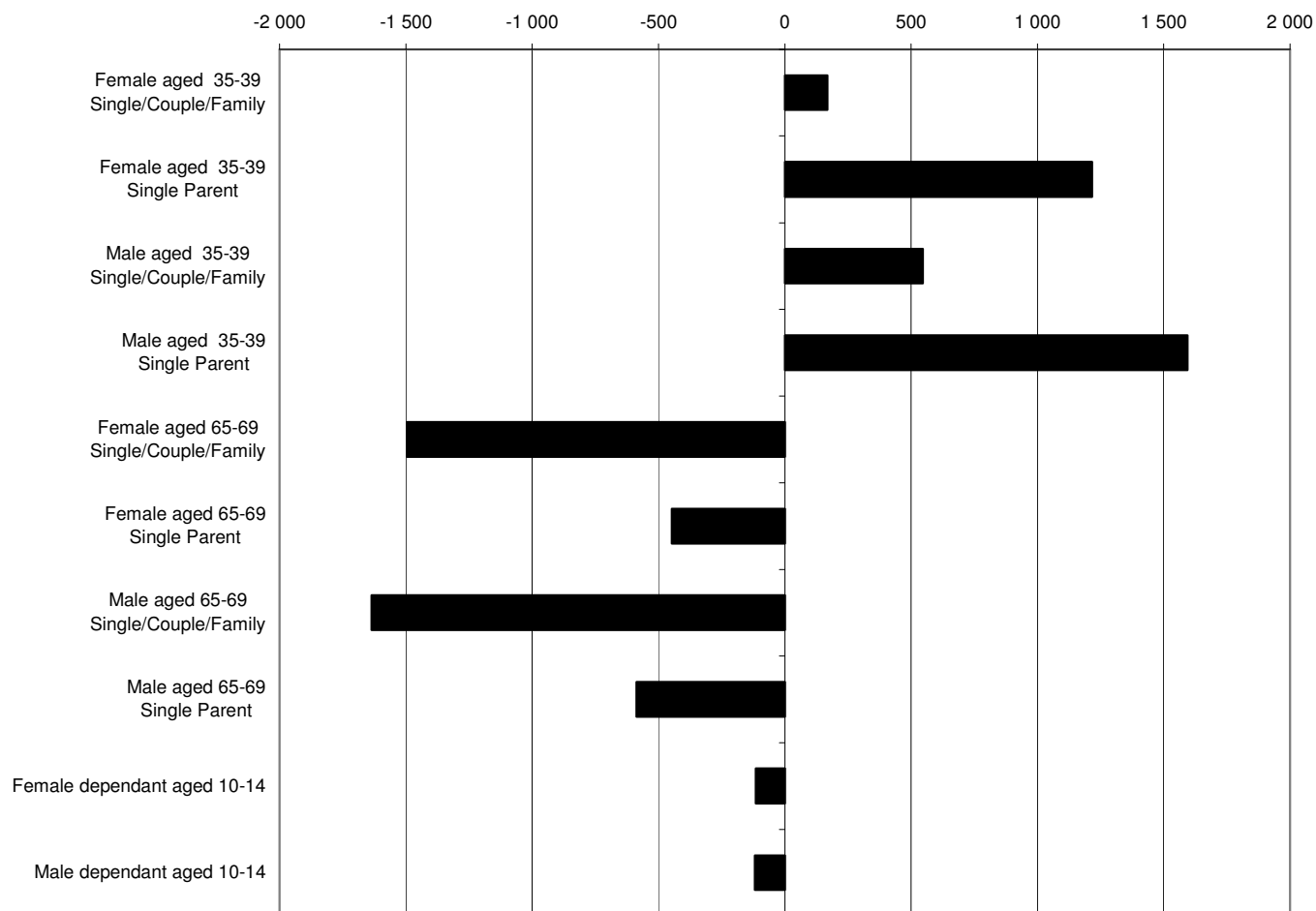
RBC Reinsurance: Implied rate relativity

$$r^*(\mathbf{x}) = \text{Ordinary SEU} =$$
$$= \begin{cases} 1 & \text{per Single, Couple or Family adult} \\ 2 & \text{per Single Parent adult} \\ 0 & \text{per dependant} \end{cases}$$

Ordinary SEU are implied by pre-1996 rate relativities.



Per capita equalisation transfer using RBC Reinsurance





Properties of equalisation using RBC Reinsurance as proposed

The per capita equalisation transfer will depend on the membership category of the person.

The per capita equalisation transfer will not depend on the amount of LHC loading that the person is paying to the insurer.



Properties of equalisation using RBC Reinsurance as proposed - continued

A female single parent aged 35-39 will be charged ~ 7 times the amount that she would be charged in any other membership category. For a male single parent aged 35-39, the corresponding ratio is ~3.

A female single parent aged 65-69 will attract ~30% of the subsidy that she would attract in any other membership category. For a male single parent aged 65-69, the corresponding ratio is ~36%.



Alternatives studied in the paper

Adapted SEU.

RBC Reinsurance.

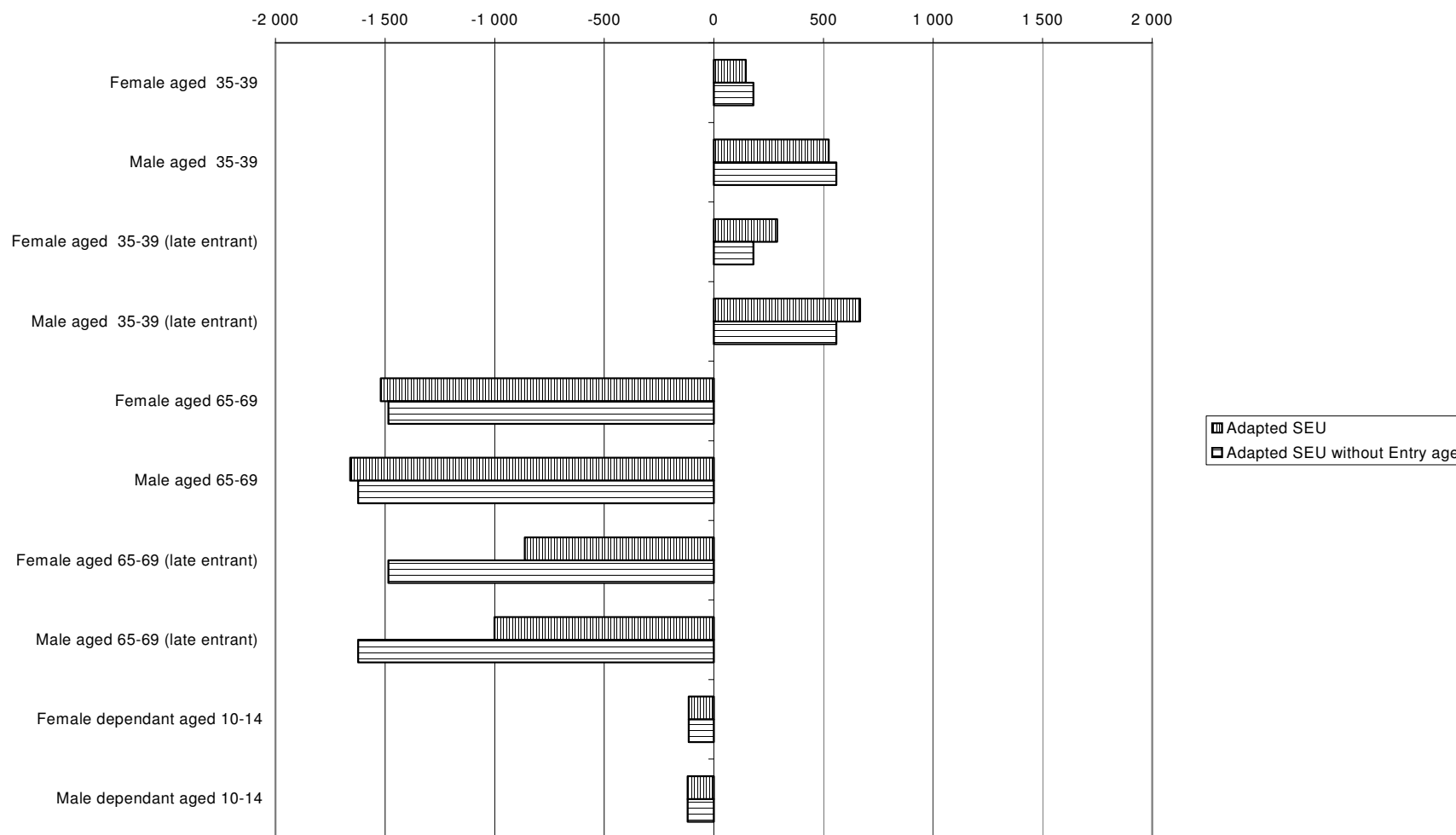
Adapted SEU without Entry age.

RBC Reinsurance with Entry age.

RBC Reinsurance “with Product”.

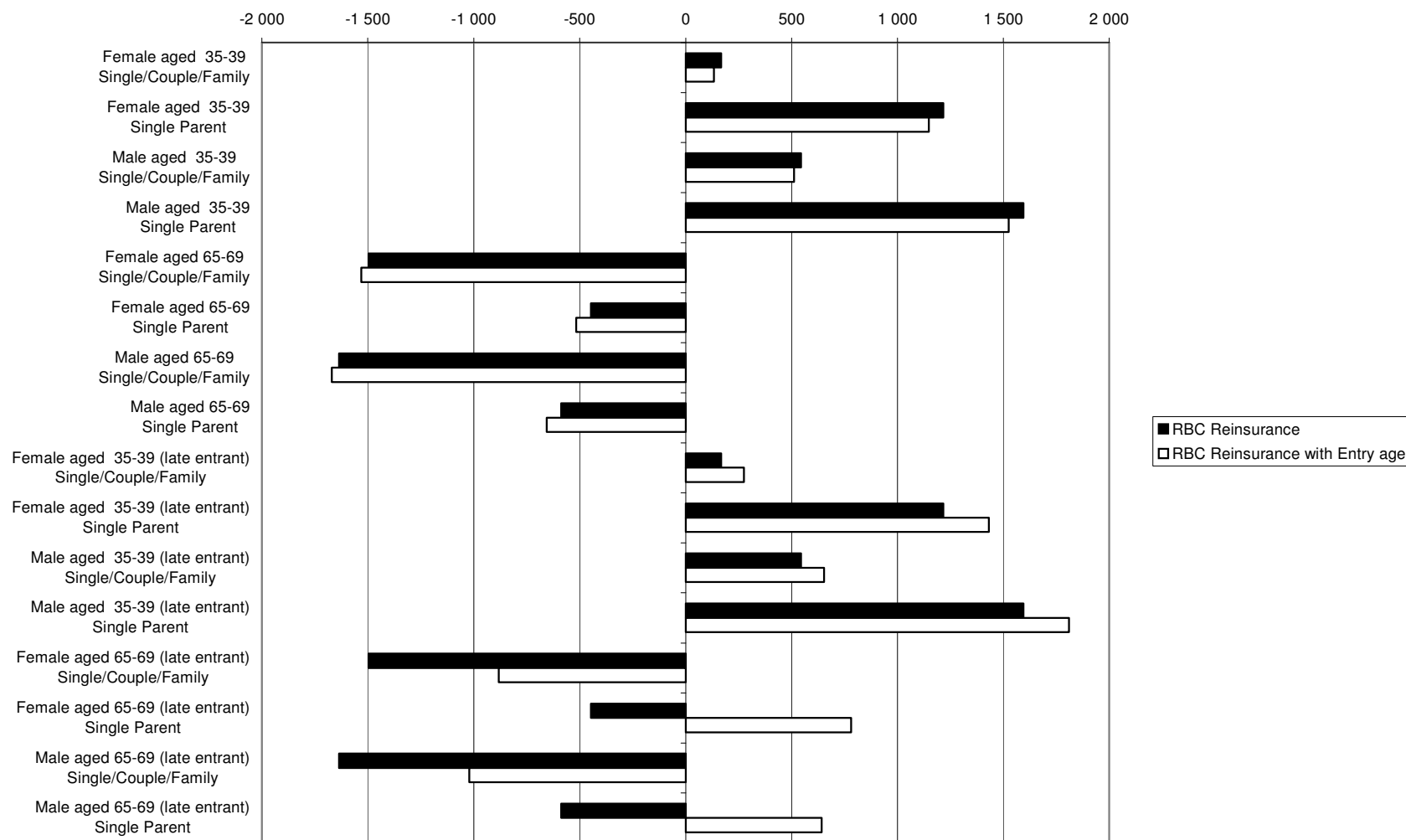


Adapted SEU with and without Entry age



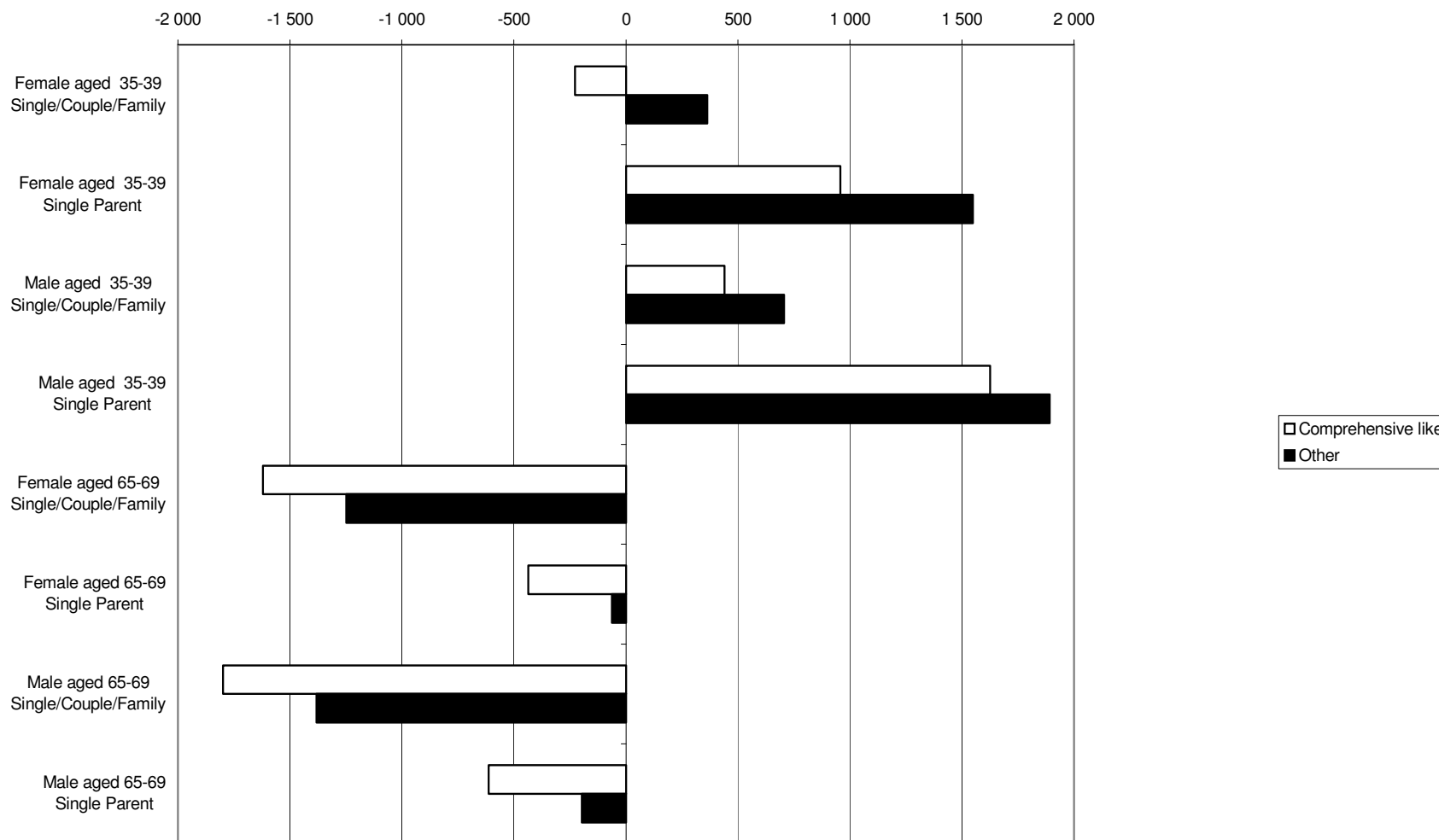


RBC Reinsurance with and without Entry age





RBC Reinsurance “With product”





Alternatives studied in the paper - Annual equalisation transfer in \$ million

Equalisation transfer	Adapted SEU "Without product"		RBC Reinsurance "Without product"		RBC Reinsurance "With product"		
	With Entry age	Without Entry age	Without Entry age	With Entry age	Comprehensive like products	Other products	Total
Single	-89,9	-92,4	-101,1	-98,6	-97,3	21,6	-75,7
Couple	-115,9	-118,8	-126,9	-124,0	-145,3	-0,2	-145,4
Single Parent	3,9	4,1	32,0	31,7	10,9	23,9	34,7
Family	202,0	207,1	196,0	191,0	-30,4	216,8	186,4
Total	0,0	0,0	0,0	0,0	-262,2	262,2	0,0

**Indicative figures, based on a notional and
simplified split of the insured population of NSW !**



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Thank you for your attention !