

# **Risk Adjustment-Lessons Learned:**

## **Experience in VHI Markets**

**John Armstrong (Ireland),  
Erasmus University, Rotterdam**

**Heather McLeod,  
New Zealand**

**Francesco Paolucci  
ACERH, Canberra**



**Webcast  
30 - 31 March 2011**

# Agenda

- Risk Equalisation/Risk Adjustment: Global Experience and Future Relevance
- Risk equalisation/risk adjustment — background and definitions [Heather]
- Introduction to three country study [John]
- Summary of Australia experience [John]
- Summary of Ireland experience [John]
- Summary of South Africa experience [Heather]
- Three country comparison [John]
- Wrap up of themes and learnings [John]
- Listener Submitted Questions

# **Part 1: Risk equalisation/ risk adjustment: Background / Definitions**



IAA HEALTH SECTION  
SECTION SANTÉ DE L'AAI

**Webcast  
30 - 31 March 2011**

# Information Used

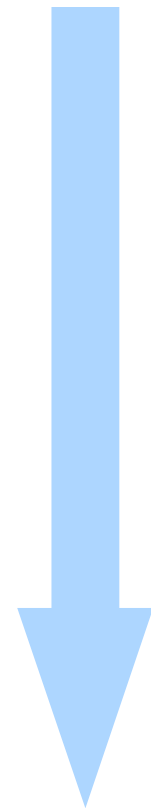
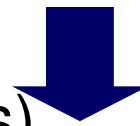
## Risk Adjustment

Competitive Markets

Other Settings

Predictive Modeling

- Demographics,
- Health status (e.g. diagnoses)
- Functional status
- Geography
- Socio-economic variables
- Price and insurance coverage
- Supply side factors
- Consumer Taste
- Lagged or concurrent utilization



# Risk-Adjusted Capitation

- A capitation payment is defined as the contribution to a plan's budget associated with a plan member for the service in question for a given period of time.
- Clearly the health care expenditure needs of citizens vary considerably, depending on personal characteristics such as age, morbidity, and social circumstances.
- More refined forms of capitation systems therefore employ methods of risk adjustment, which seek to adjust per capita payments to reflect the relative expected health service expenditure for plan members on the basis of personal characteristics.

# Risk-Adjusted Capitation

Summary of the 20 Capitation Schemes Surveyed

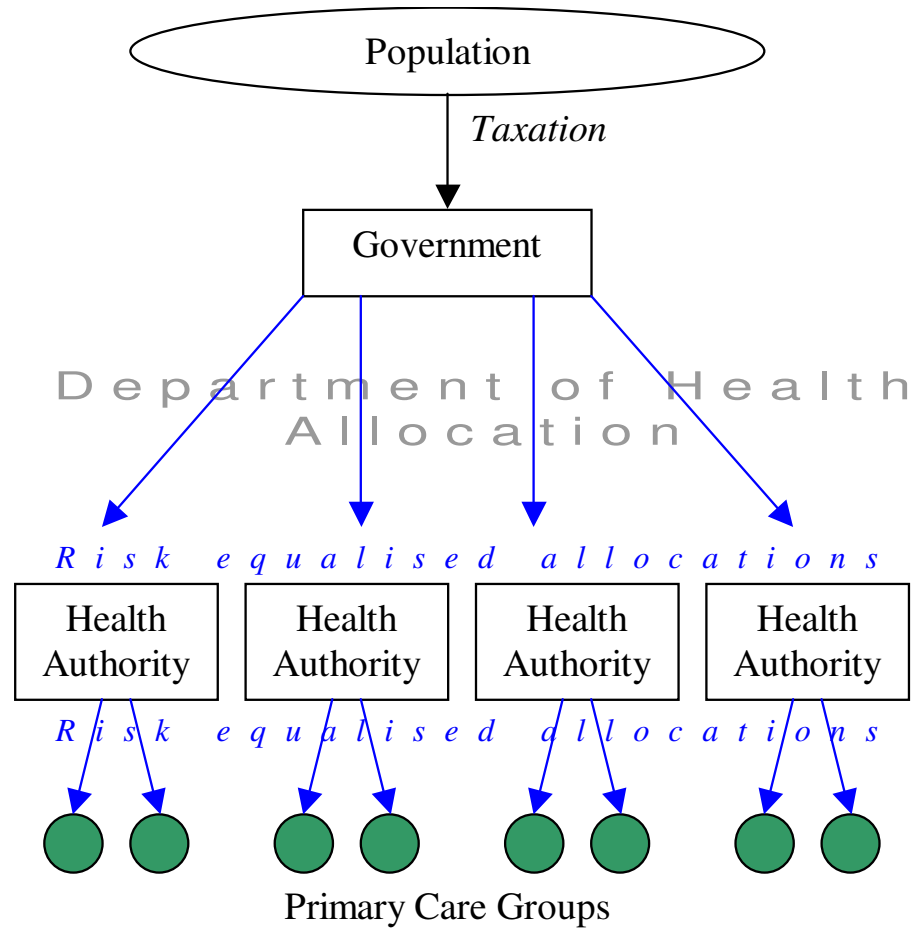
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Competitive insurance plans	Employer-based insurance plans	Public sector: devolved	Public sector: centralized
Belgium	France	Denmark	Australia
The Netherlands	Japan	Finland	(New South Wales)
Germany		Norway	Canada (Alberta)
Israel		Spain	Italy
Switzerland		Sweden	New Zealand
			United Kingdom
			(England, Scotland, Wales, Northern Ireland)

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Source: Rice and Smith, 2001

# England



Source: Oliver Adam J, "Risk Adjusting Health Care Resource Allocations"

Source : CARE Monograph 3, Parkin and McLeod

# Predictive Modeling

- **Predictive models are used for:**
  - Care management
  - Provider selection
  - Provider profiling
  - Effectiveness research
  - Forecasting financial data
  - Quality measurement
- Incentives and internal face validity may matter less than with classic risk adjustment uses.



# Hospital spend

## DRG: Condition X



Age < 17



No C.C.



With C.C.



< 17 yrs

without C.C.

with C.C.

Detailed Breakdown Distribution of Admission Costs per condition X



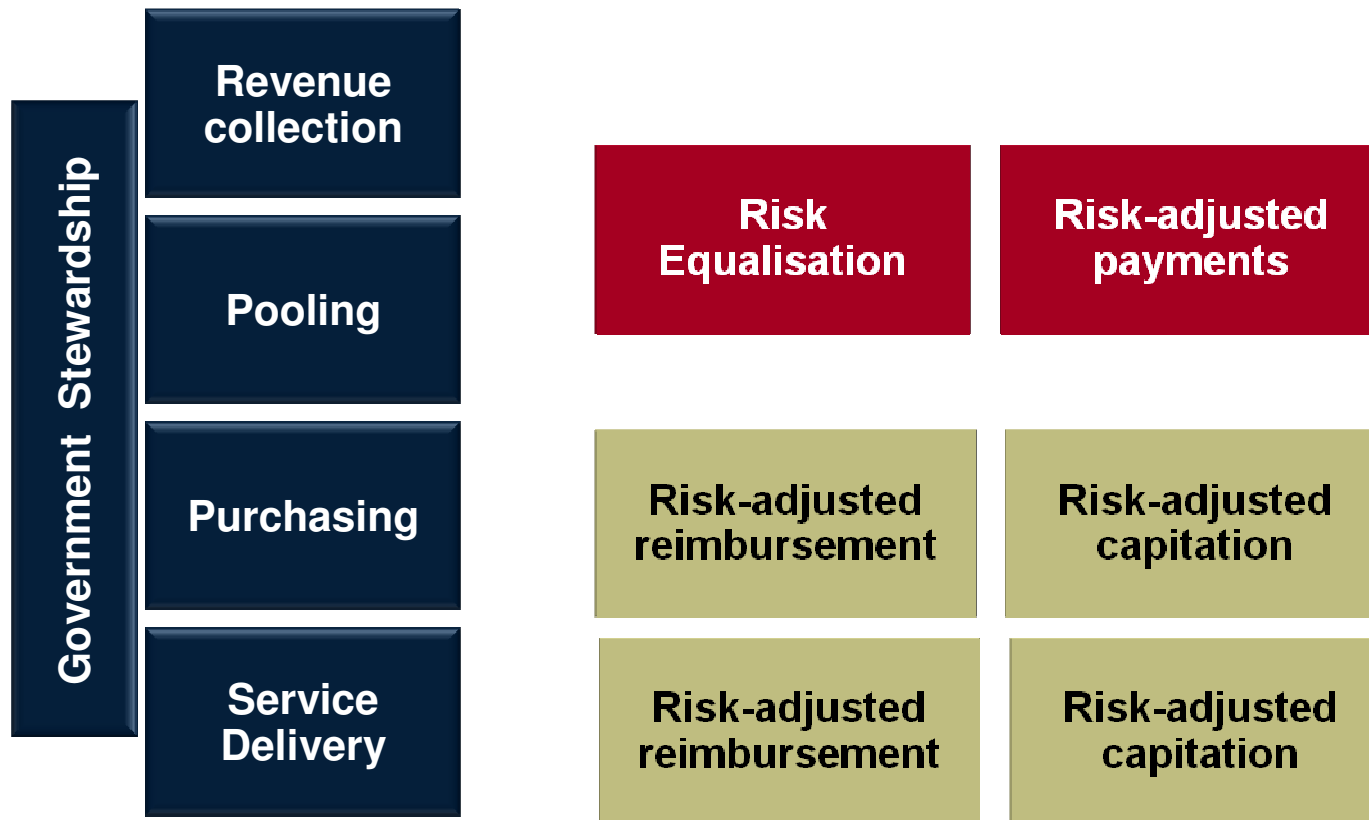
Individual Case Mix adjusted Breakdown Distribution of Admission Costs per condition X

# Diagnosis-based Risk Adjustment

- **Adjusted Clinical Groups (ACG)**
  - John Hopkins University
- **Chronic Disability Payment System (CDPS)**
  - University of San Diego and Boston University
- **Diagnostic Cost Groups (DCG)**
  - Boston University and Health Economics Research
- **Global Risk Adjustment Model (GRAM)**
  - Kaiser Permanente

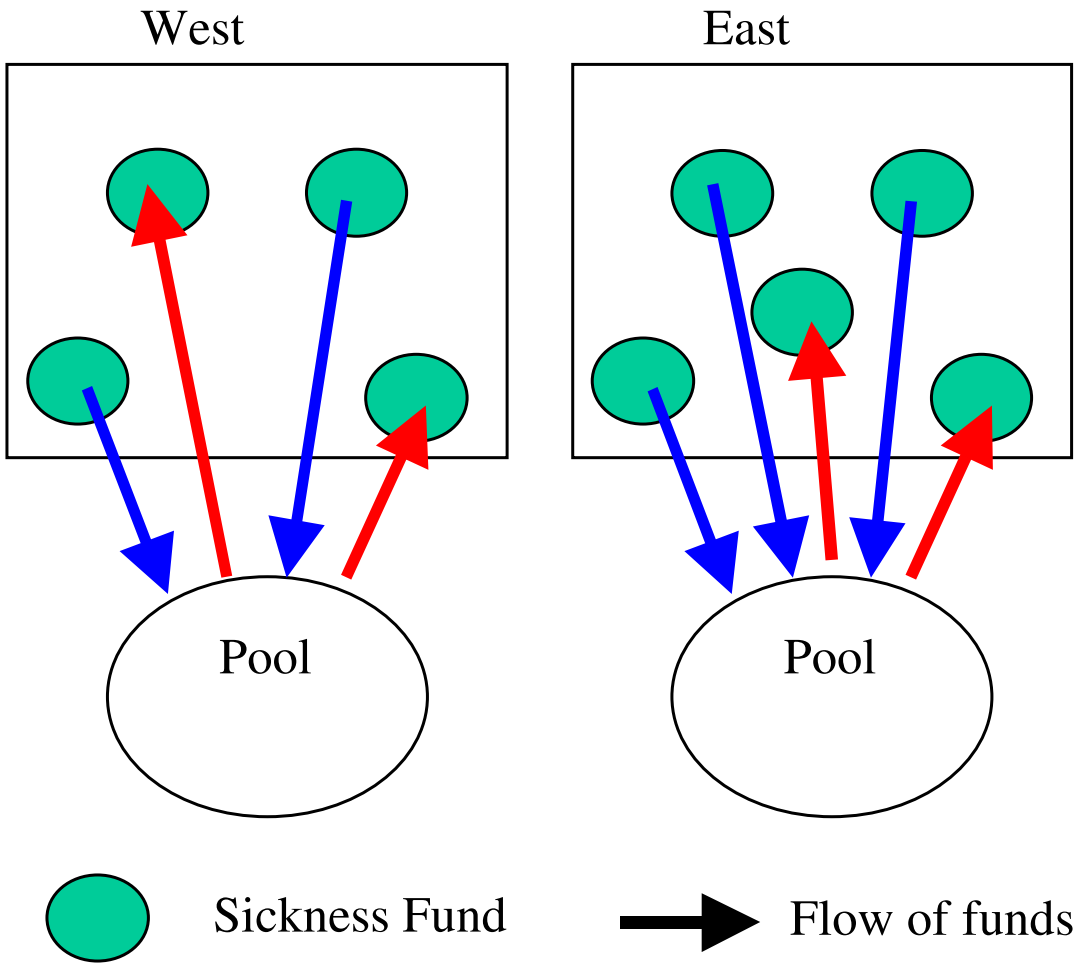
**Not an exhaustive list !**

# Health System Functions



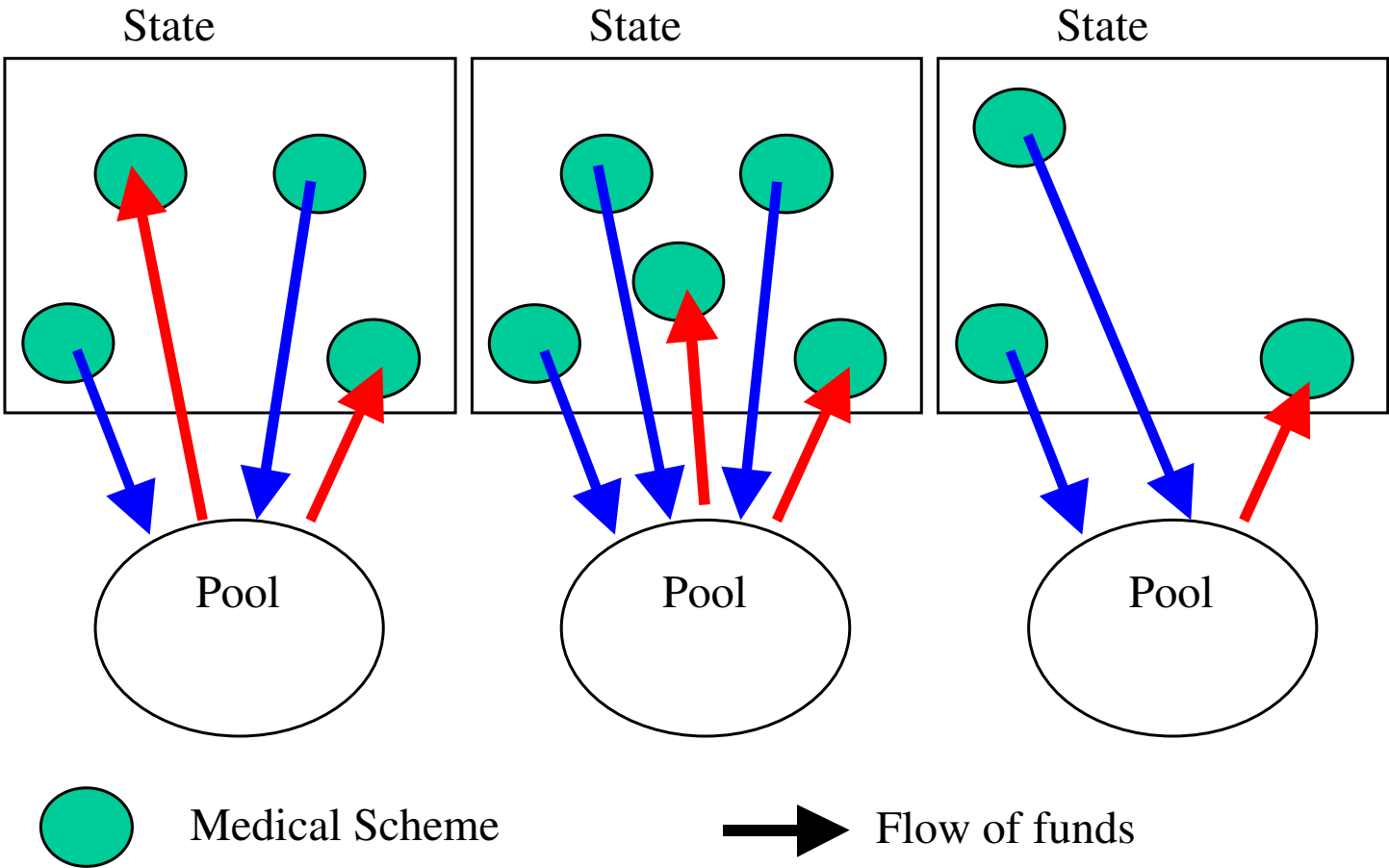
**Source for health system functions:** Kutzin, J. (2008). Health financing policy: a guide for decision-makers. WHO Europe.

# Germany



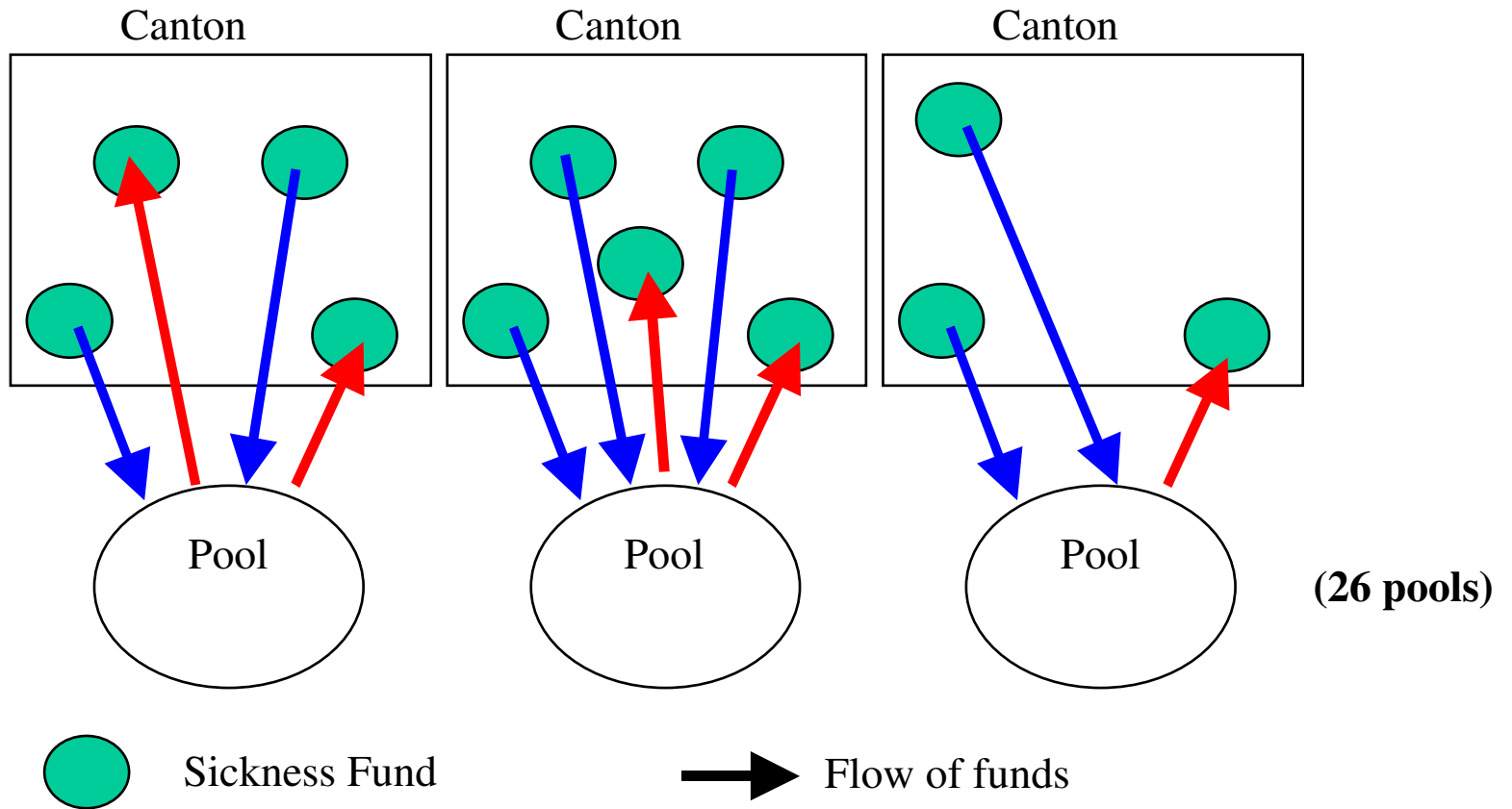
Source : CARE Monograph 3, Parkin and McLeod

# Australia



Source : CARE Monograph 3, Parkin and McLeod

# Switzerland



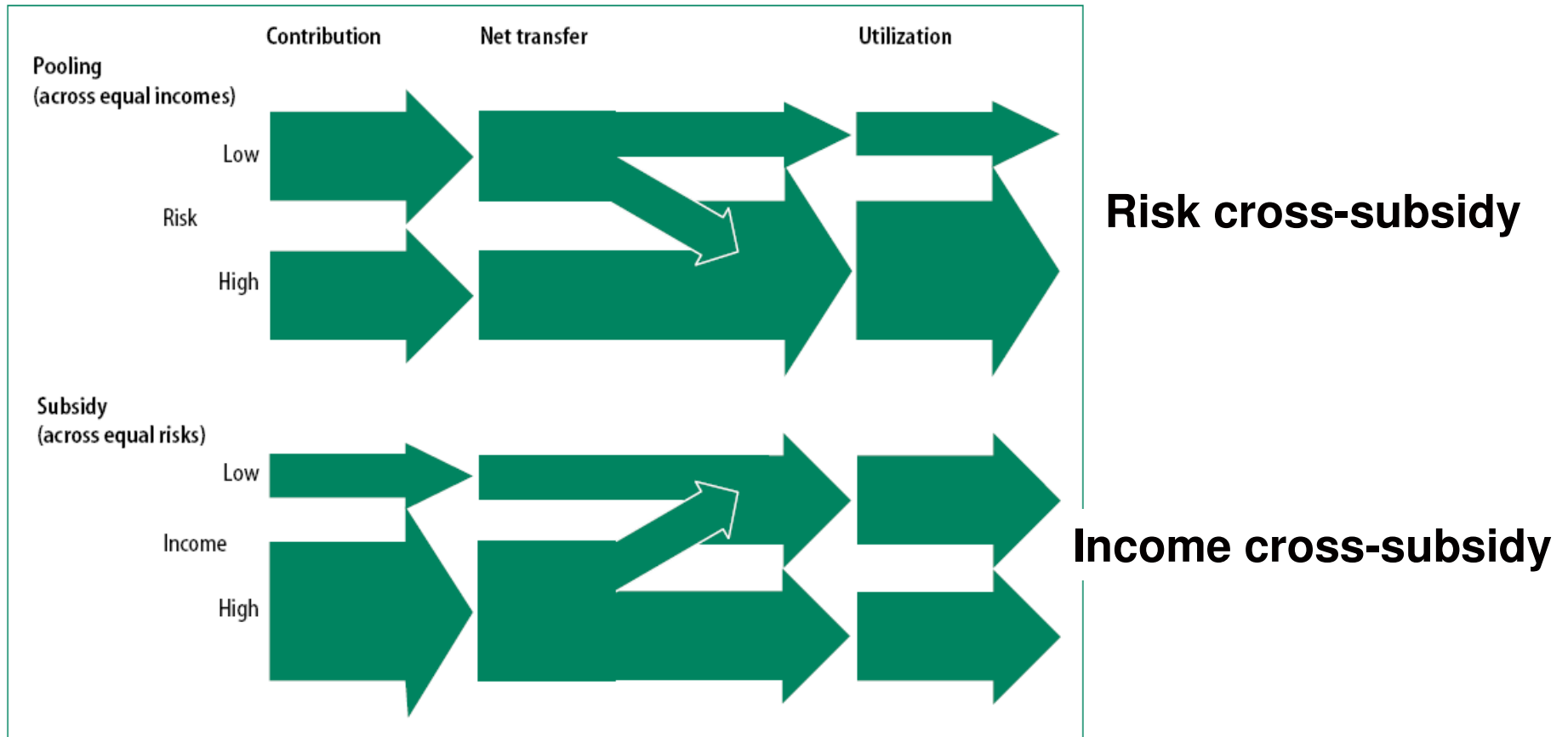
Source : CARE Monograph 3, Parkin and McLeod

# Risk Equalisation

- Risk equalisation:
- “..refers to a mechanism that equalises the risk profiles of the insurers by contributing to or receiving from them a risk-adjusted equalisation payment per insured member, derived from an individual’s predicted (ex ante) health expenses based on his/her risk factors”

**Source:** Armstrong J, Paolucci F, McLeod H, van de Ven WPMM. Risk equalisation in voluntary health insurance markets: A three country comparison. Health Policy. 2010;98 39-49.

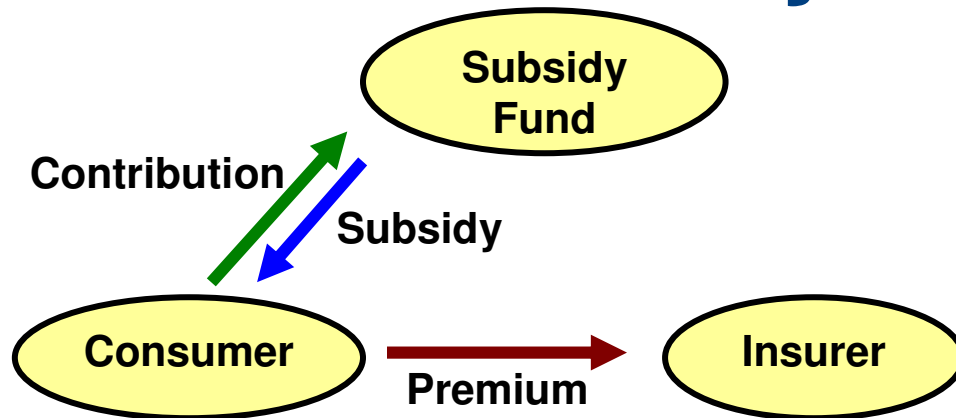
# Cross-subsidies for NHI



Source: WHO Health Report 2000

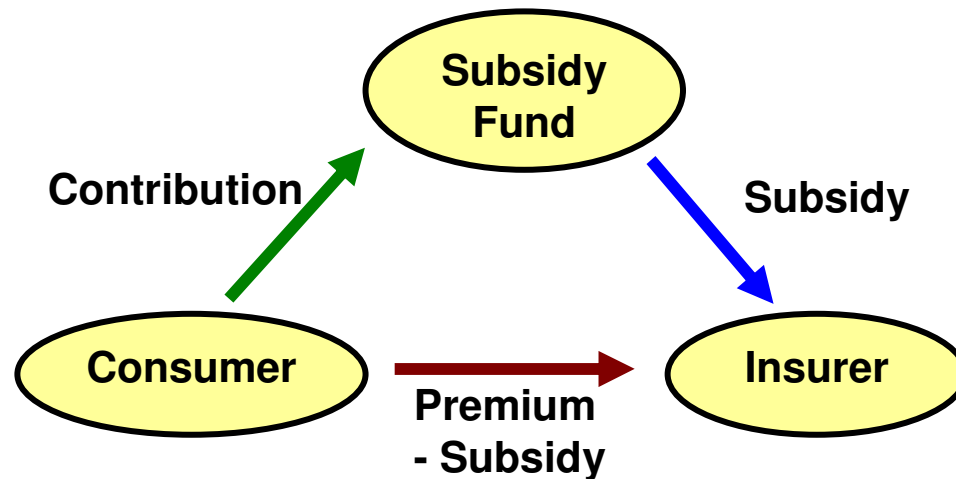


# Payment Flow in a Subsidy System



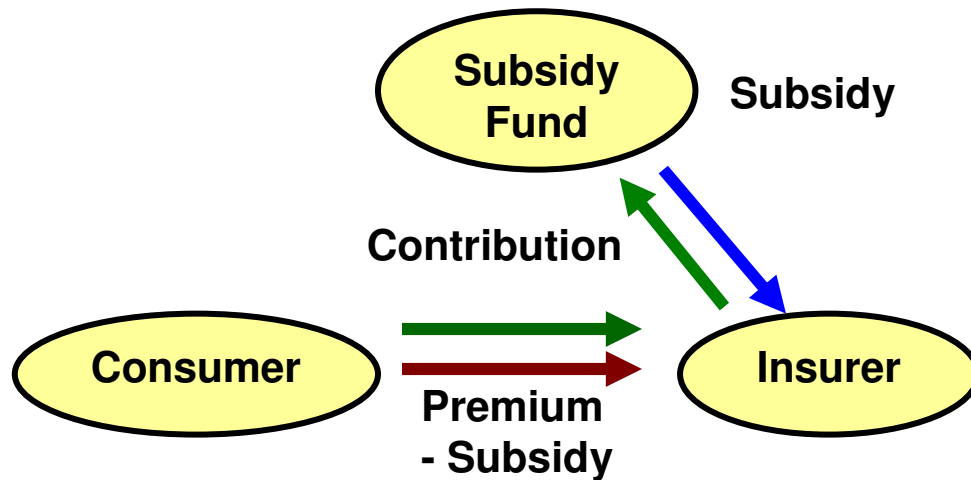
## Modality A

Not used for risk-adjusted subsidies anywhere



## Modality B

USA Medicare, Belgium, Russia, Netherlands (until 2005), Israel



## Modality C

Germany, Switzerland, Ireland, Czech Republic, Colombia

Sponsor collects Contributions and Premiums and transfers Contributions and Subsidies to Insurers

## Modality D

Some USA employer coalitions

# Countries with Risk Equalisation Formulae Studied (2000 to 2005)

- Australia
- Belgium
- Colombia
- Czech Republic
- Germany
- Ireland
- Israel
- Netherlands
- New Zealand
- Russian Federation
- Switzerland
- United Kingdom
- United States of America
- Canada
- Finland
- Norway
- Sweden
- Chile
- France
- Japan
- Italy
- Denmark
- Spain
- Taiwan
- Poland
- Slovenia

**Not an exhaustive list !**

# Countries with Risk Adjustment in National System studied in 2010

## ● Developed Countries:

- Australia
- Canada
- Denmark
- Finland
- Ireland
- Italy
- New Zealand
- Norway
- Spain
- Sweden
- United Kingdom
- USA

## ● Developing Countries:

- Brazil
- Chile
- Colombia
- Costa Rica
- Cuba
- Ghana
- India
- Indonesia
- Malaysia
- Namibia
- Republic of Korea
- Singapore
- Sri Lanka
- Taiwan
- Tanzania
- Thailand
- Vietnam

**Not an exhaustive list !**

# **Practical Issues in Designing a Risk Equalisation Formula**

# Prospective vs. Retrospective

- Equalisation payments can either be calculated prospectively, at the beginning of a particular period, or retrospectively, at the end of a particular period.
- **Prospective** systems are typically based on global risk adjustors (age, gender, location) and incorporate prior utilisation or diagnostic information aggregated from previous periods.
- **Retrospective** systems utilise data that becomes known during the period for which equalisation calculations are being computed.
- Other alternatives: calculate equalisation payments prospectively and adjust retrospectively.

# Risk Adjustment Factors Used in Other Systems

## Demographics & Health Status

Age

Gender

Chronic conditions

Height/weight ratio (BMI)

Self-rated general health status

Physical impairments/Disability

## Medical Services

Hospitalisation

Prior Utilisation

Level of insurance coverage

## Socio-Economic Status

Income

Education level

Employment status

Degree of urbanisation

Supply of health care facilities

Family size/Number Dependants

## Geographical Factors

Region

Local Factors

Less common factors :  
family history; lifestyle  
factors such as  
smoker/non-smoker  
status; sporting activity;  
ethnicity.

International review of 10 countries with risk equalisation, Van Vliet et al (1992)

Source : CARE Discussion paper, Osburn and McLeod



**Centre for  
Actuarial  
Research**

# Severe Diseases Adjustment in Israel

Funds from government and income-related premiums collected in central pool, then prospectively allocated to sickness funds according to four components:

- the mean premium
- the risk equalisation scale
- a payment for “severe diseases”
- a lump sum subsidy.

A sickness fund receives a fixed payment for each member who has one of the five conditions.

Condition	Payment (July 1999)
AIDS	54 000IS
Dialysis	209 000IS
Gauche	240 000IS
Hemophilia	100 000IS
Talasemia	48 000IS

[Original source: Rosen and Shamai, “Financing and resource allocation in Israeli health care”]

Source : CARE Discussion paper, Osburn and McLeod



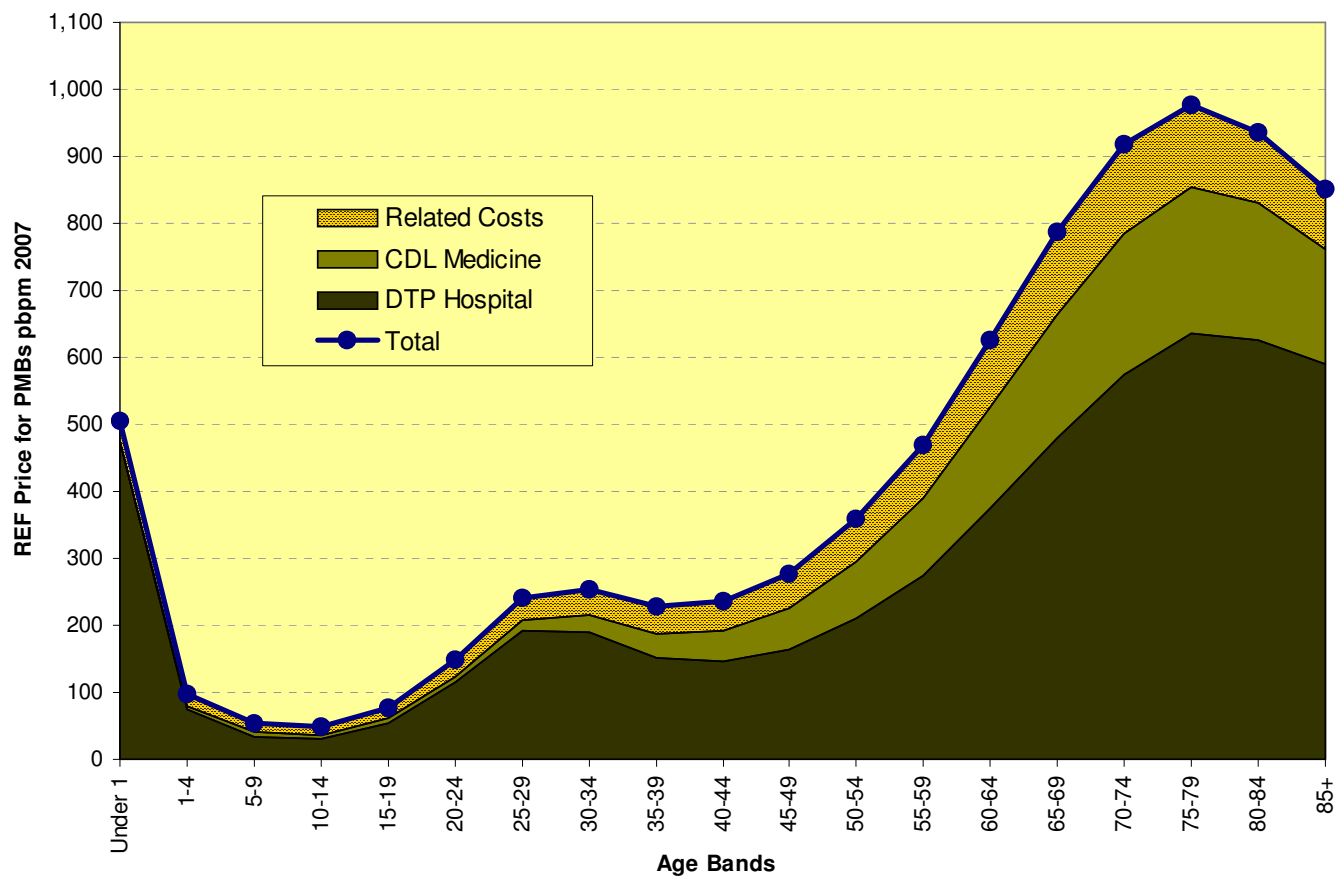
# Definitions and Guiding Principles

- In the context of the Risk Equalisation Fund, **risk** is defined as:
  - The expected and predictable significant deviation from the theoretical national community-rated price for groups of beneficiaries with a measurable set of risk factors.
  - The national community-rated price is the reasonably efficient achievable price for the common set of benefits.

# REF Contribution Table

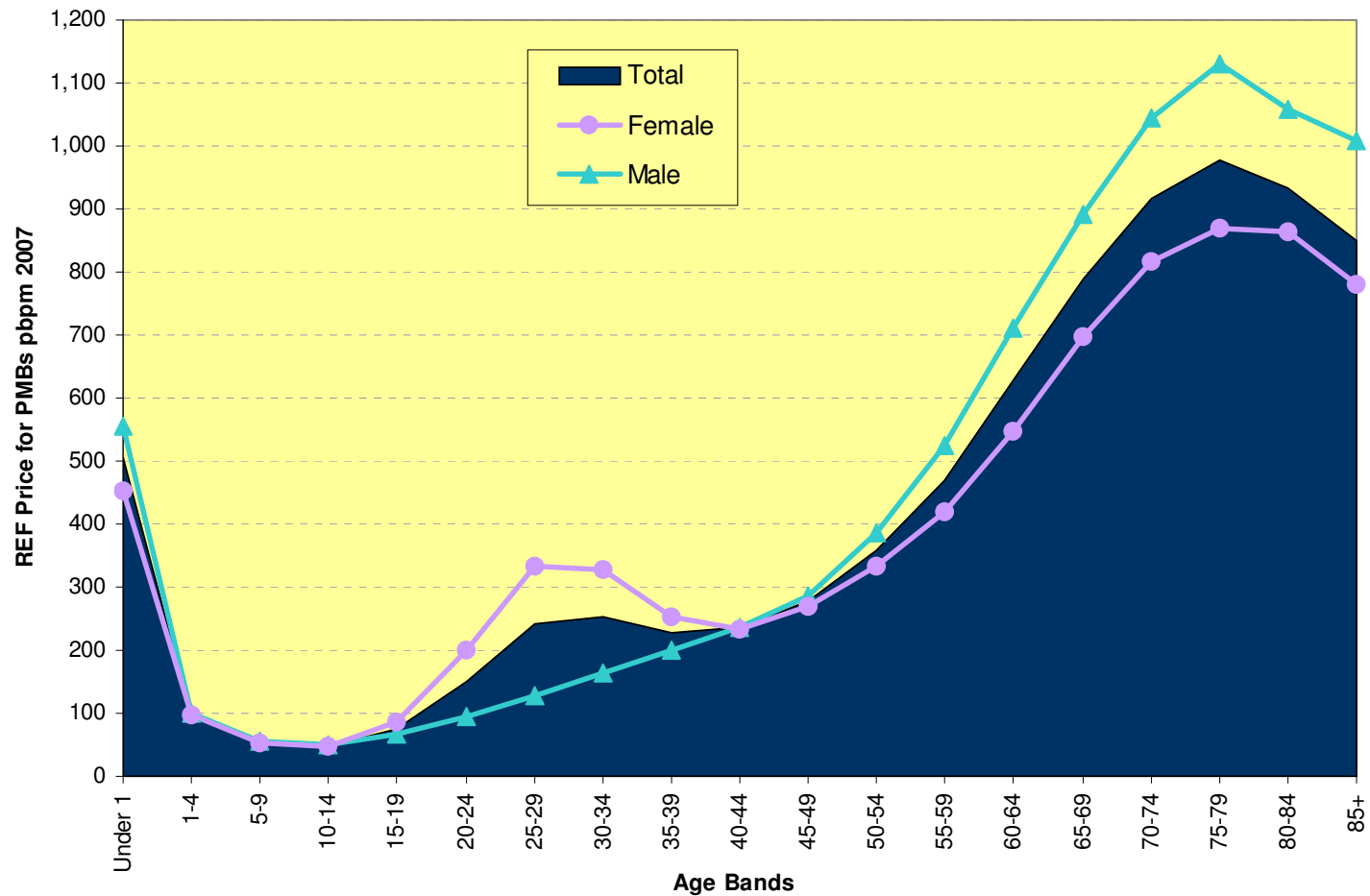
- The REF Contribution Table is a table of amounts payable by the REF per beneficiary, according to the REF risk factors. The amount is determined from historic data and other inputs on costs per disease. The amount is set in order to cover:
  - a defined benefit package;
  - for the entire insurance industry population that is expected for the next year (the target population); and
  - with an agreed dispensation of cost and other (managed care) efficiencies.

# Components of PMB Price by Age



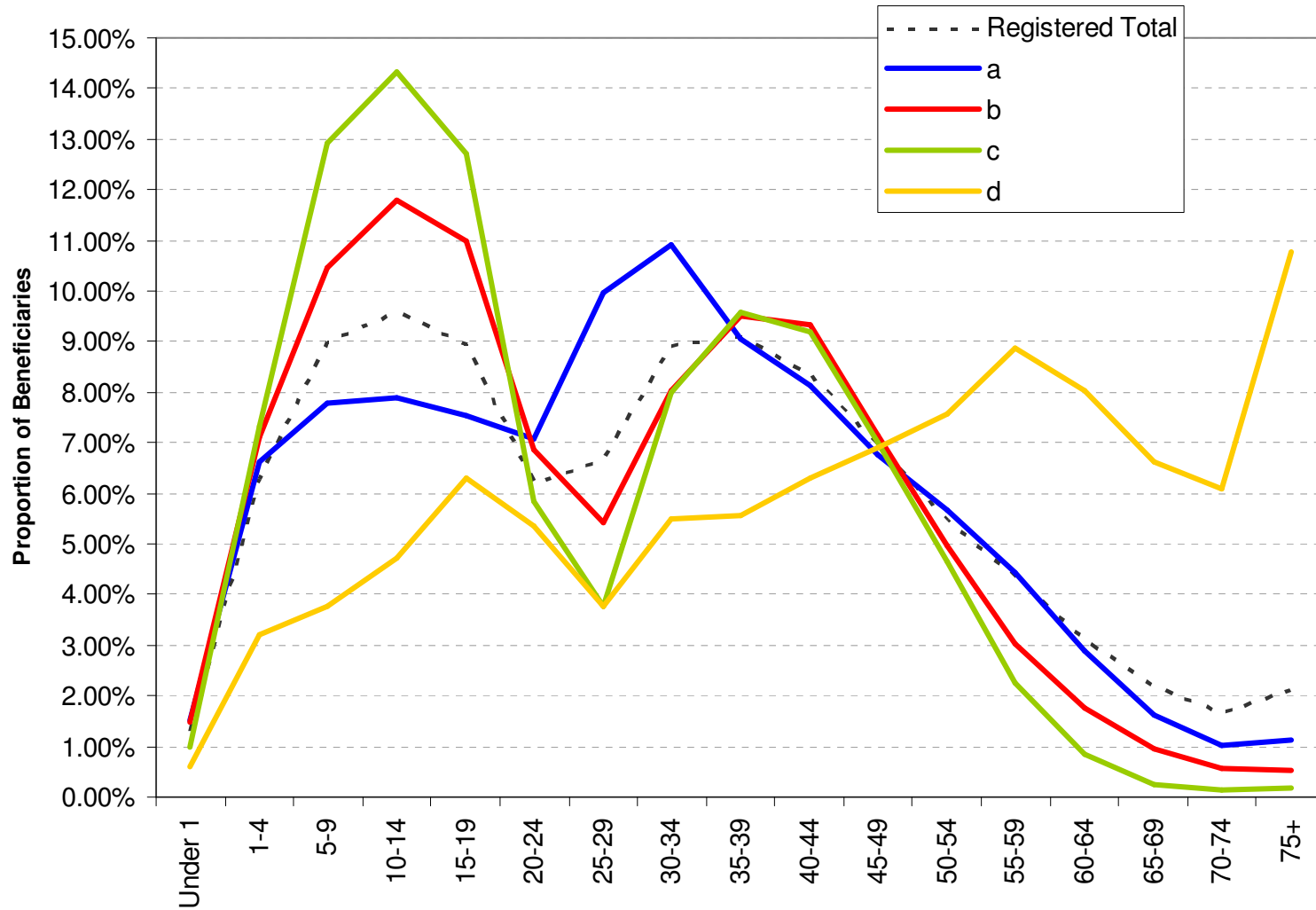
Source: South Africa, REF Contribution Table 2007

# PMB Price by Age and Gender



Source: South Africa, REF Contribution Table 2007

# Age Profiles Largest Open Schemes

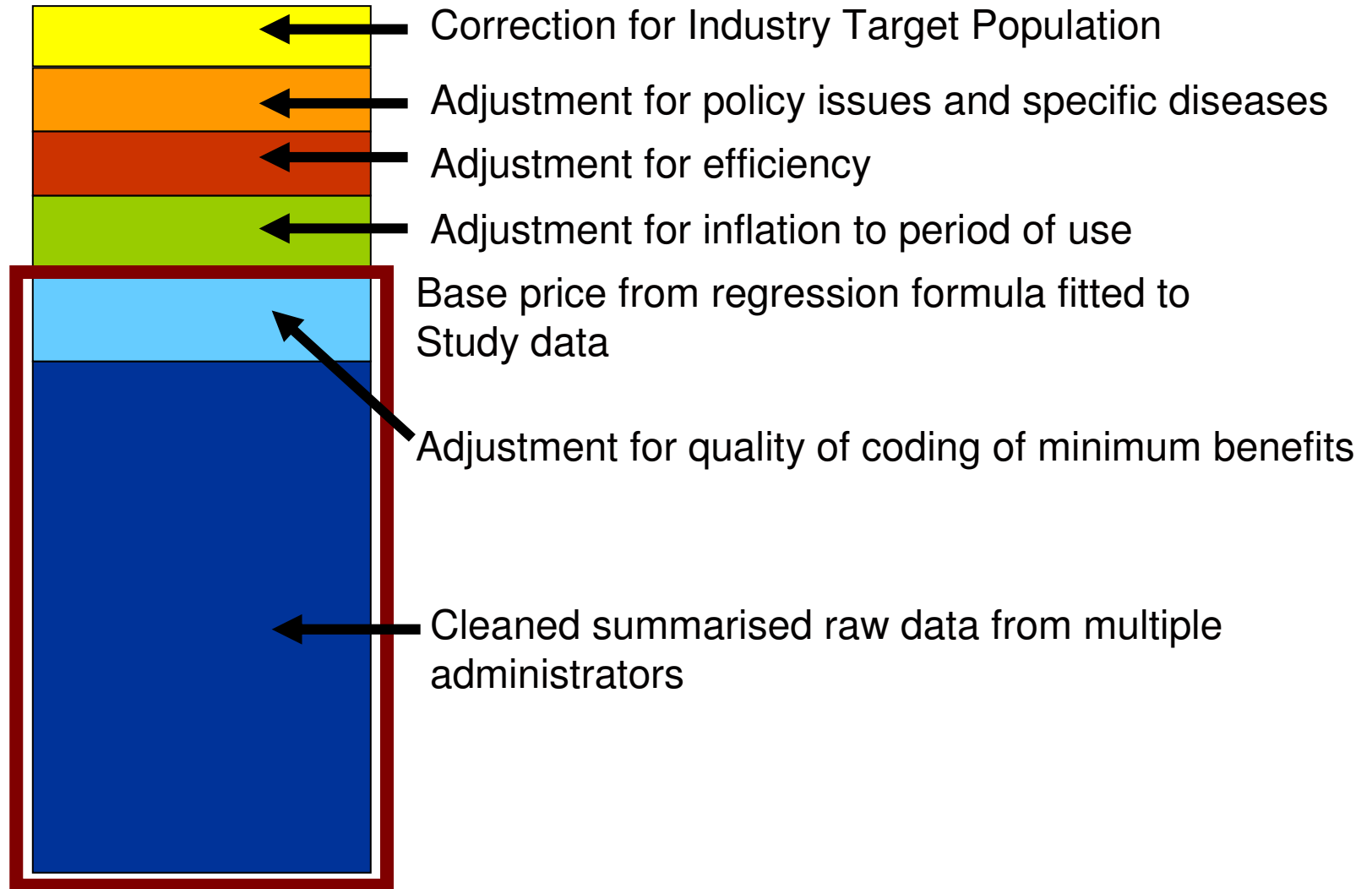


# Risk Factors in SA Formula

- Age
- Deliveries
- Gender (recommended from 2007)
- Not ethnicity. Not geographic region
- Not open/restricted scheme
- Not primary member, marital status or family size
- Not income
- **Measures of chronic disease burden:**
  - Numbers with each CDL disease
  - Numbers with multiple CDL diseases
  - Numbers with HIV/AIDS on ARV therapy
- Not high cost, low frequency conditions.

Source: South Africa, FCTT 5 November 2003; RETAP 2007

# Pricing REF Contribution Table



# REF Contribution Table

## [Base 2005, Use 2007]

REF Contribution Table [Base 2005, Use 2007]		Expected Industry REF Community Rate										The actual Industry Community Rate for each payment period is determined according to the REF Grids that are approved for shadow payments.					
Per Beneficiary Per Month		257.05															
Age Bands	No CDL Diseases NON	Chronic Disease List (CDL) Conditions															
		ADS	AST	BCE	BMD	CHF	CMY	COP	CRF	CSD	DBI	DM1	DM2	DYS	EPL	GLC	
Column	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
Under 1	505.04																
1-4	87.62	234.97	391.53	551.32	1,266.05	1,267.57	1,267.57	1,459.04	15,986.75	1,293.86	921.26	1,505.94	535.45	693.80	795.78	311.50	
5-9	40.45	187.80	344.35	504.15	1,218.88	1,220.39	1,220.39	1,411.87	15,939.57	1,246.68	874.09	1,458.76	488.27	646.63	748.61	264.33	
10-14	37.41	184.76	341.31	501.11	1,215.84	1,217.35	1,217.35	1,408.83	15,936.54	1,243.64	871.05	1,455.71	485.23	643.59	745.57	261.28	
15-19	55.41	202.76	359.33	519.11	1,233.84	1,235.36	1,235.36	1,426.83	15,954.53	1,261.65	889.05	1,473.71	503.23	661.59	763.57	279.28	
20-24	87.76	235.11	391.66	551.46	1,266.19	1,267.71	1,267.71	1,459.18	15,986.89	1,294.00	921.40	1,506.06	535.57	693.94	795.92	311.63	
25-29	123.63	270.98	427.53	587.33	1,302.04	1,303.57	1,303.57	1,495.05	16,022.74	1,329.87	957.27	1,541.93	571.44	729.80	831.78	347.50	
30-34	142.63	289.99	446.55	606.34	1,321.06	1,322.59	1,322.59	1,514.05	16,041.76	1,348.87	976.27	1,560.94	590.45	748.81	850.80	366.51	
35-39	295.36	313.44	470.05	629.85	1,326.44	1,327.96	1,327.96	1,519.43	16,047.14	1,354.25	981.65	1,566.31	595.83	754.19	856.17	371.88	
40-44	166.14	313.44	470.05	629.85	1,344.56	1,346.09	1,346.09	1,537.56	16,065.26	1,372.38	999.78	1,584.45	613.96	772.32	874.31	390.02	
45-49	243.13	340.17	507.03	656.52	1,371.25	1,372.77	1,372.77	1,564.24	16,091.95	1,399.06	1,026.46	1,611.14	640.65	799.00	900.98	416.70	
50-54	243.13	390.48	547.03	706.82	1,421.55	1,423.07	1,423.07	1,614.54	16,142.24	1,449.36	1,076.77	1,661.42	690.94	849.30	951.28	466.99	
55-59	312.98	460.33	616.89	776.69	1,491.40	1,492.93	1,492.93	1,684.40	16,212.10	1,519.22	1,146.62	1,731.29	760.80	919.16	1,021.15	536.86	
60-64	421.34	568.69	725.26	885.05	1,599.77	1,601.29	1,601.29	1,792.76	16,320.47	1,627.59	1,254.98	1,839.65	869.17	1,027.52	1,129.51	645.22	
65-69	527.24	674.59	831.15	990.94	1,705.66	1,707.19	1,707.19	1,898.66	16,426.36	1,733.48	1,360.88	1,945.54	975.06	1,133.41	1,235.40	751.11	
70-74	606.36	753.71	910.26	1,070.06	1,784.79	1,786.30	1,786.30	1,977.77	16,505.49	1,812.59	1,440.00	2,024.66	1,054.18	1,212.54	1,314.52	830.23	
75-79	645.30	792.65	949.22	1,109.01	1,823.73	1,825.26	1,825.26	2,016.72	16,544.43	1,851.54	1,478.94	2,063.61	1,093.13	1,251.48	1,353.47	869.18	
80-84	596.89	744.24	900.80	1,060.60	1,775.31	1,776.84	1,776.84	1,968.31	16,496.01	1,803.13	1,430.53	2,015.20	1,044.71	1,203.07	1,305.06	820.76	
85+	534.18	681.53	838.11	997.89	1,712.61	1,714.14	1,714.14	1,905.60	16,433.31	1,740.43	1,367.82	1,952.49	982.01	1,140.36	1,242.34	758.06	

### Combined Female and Male Tables for Comparison

												HIV/ AIDS
HAE	HYL	HYP	IBD	IHD	MSS	PAR	RHA	SCZ	SLE	TDH	HIV	
17	18	19	20	21	22	23	24	25	26	27	28	
10,815.39	312.80	257.26	514.11	943.30	9,013.45	976.71	453.66	727.06	1,342.03	170.86	1,084.96	
10,768.22	265.62	210.09	466.94	896.12	8,966.27	929.54	406.48	679.89	1,294.85	123.69	1,037.77	
10,765.18	262.58	207.05	463.90	893.08	8,963.23	926.50	403.44	676.85	1,291.81	120.64	1,034.74	
10,783.17	280.59	225.05	481.90	911.08	8,981.23	944.49	421.45	694.85	1,309.82	138.65	1,052.75	
10,815.53	312.93	257.41	514.26	943.42	9,013.58	976.85	453.79	727.20	1,342.17	171.00	1,085.09	
10,851.40	348.80	293.28	550.13	979.29	9,049.45	1,012.72	489.65	763.07	1,378.04	206.87	1,120.96	
10,870.40	367.82	312.28	569.13	998.30	9,068.46	1,031.72	508.68	782.08	1,397.04	225.88	1,139.97	
10,875.77	373.19	317.65	574.50	1,003.69	9,073.83	1,037.10	514.05	787.45	1,402.42	231.25	1,145.35	
10,893.91	391.31	335.79	592.64	1,021.81	9,091.96	1,055.23	532.17	805.59	1,420.55	249.39	1,163.47	
10,920.59	418.00	362.46	619.31	1,048.50	9,118.65	1,081.91	558.86	832.26	1,447.23	276.06	1,190.16	
10,970.89	468.30	412.77	669.62	1,098.78	9,168.94	1,132.21	609.16	882.57	1,497.53	326.36	1,240.46	
11,040.75	538.15	482.63	739.48	1,168.65	9,238.80	1,202.07	679.01	952.43	1,567.39	396.23	1,310.31	
11,149.11	646.51	590.99	847.84	1,277.02	9,347.16	1,310.43	787.38	1,060.79	1,675.76	504.59	1,418.68	
11,255.01	752.41	696.89	953.74	1,382.90	9,453.06	1,416.33	893.28	1,166.69	1,781.65	610.48	1,524.58	
11,334.12	831.53	776.00	1,032.85	1,462.03	9,532.17	1,495.45	972.39	1,245.80	1,860.76	689.60	1,603.69	
11,373.07	870.48	814.95	1,071.80	1,500.97	9,571.13	1,534.39	1,011.35	1,284.75	1,899.71	728.55	1,642.65	
11,324.66	822.06	766.54	1,023.39	1,452.56	9,522.71	1,485.98	962.92	1,236.34	1,851.30	680.14	1,594.22	
11,261.95	759.36	703.83	960.68	1,389.86	9,460.01	1,423.27	900.22	1,173.62	1,788.60	617.43	1,531.53	

**Modifier for number of chronic conditions**

Number of Conditions	2	3	4 or more
	CC2	CC3	CC4
All Ages	194.88	532.95	1,074.78

Amount is per beneficiary per month.  
Add to amounts obtained from Columns 1 to 28.  
Not applicable to Under 1's.

**Modifier for Maternity**

	MAT
All Ages	17,515.39

Amount is per beneficiary (per month).  
Use only once per delivery, not monthly.



# Loss of Efficiency through Cream Skimming

- “The larger the predictable profits arising from cream skimming, the greater the chance that cream skimming will be more profitable than improving efficiency.”
- “At least in the short-run, when a health plan has limited resources available to invest in cost-reducing activities, it may prefer to invest in cream skimming rather than in improving efficiency.”
- “Efficient health plans, who do not cream skim applicants, may lose market share to inefficient health plans who do, resulting in a welfare loss to society.”

Source : Van de Ven W.P.M.M., Ellis R.P. Risk Adjustment in Competitive Health Plan Markets. In: Culyer AJ, Newhouse JP, eds. *Handbook of Health Economics*. Amsterdam: Elsevier; 1999.

# Core Reading

- Van de Ven W.P.M.M., Ellis R.P. Risk Adjustment in Competitive Health Plan Markets. In: Culyer AJ, Newhouse JP, eds. *Handbook of Health Economics* Amsterdam: Elsevier; 1999.
- Rice N., Smith P.C. Capitation and Risk Adjustment in Health Care Financing: An International Progress Report. *The Milbank Quarterly*. 2001;79.
- **Health Policy Special Issue 2003**  
W.P.M.M. van de Ven et al. Risk adjustment and risk selection on the sickness fund insurance market in five European countries. *Health Policy* 65 (2003) 75/98
  - Belgium
  - Germany
  - Israel
  - The Netherlands
  - Switzerland
- Update on five countries six years later: *Health Policy* 2007;83.

# **Part 2:**

# **Comparison of Risk equalisation in voluntary health insurance markets**



IAA HEALTH SECTION  
SECTION SANTÉ DE L'AAI

**Webcast**

**30 - 31 March 2011**

# Special Issue of Health Policy

- Editorial:  
Authors: Armstrong (Editor in Chief), Paolucci, Van de Ven
- Country papers
  1. Australia (Connelly, Paolucci, Butler, Collins)
  2. Ireland (Armstrong)
  3. South Africa (McLeod, Grobler)
- Comparison paper:  
Authors Armstrong, Paolucci, Van de Ven

**Reference: Armstrong (Editor) et al** 'Risk equalisation in voluntary health insurance markets' Special Issue, Health Policy. 2010;98

# Context / Motivation

- Health system reform: Rationale affordability & solidarity reasons
- Increasing use of voluntary private health insurance (VHI)
- Competition based upon efficiency & discouraging risk selection
- Some important differences between VHI and MHI systems
- Also some important differences between the VHI countries

# Differences between countries

- Historical background
- Institutional structures
- Relative wealth
- Role & scope of health insurance within the system

# Similarities between countries

- Universal National Health Insurance / Service
- Consumer choice of level of VHI coverage
- Competition between risk-bearing insurers
- Restrictions on risk-rating
- Incentives & subsidies to meet policy objectives (e.g. affordability, market stability, discouraging risk selection)
- Risk equalisation considered important ingredient

# Terminology

## Risk equalisation:

“..refers to a mechanism that equalises the risk profiles of the insurers by contributing to or receiving from them a risk-adjusted equalisation payment per insured member, derived from an individual’s predicted (ex ante) health expenses based on his/her risk factors”

## Claims equalisation

“...is a mechanism to equalise claims costs among insurers by contributing to or receiving from them claims-adjusted equalisation payments with the objective that the ex-post costs per person of each insurer become more similar”



# Terminology

- Both mechanisms have intention of subsidising high-risk groups
- However, efficiency incentives limited in claims equalisation given lack of financial responsibility because claims cost per risk group profiles are equalised

# Significance of Special Issue

- Important for countries considering transition to regulated competition
- Also relevant for mandatory health insurance (MHI) countries that have elements of voluntary health insurance (VHI) countries

# Country papers

- Outline the features of health insurance market
- Considers the structure of the equalisation system in each country
- Present empirical data to demonstrate extent of risk selection in each country
- Presents insights into implementation, operation & outcomes of equalisation in each country

# Australia

- Mix of public-private financing & delivery of health services
- Public health insurance (Medicare, 1984) (68% of total healthcare expenditure)
- Out-of-pocket payments. (24% of total healthcare expenditure)
- Competitive VHI. (8% of total healthcare expenditure).

# Australia

- Voluntary health insurance
- Supplementary coverage for parts of the costs not covered by Medicare
- Duplicate coverage for the costs of services (partly) covered by Medicare
- Non-substitutive: Individual-based insurance
- Out of pocket expenditures

# Ireland

Mix of public-private financing & delivery of health services:

- Public health insurance (70% of total healthcare expenditure)
- Out-of-pocket payments. (20% of THE)
- Competitive VHI. (12% of THE)

# Ireland

- Voluntary health insurance
- Supplementary coverage for parts of the costs not covered by public tax funded system
- Duplicate coverage for the costs of services provided as alternative to public taxation funded system
- Out of pocket expenditures

# South Africa

- Voluntary health insurance
- Supplementary coverage for treatment delivered within private hospital system
- Not for profit medical schemes
- Importance of brokers



# South Africa

## Public / Private Delivery & Financing

- Public (40% of total healthcare expenditure)
  1. Universal tax funded with allocated budgets for public facilities
  2. 64% depend on it for conventional services
  3. Salaried staff
  4. Care is virtually free at point of service for low-income groups
- Private (60% of total healthcare expenditure)
  1. Medical Schemes since 1967 covering on VHI basis 15% of population
  2. Further 21% use private GP and pharmacies on OOP basis
- FFS

# Comparison Paper – Market Structure

	<b>Australia</b>	<b>Ireland</b>	<b>South Africa</b>
<b>% population covered by VPHI</b>	47%	50%	15%
<b>People covered by VPHI</b>	10.9 million	2.1 million	7.8 million
<b>VPHI expenses as % of total national hc expenses</b>	8 %	12%	55%
<b>Do consumers have free choice of insurer to enroll within?</b>	Yes, 93% are in open schemes	Yes, 95% are in open schemes	Yes, 67% enrolees in open schemes
<b>Financial responsibility of individual insurance entities</b>	Very low	100%	100%

## Comparison Paper – Market Structure

	<b>Australia</b>	<b>Ireland</b>	<b>South Africa</b>
<b>Number of open undertakings</b>	25	3	41
<b>Market share largest insurer</b>	30%	62%	25%
<b>Market share largest 4 insurers</b>	70%	100%	44%
<b>Premium subsidies and/or tax-credits for PHI purchase?</b>	Yes (Rebate and Medicare Levy Surcharge)	Yes	Yes (but no subsidies for people earning below tax-threshold)
<b>Premium restrictions?</b>	Community-rated	Community-rated	Community-rated
<b>Benefit flexibility</b>	Very high	Very high	Very high

# Part 3: Cost equalisation in Australia



IAA HEALTH SECTION  
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**Webcast**

**30 - 31 March 2011**

# Risk equalisation

- 1 April 2007
- The Health Benefits Reinsurance Trust Fund established under section 73BC of the National Health Act 1953 is continued in existence as the Private Health Insurance Risk Equalisation Trust Fund (the Risk Equalisation Trust Fund)

*Private Health Insurance Act 2007, p.285*

# Ex-post claims costs equalisation

- Australian risk equalisation scheme is *ex-post* (based on *actual claims* experience)
- Contrasts with arrangements in some European countries that have adopted an *ex-ante* scheme based on *predicted expenditures*

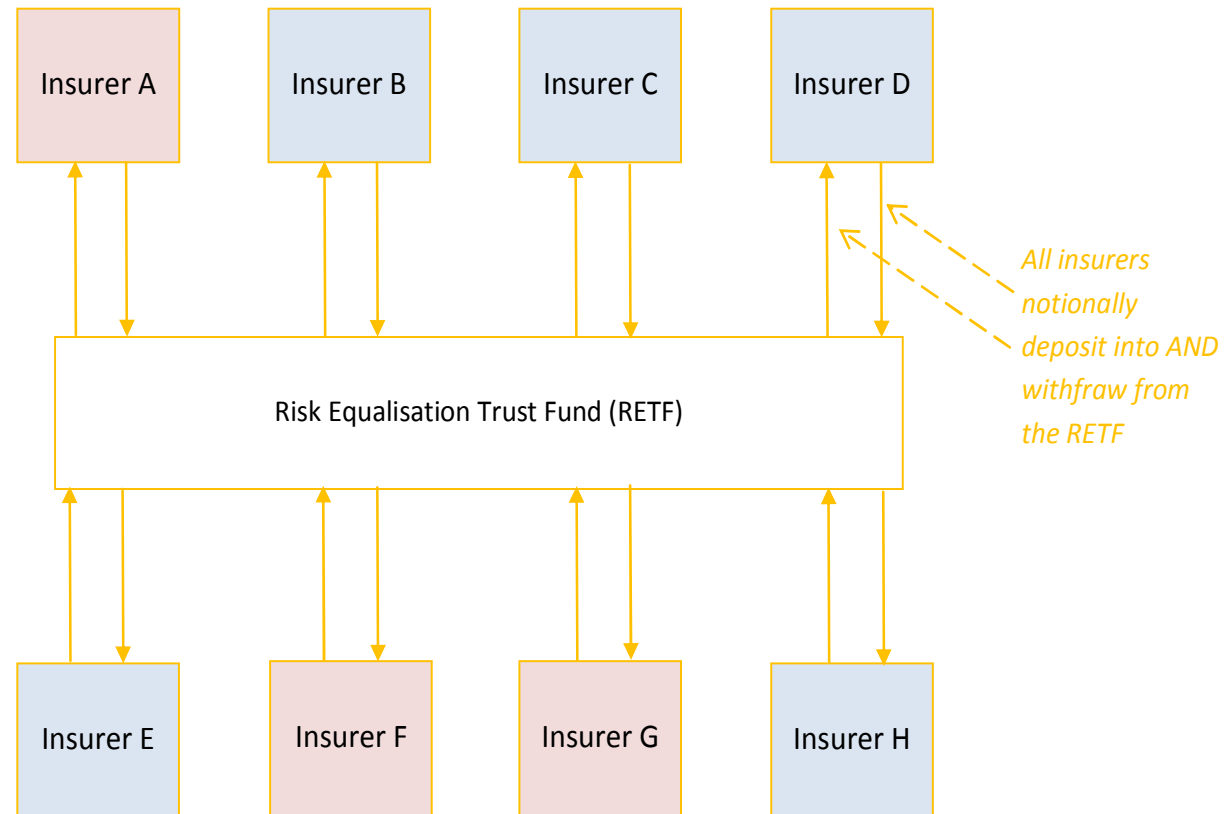
# Benefits/Services

- Services covered under the Australian scheme (figures in parentheses are the proportion of the total benefits being equalised):
  - Hospital benefits (97.6%)
  - Hospital substitute benefits (0.05%)
  - Chronic Disease Management Program benefits (0.07%)
  - High Cost Claimant benefits (2.28%)

# Flows of funds

*Sum of payments into the RETF = Sum of payments out of the RETF (zero sum game)*

*Individual insurers make or receive a net transfer, depending on claims experience*



*All insurers notionally deposit into AND withdraw from the RETF*



# Features

RETF has two components

1. *Age-Based Pool (ABP)*

- **Eight age bands:** one from age 0-54, seven covering remaining ages (55-59, 60-64, ..., 85+);
- Only age bands for **55+** have **positive weights** (i.e. generate a requirement to pay into the pool);
- Under previous reinsurance scheme, weights applied only to age bands for **65+**.

## *2. High Cost Claimants Pool (HCCP)*

- Replaces pooling of claims for claimants with >35 days hospitalisation during a 12-month period
- Applies to benefits paid in excess of \$50,000 for a claimant in any quarter allowing for amounts already contributed to the age-based claims pool

# Number example

## ABP payment – Fund 1

(1)	(2)	(3)	(4) = (2) x (3)
Member's age	ABP weight	Eligible benefits	ABP contribution
0 – 54	0	\$13,818,135	0
55 – 59	0.15	\$1,765,650	\$264,848
60 – 64	0.425	\$2,516,052	\$1,069,322
65 – 69	0.60	\$4,025,683	\$2,415,410
70 – 74	0.70	\$6,843,661	\$4,790,563
75 – 79	0.76	\$12,044,844	\$9,154,081
80 – 84	0.78	\$21,439,823	\$16,723,062
85+	0.82	\$39,020,477	\$31,996,791
Totals		\$101,474,325	\$66,414,077

## ABP payment – Fund 2

(1)	(2)	(3)	(4) = (2) x (3)
Member's age	ABP weight	Eligible benefits	ABP contribution
0 – 54	0	\$10,242,164	0
55 – 59	0.15	\$1,308,721	\$196,308
60 – 64	0.425	\$1,864,927	\$792,594
65 – 69	0.60	\$2,983,884	\$1,790,330
70 – 74	0.70	\$5,072,603	\$3,550,822
75 – 79	0.76	\$8,927,781	\$6,785,114
80 – 84	0.78	\$15,891,449	\$12,395,330
85+	0.82	\$28,922,438	\$23,716,399
Totals		\$75,213,967	\$49,226,898

## HCCP payment – Fund 2

(1)	(2)	(3) = 0.425×(2)	(4) = (2)–(3)	(5)	(6)	(7) = (0.82× (5)–(6))–(7) <sub>q-1</sub> s.t. (7)>0
Quarter (q)	Gross benefits paid	ABP payment	Residual	Cumulative residual (R)	Threshold (T)	HCCP <sub>q</sub> = 0.82(R–T) – HCCP <sub>q-1</sub>
<b>1</b>	<b>Nil</b>	<b>Nil</b>	<b>Nil</b>	<b>Nil</b>	<b>Nil</b>	<b>Nil</b>
<b>2</b>	<b>\$75,292</b>	<b>\$31,999</b>	<b>\$43,293</b>	<b>\$43,293</b>	<b>\$50,000</b>	<b>Nil</b>
<b>3</b>	<b>\$85,021</b>	<b>\$36,134</b>	<b>\$48,887</b>	<b>\$92,180</b>	<b>\$50,000</b>	<b>\$34,588</b>
<b>4</b>	<b>\$60,000</b>	<b>\$25,500</b>	<b>\$34,500</b>	<b>\$126,680</b>	<b>\$50,000</b>	<b>\$28,290</b>
Annual totals	\$220,313	\$93,663				\$62,878

# RETF transfers

(1)	(2)	(3)	(4) = (2) <sub>T</sub> ÷ (3) <sub>T</sub>	(5) = (4) <sub>T</sub> × (3)	(6) = (2) - (5)
	RETF contributions (= ABP + HCCP)	SEUs	Total RETF contributions ÷ Total SEUs	Expected benefits	RE transfers (net transfers)
Fund 1	\$66,414,077	463,024		\$66,450,671	<b>-\$36,594</b>
Fund 2	\$49,289,776	343,193		\$49,253,182	\$36,594
Totals (T)	\$115,703,853	806,217	\$143.5145		

# Empirical results - Industry & firm level

At the industry level:

- In 2007-08, RETF churn was \$2,908m
- Net transfers amounted to only \$254m (8.7% of the churn)
- Note that the latter amount is the only amount that is *actually transferred* via the RE scheme

# Net transfers by fund – 8 largest

Fund	Market share (%)	Net RE transfers	Net RE as % of redistributed funds	Net RE transfers as % of benefits paid
Medibank	28.66	\$34,878,057	13.64	1.25
MBF	15.70	\$102,581,523	40.11	6.11
BUPAAH	10.07	\$37,039,038	14.48	3.48
HCF	9.04	-\$21,492,058	-8.40	-2.28
NIB	7.25	-\$73,348,555	-28.68	-11.70
HBF	6.65	\$26,416,408	10.33	4.00
AUHL	3.46	\$32,024,141	12.52	10.17
AHM	3.13	-\$21,195,796	-8.29	-6.00



# Net transfers by fund – 8 smallest

Fund	Market share (%)	Net RE transfers	Net RE as % of redistributed funds	Net RE transfers as % of benefits paid
Phoenix	0.13	\$5,549,619	0.60	9.69
DHF	0.11	\$5,470,146	0.80	16.86
ACA	0.09	\$3,935,247	0.42	8.24
HCI	0.06	-\$1,585,686	-0.28	-8.90
Transport	0.07	\$76,989	0.03	0.93
CDH	0.05	\$624,653	0.24	13.97
NHBA	0.04	-\$772,432	-0.30	-30.01
RBHS	0.04	\$1,720,452	0.67	28.99

# Effects of cost equalisation

- Highly imperfect matching with the 'true' risk structure of insurers' population resulting in over/under compensations (i.e. misallocation of subsidies).
- Strong incentives for selection (historically a constant threat to the stability of PHI market in Australia).
- Lack of incentives for efficiency

# Potential developments

- Ex-post claims equalisation to ex-ante risk equalisation
- Transfers between insurers based on the 'true' population risk profile rather than benefit costs:
  - Improved predictability & incentives for efficiency
  - Fairer equalisation & reduced incentives for selection (i.e. better matching with insurers' population risk profiles)

# Potential developments

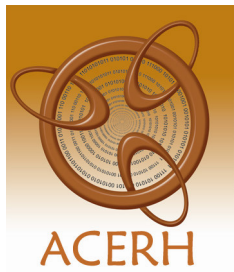
1. Insurers' claims data;
2. Individual records on public health care utilisation (MBS, PBS, AIHW...);
3. Breakdowns of utilisation of public health care services/benefits (NHS, PHIAC, AIHW)

# So far.....

1. “Demographic scales for ex-ante RE in the Australian PHI market” (Paolucci & Shmueli 2009)
2. Expanded age-gender scales constructed by using 3. breakdowns of utilisation of public health care services/benefits (NHS, PHIAC, AIHW)
3. Simulations of the implications of switching from *ex-post* CE to *ex-ante* RE on the RETF transfers across insurers by using aggregate age-gender health expenditures data per insurer (PHIAC, 2008)

# Next steps

- Additional risk-adjusters:
  - Health status (e.g. DRGs, disability etc.);
  - Region?
  - Product type?
  - Etc
- Department of Health review of scheme



**Francesco Paolucci**

**Australian Centre for Economic Research in Health (ACERH)**

**Australian National University**

**[Francesco.paolucci@anu.edu.au](mailto:Francesco.paolucci@anu.edu.au)**

# Part 4: Risk equalisation in Ireland



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# Overview of Health Financing in Ireland

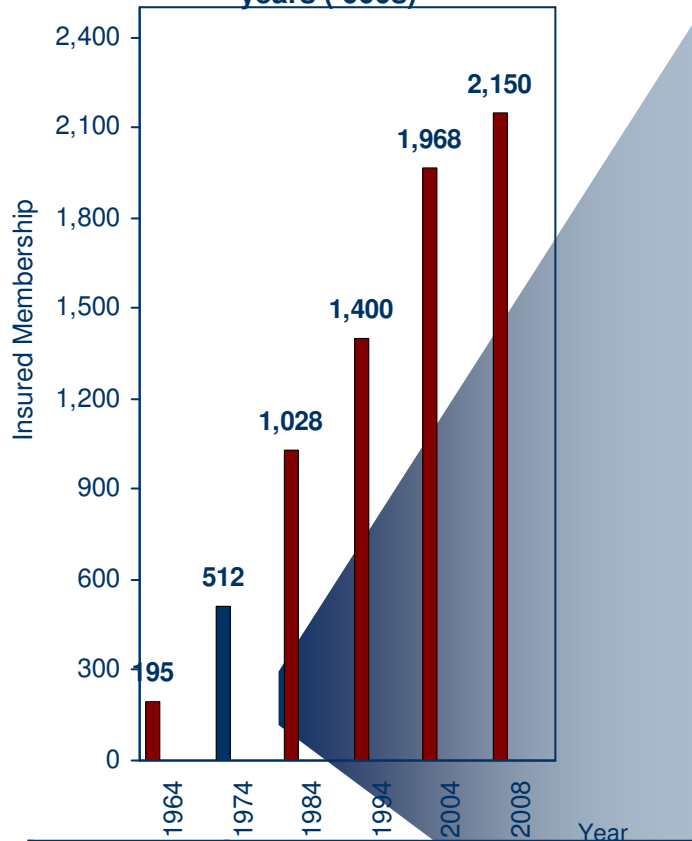
- Mixed system of funding healthcare
- Taxation based with voluntary insurance market and out of pocket expenditures
- Complicated mixture of public / private provision and financing
- Unique three tier health system with element of universal coverage:
  - Medical card holders (means-tested and older persons)
  - Voluntary health insurance market
  - Those in the middle

# How significant is PMI for the Health Sector?

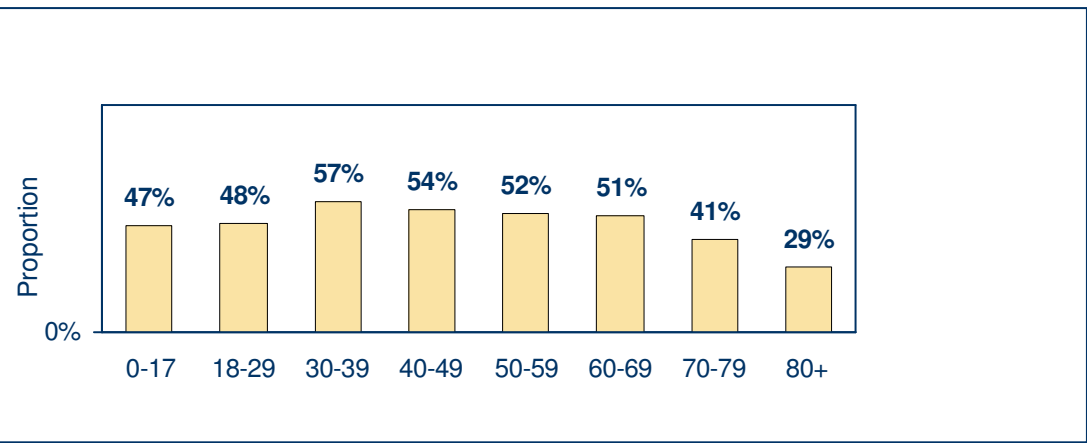
- Market commenced in 1957 with establishment of Vhi Healthcare;
- Provides private alternative (duplicative) to universal entitlement of public hospital system;
- Individuals purchase insurance on voluntary basis with tax subsidies
- Benefits provided historically have been secondary care based though primary care insurance market is growing considerably;
- Community rating system underpins market;
- Insurance is purchased through employer based schemes (60%) or directly by individuals
- One of the largest voluntary insurance markets in World (52% of population) but small share of total health expenditure (10-15%);
- Unique mix of private and public provision of service to insured persons;
- Competition
  - Intended to be on basis of efficiencies / benefit packages;
  - In reality on basis of attracting preferred lives

# Some facts about Private Medical Insurance in Ireland

Growth in Membership over last thirty years ('000s)



Population (000s)	2.82	2.98	3.44	3.52	3.97	4.2
Penetration	10%	15%	25%	35%	50%	52%

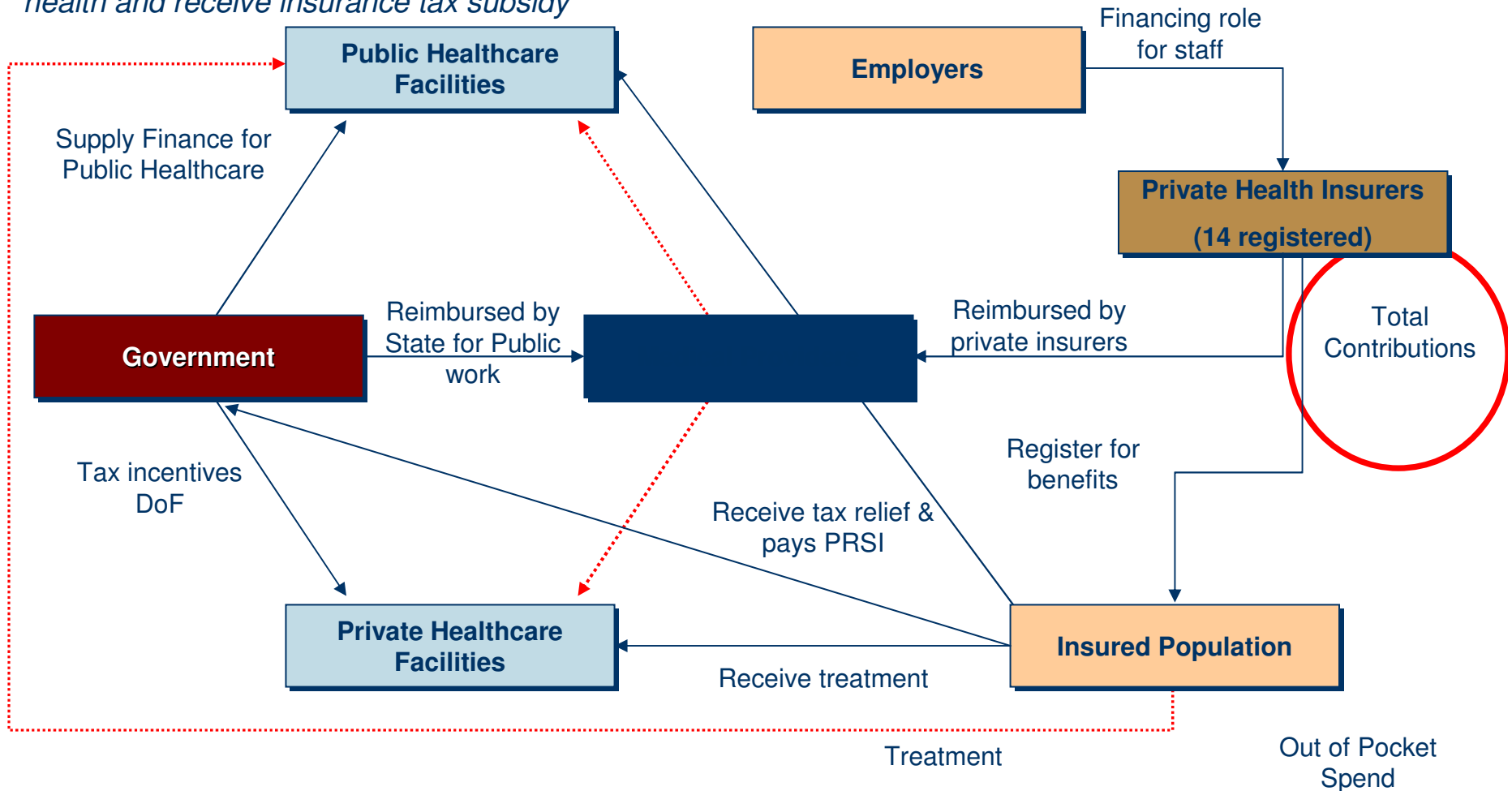


Cost of private insurance per annum – Median Plan as proportion of Average Earnings

	2000	2001	2002	2003	2004	2009
% of Average Weekly Earnings	93%	93%	103%	106%	107%	130%

# How Private Insurance Interacts with the Public system

*Interaction is complex – Both public and private facilities are providers of services, State finances provision of services, regulates insurance sector and employs medical professionals, Consumers pay tax contributions for health and receive insurance tax subsidy*

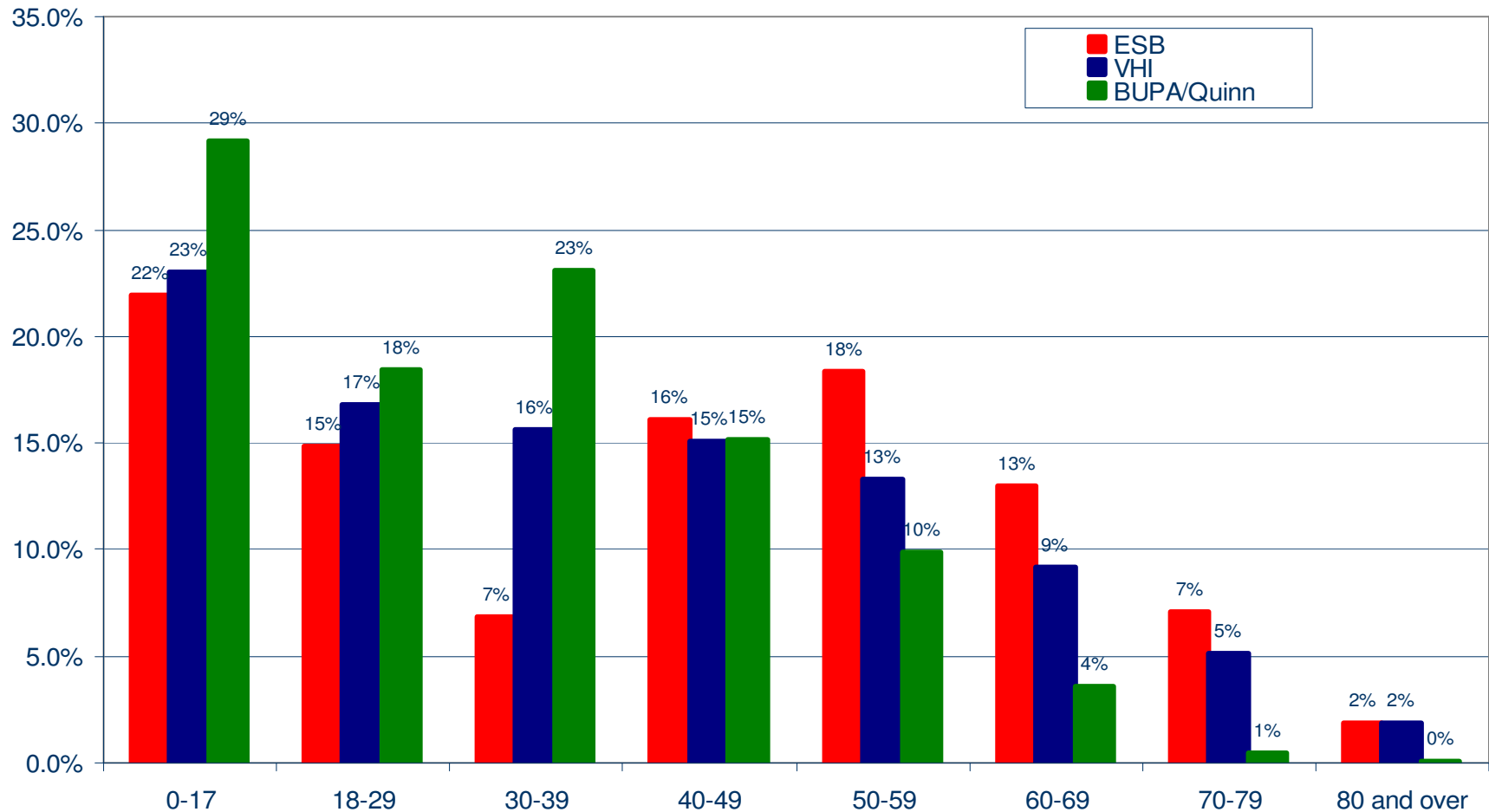


# What regulations are there to support community rating?

- Heavily regulated market:
  1. Open enrolment / Lifetime cover
  2. Minimum benefits
  3. Lifetime community rating (Late entry penalties)
- Not all sufficient to ensure protect community rating by discouraging risk selection
- Therefore need for risk equalisation scheme has been stated public policy requirement since 1994
- Aims: *“To ensure competition takes place not on the basis of targeting preferred risk groups”*
- However, no transfers, have as yet being made under original scheme

# What is the evidence of risk selection?

Differences can be seen using age profile of insured profile between insurers



Source: HIA Report, Internal VHI data

# Two Paths to Risk equalisation

## Original scheme

- Proposed mid-1990s
- Retrospective scheme
- Amended over years

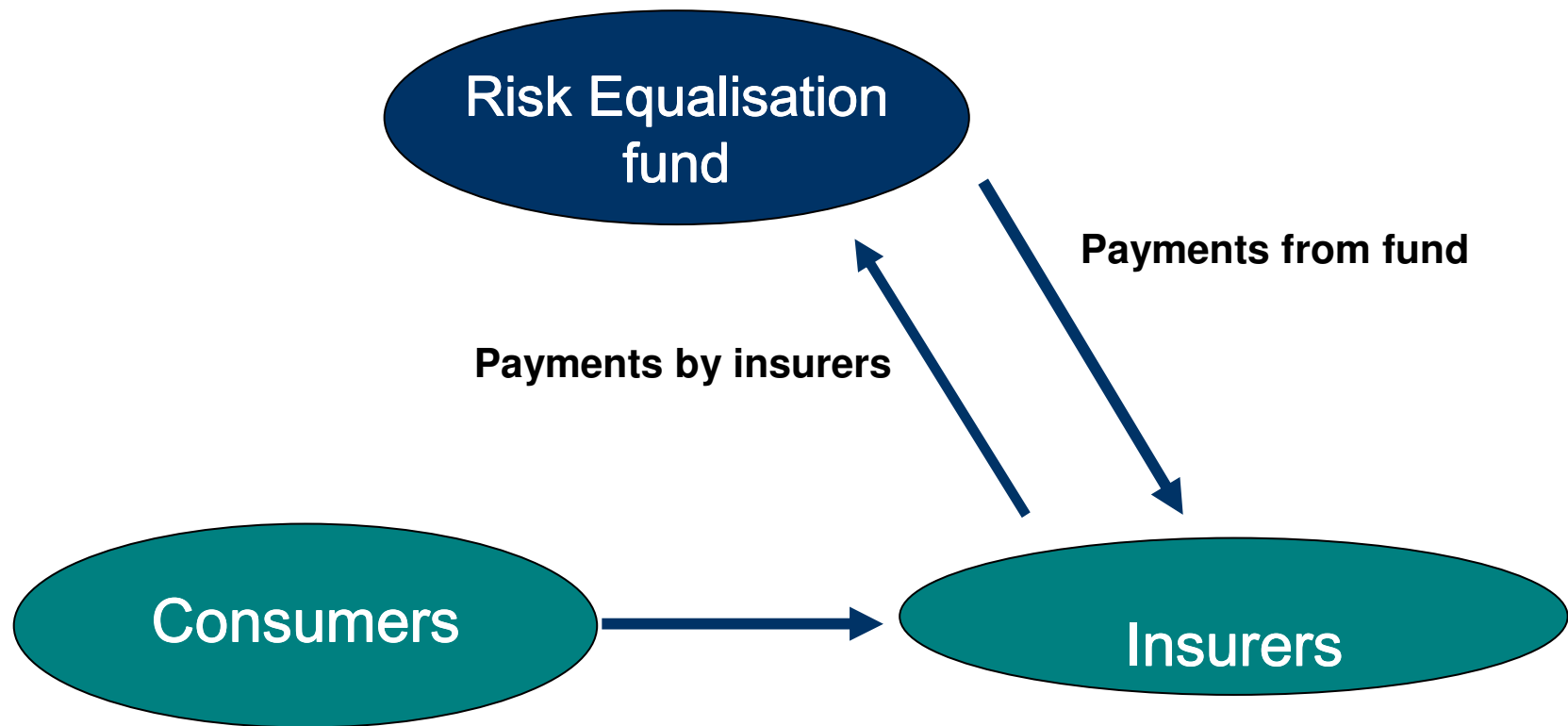
## Tax-levy scheme

- Prospective scheme
- Introduced 2008
- Facilitated through tax system
- Levy system

# **Approach 1: Retrospective risk equalisation**



# Modality of risk equalisation payments under original scheme



**Monetary Based Community Rated Premiums**

# Intended original approach

- Compares actual equalised benefit with normative equalised benefits using market proportions of risk
- Thus, formula is based upon all insurers having the market profile of risks as measured by each insurer having the market proportion of members in each risk group
- Equalisation uses insurers **own** average cost per member in a given risk group
- System therefore unlike that operating in many other countries
- Theory is that this encourages efficiencies on part of insurers
- Problem is differences in average costs per member between insurers may have resulted from different risk selection strategies
- Only 80% of transfers are made between insurers

# Risk adjusters used

- Compares actual equalised benefit with normative equalised benefits using market proportions of risk
- System is retrospective and risk adjusters reflect this
- Risk adjusters:
  1. Age - main source of variation in risk profile, eight age bands 0-17, 18-29, 30-39, 40-49, 50-59, 60-69, 70-79, 80+
  2. Gender
  3. Health status as measured by proxy variable referred to as 'bed nights' with weighting up to 50% though weighting proposed to be used was zero

# Consequences of this approach

- Compares actual equalised benefit with normative equalised benefits using market proportions of risk
- **An insurer manages their own claims cost down through efficiency:** Insurer gets to keep the advantage;
- **An insurer gets a higher proportion of older people than previously:** For a contributing insurer the value of transfer of their transfer to the solidarity fund goes down. For a receiving insurer the value of their transfer goes up;
- **An insurer manages their measured health status:** Depending upon the weight gets to keep part of it (and share part of it)
- **An insurer retains the same proportion of elderly but manages their costs per member downwards:** For a contributing insurer, the insurer gets to keep the advantage and puts less money into the fund. For a receiving insurer they will get less of a transfer as the benefits cost per member in the older risk group has reduced;
- **An insurer retains the same proportion of elderly but manages their costs per member downwards:** Insurer gets to keep the advantage;
- **The relativities of the average costs per member changes:** It depends on your mix of members!

# General issues in relation to introduction of risk equalisation

- No transfers have commenced so incentive for risk selection still there
- European State Aid Issues – European Court of First Instance Approved
- Continual court challenges by contributing insurers culminating in striking down of system on legal basis
- Crude risk adjusters being used: e.g. Health status variable
- Move from retrospection system of risk equalisation
- Question arises as to whether affordability objectives of community rating could be met by risk-related subsidies
- Economic down-turn has increased incentive for risk selection based upon product design. Policy question is whether a standard benefit package better with supplemental insurance than competition based upon product design

# Conclusions for introduction of risk equalisation in other countries

## Complexity

- Clear implications for countries wanting to apply risk equalisation within VHI markets
- Member States & Regulators need to carefully think about impact of domestic/European law on implementation of risk equalisation
- In European, the European Commission not against RE per say
- However, if not done correctly can cause major legal application problems for member states and cause difficulty in meeting policy objectives
- Results of Court cases significant implications for all risk solidarity schemes
- Clear business of introducing risk equalisation based upon evidence in Ireland is not straight-forward

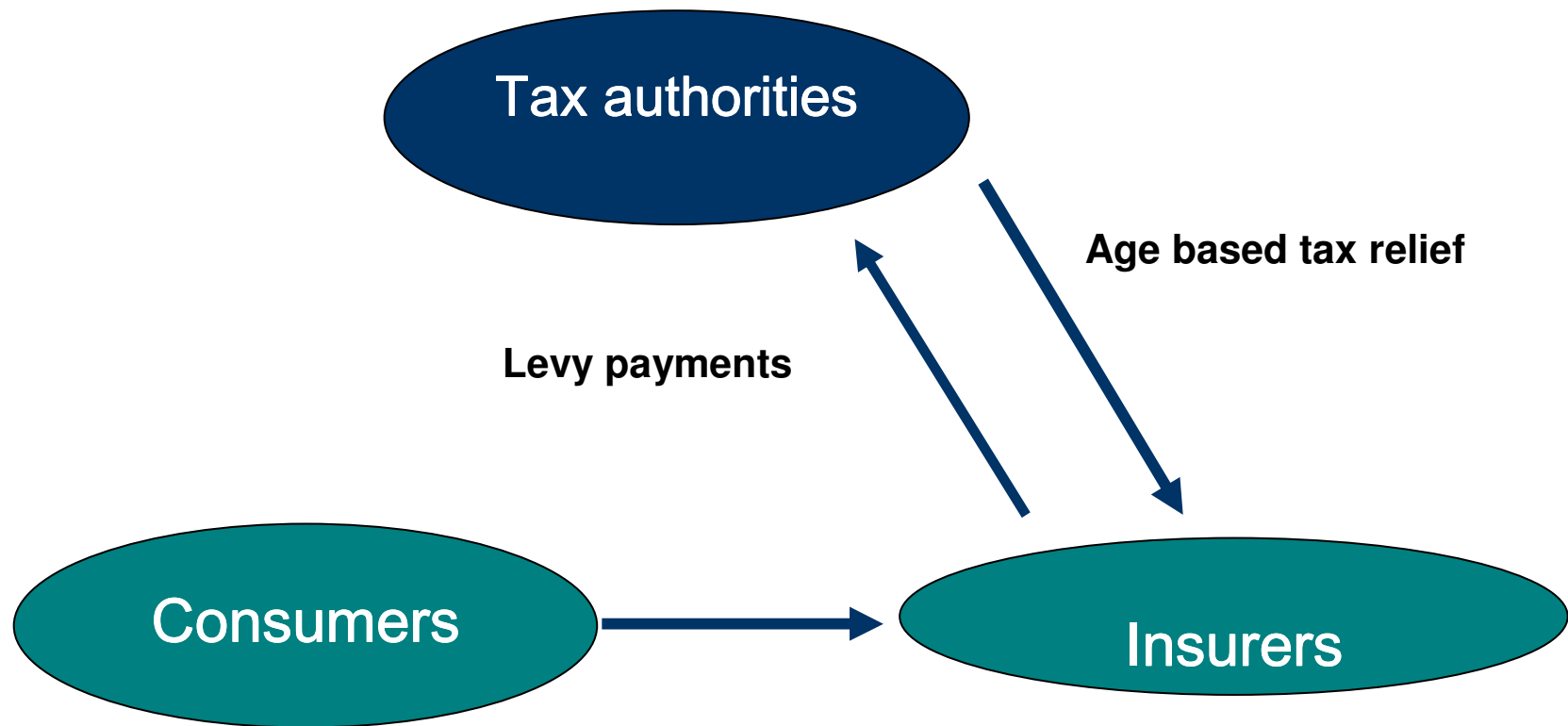
## **Approach 2: Tax levy based prospective risk equalisation**

# Alternative approach - Age-related tax relief

- Introduced from January 2009 on temporary basis
- EU approval July 2009
- Framework under which additional tax relief given to insurers for older ages
- Compensation for their normative adverse profile
- Principle of community rating by product refined
- Now applies on net basis



# Modality of risk equalisation payments under tax-levy scheme



Monetary Based Community Rated Premiums

# Original size of relief per person

Age band	Levy	Relief
0-17	€53	€0
18-49	€160	€0
50-59	€160	€200
60-69	€160	€500
70-79	€160	€950
80 and over	€160	€1,175

- Theretically calculated to be self-financing

# Conclusions from approach

- Age based risk equalisation using different modality
- Regardless changes incentives significantly
- Could be extended to other risk adjusters
- Less likely to be legally challenged
- Conclusion is may be simpler approach



**John Armstrong**  
**Ireland**

**Erasmus University Rotterdam**

**Institute of Public Administration, Dublin**  
**[johnarmstrong@eircom.net](mailto:johnarmstrong@eircom.net)**

# Part 5: Risk equalisation in South Africa



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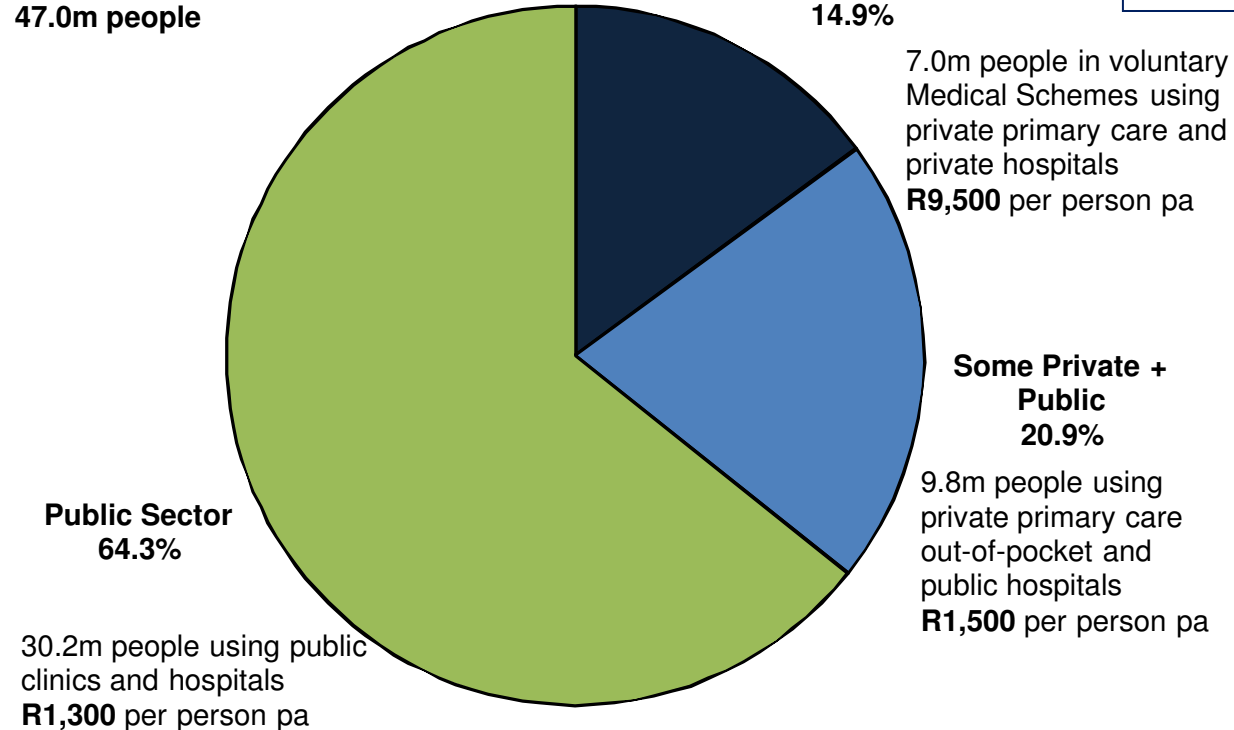
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# Public-Private Coverage

South Africa 2005  
47.0m people

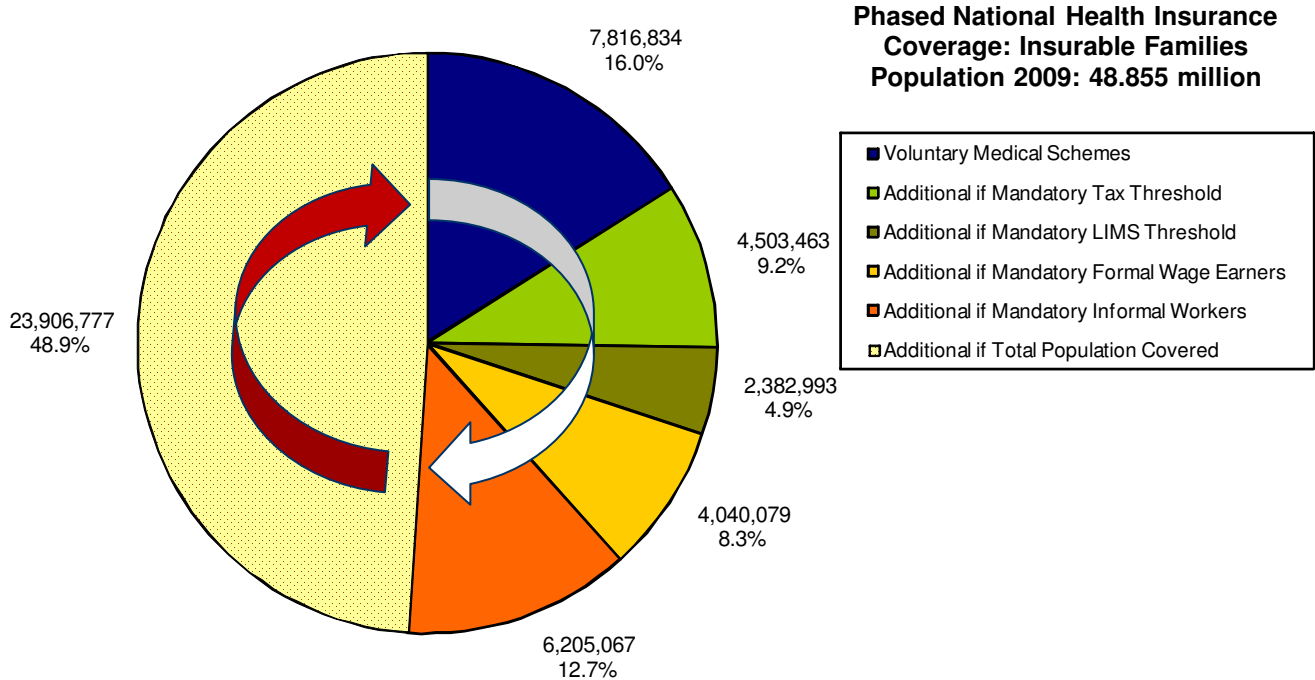
Private Health  
Insurance  
14.9%

Approximately  
16.5% in 2010



**Source:** McIntyre D., van den Heever A. *Social or National Health Insurance*.  
In: Harrison S., Bhana R., Ntuli A., editors. *South African Health Review 2007*.  
Durban: Health Systems Trust; 2007. URL:  
<http://www.hst.org.za/publications/711>

# Phased Introduction of NHI



**Estimate for 2009 using latest available medical scheme information from CMS and population from ASSA2003. Even if all earning any income and their insurable families are covered, only 51.1% of population would be covered.**

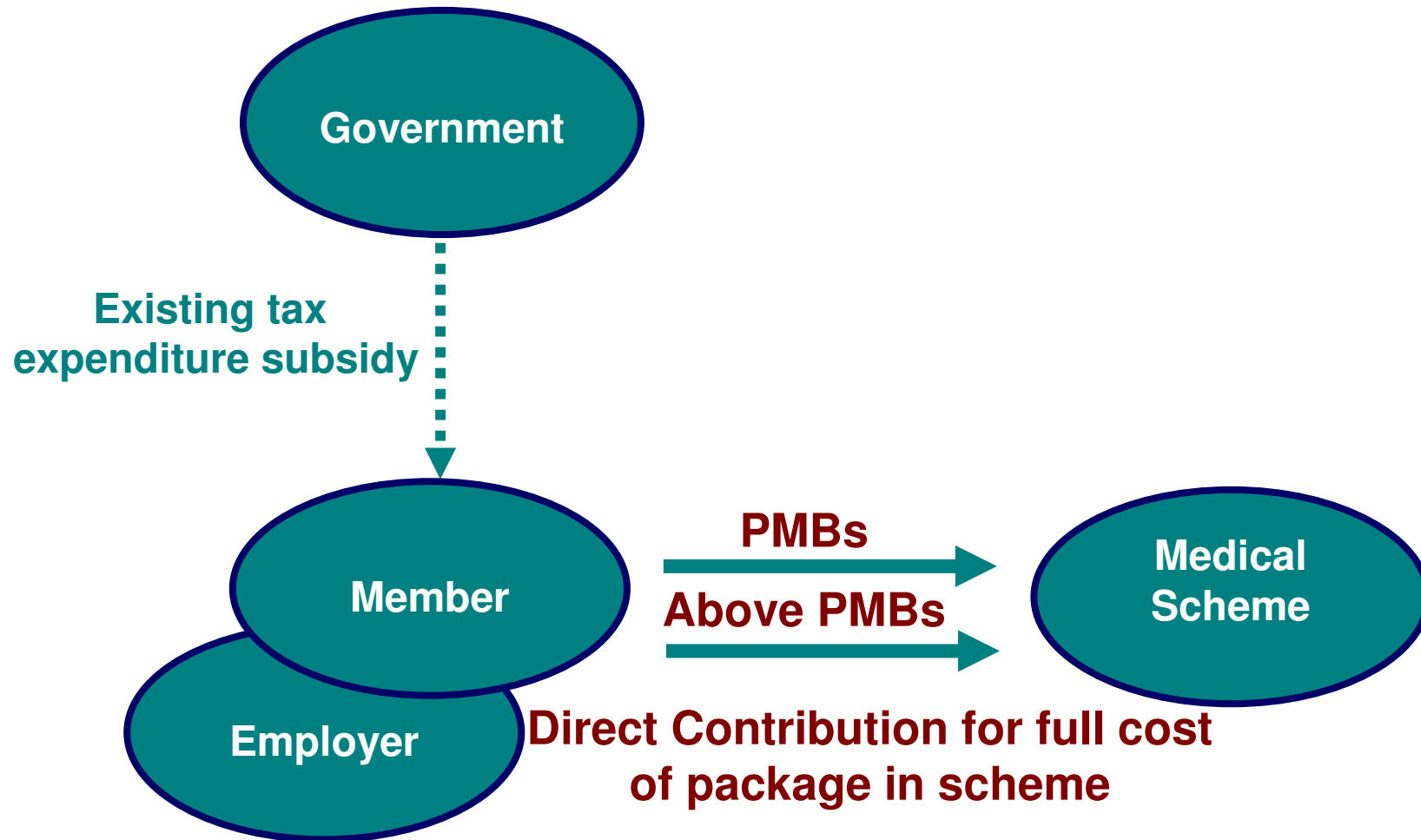
Source: IMSA NHI Policy Brief 2: Health Insurance Coverage

# Medical Schemes

- Not for-profit health insurance funds, owned by their members. Managed by boards of trustees, 50% elected from membership. Regulated for financial soundness by Council for Medical Schemes.
- 104 schemes by Q3 2010, with 3.6 million members and 8.3 million beneficiaries (lives). Cover some 16.5% of the population.
- Administrators and managed care organizations provide services. Non-healthcare costs are high but declining: 13.0% of contributions.
- Brokers are paid commissions for taking members to open schemes – in March 2007 there were 9,742 individual health brokers accredited with the Council while there are only some 7,000 primary care doctors.
- Fiercely competitive market ! Member movement between schemes has been high.
- Delivery via private healthcare providers, predominantly fee-for-service. Cost escalations in excess of wage inflation, especially hospital costs, are a major problem.
- Competition more on benefit design and risk selection than on the quality and delivery of healthcare.



# Voluntary Medical Schemes



# Policy Flow in Medical Schemes

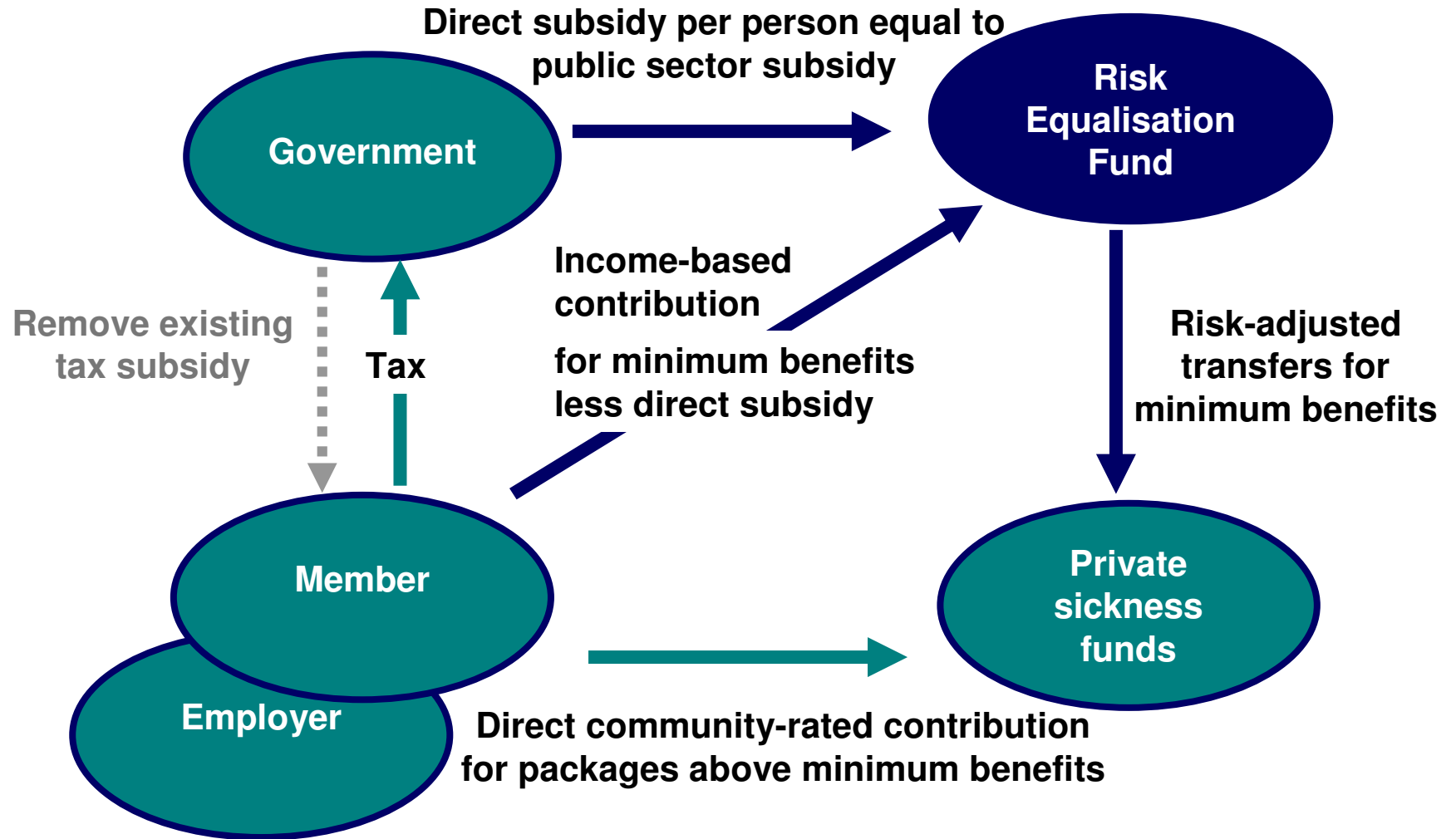
- Open enrolment
- Community rating
- Prescribed Minimum Benefits

## Medical Schemes Act 1998 (effective January 2000)

- Risk-related cross subsidies (risk equalization)
- Reform of tax subsidy for private healthcare
- Income-related cross subsidies
- Mandatory contributions and cover

## Mandatory Health Insurance

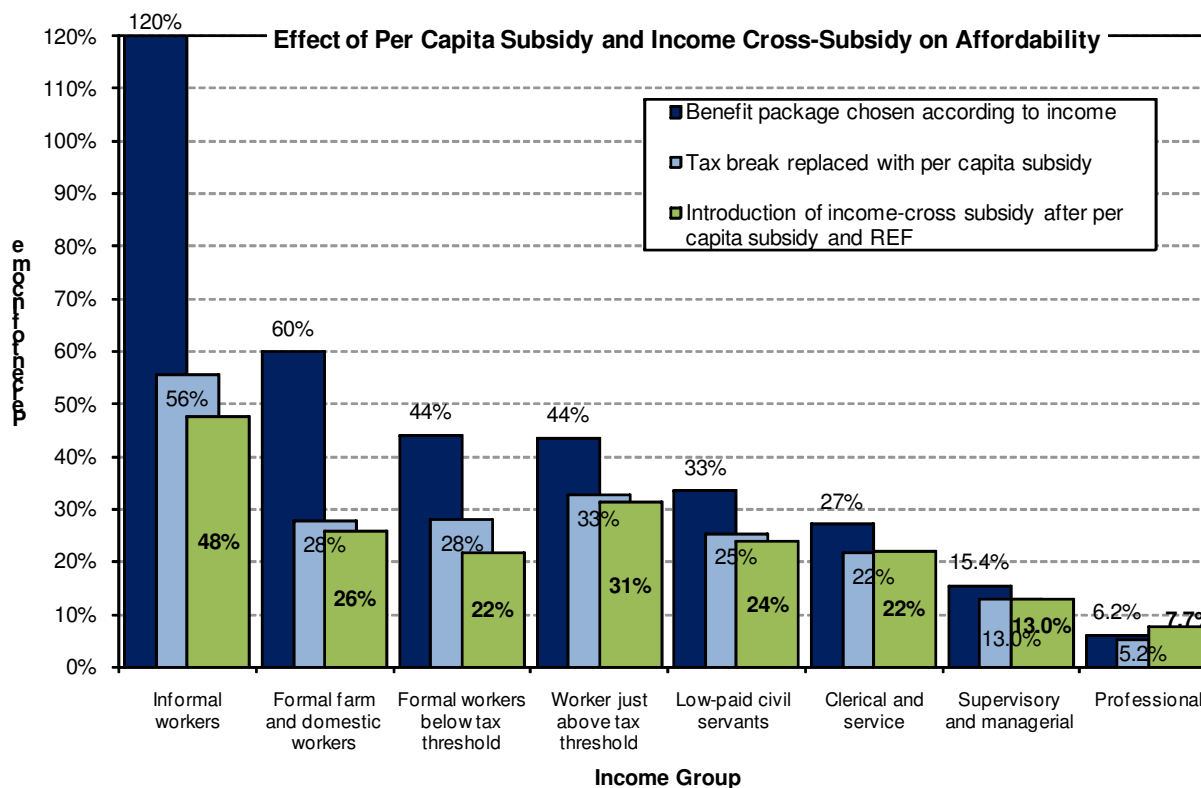
# Mandatory Health Insurance



As accepted by Government in 2005 and prepared for legislation in 2008



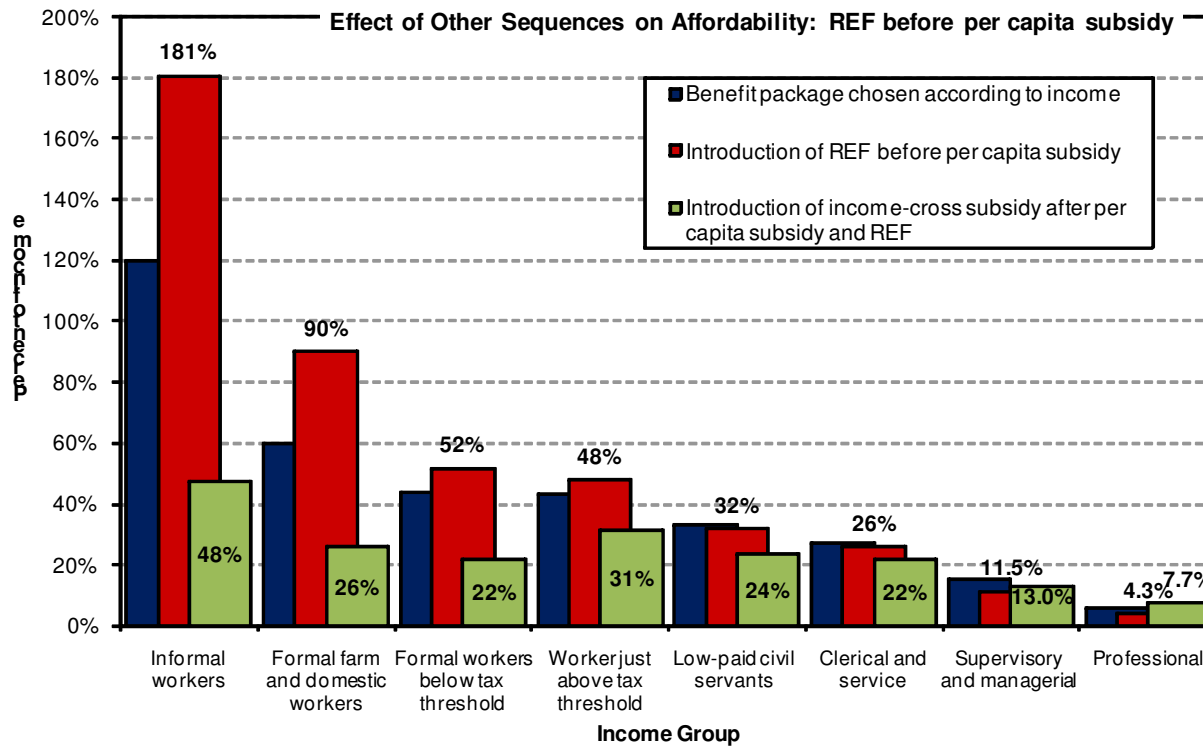
# Per Capita Subsidy, REF and Income Cross-Subsidy



**Affordability can be improved for lower income groups by implementing income cross-subsidy and Risk Equalisation Fund together.**

**Source:** McLeod and Grobler (2009), The role of risk equalization in moving from voluntary private health insurance to mandatory coverage: the experience in South Africa

# Other Sequences of REF Reform



**REF on its own before the per capita subsidy or any income cross-subsidy is seriously damaging to all lower income groups, putting them in a much worse position than now. High income groups benefit most. This is why RETAP never envisaged REF being introduced in isolation.**

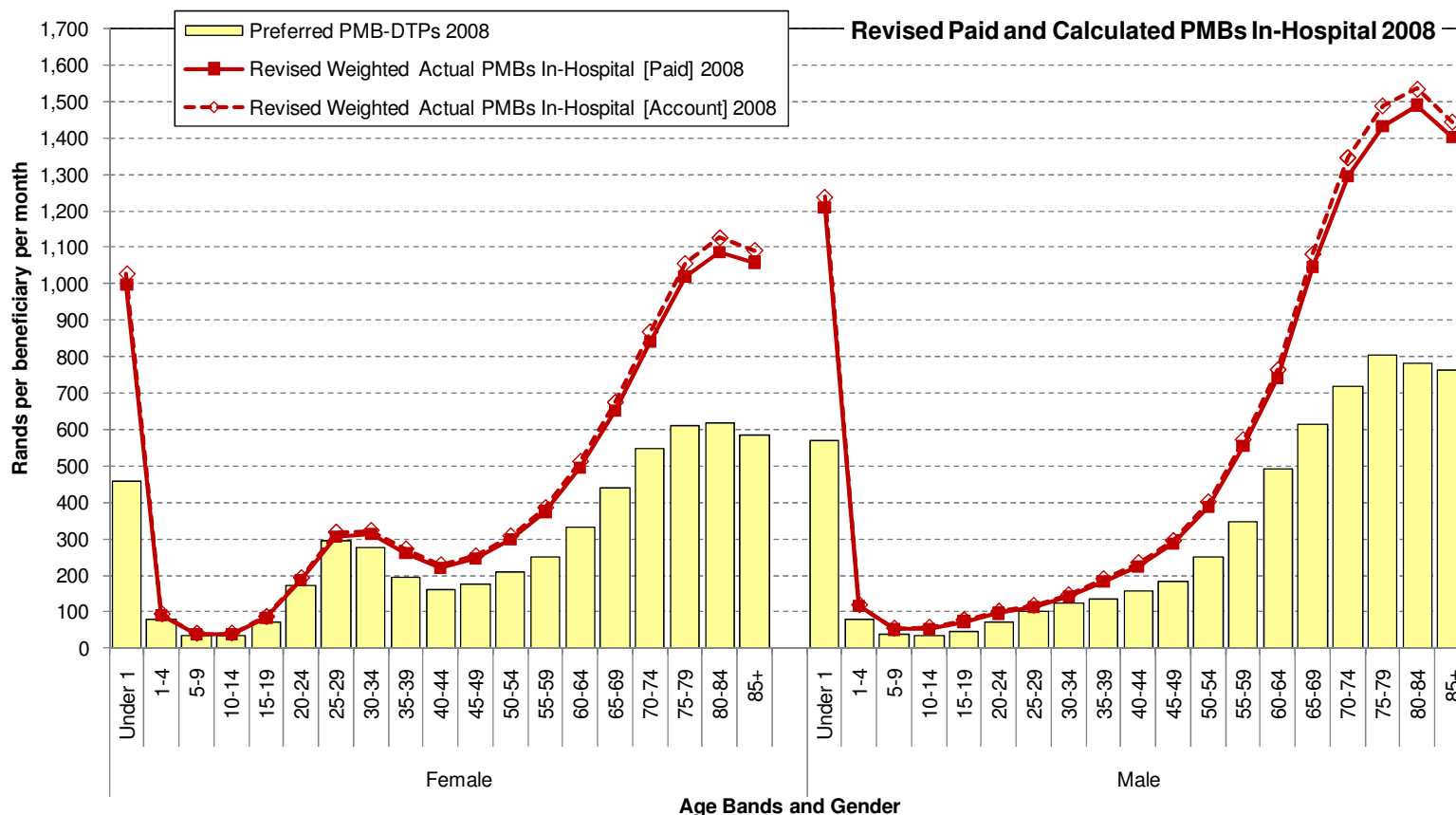
**Source:** McLeod and Grobler (2009), The role of risk equalization in moving from voluntary private health insurance to mandatory coverage: the experience in South Africa

# Preferred Sequential Implementation

- The sequence that will cause the least instability and seems most viable in terms of the impact on workers is as follows:
  - Already in place: open enrolment, community rating, minimum benefits.
  - Remove tax subsidy and replace with a per capita subsidy;
  - Introduce the Risk Equalisation Fund to operate between options;
  - Simultaneously introduce an income cross-subsidy;
  - Introduce mandatory membership for all earning any income (very lowest income need some form of wage subsidy or subsidy of social security contributions if these are a flat percent of income);
  - Deal with option restructuring issues to improve community-rating at scheme level and enlarging the package of minimum benefits.

**Source:** McLeod, H., & Grobler, P. (2009). The role of risk equalization in moving from voluntary private health insurance to mandatory coverage: the experience in South Africa. In D. Chernichovsky & K. Hanson (Eds.), *Advances in Health Economics and Health Services Research* (Vol. 21: Innovations in Health System Finance in Developing and Transitional Economies): Emerald Books.

# Revised PMB In-Hospital Cost Curves



**Data from Discovery Health and Medscheme on actual PMBs paid in calendar 2008, weighted using member months of exposure, scaled to total PMBs using weighted data from all three administrators. Account:Paid ratio from Medscheme.**

Source: Heather McLeod using data from Discovery Health, Medscheme and Momentum



# Two Paths to Universal Coverage

## Through SHI to NHI

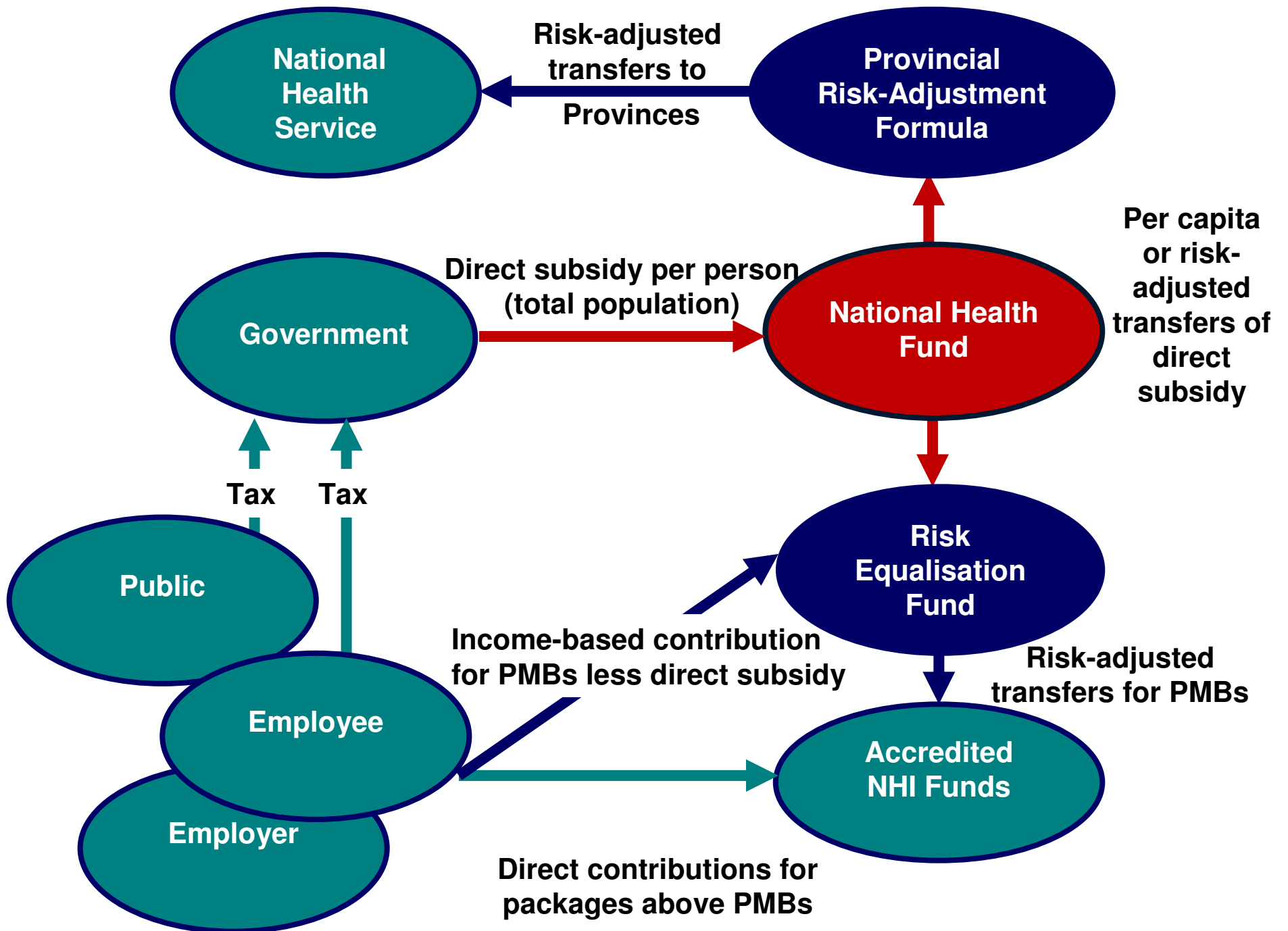
- 1994 to 2007
- Gradual, begin with highest paid workers and their families.
- Subsidies for workers earning below tax threshold.
- Medical Schemes are vehicles for SHI, buy from private and (increasingly) public providers.
- Open enrolment, minimum benefits (PMBs), community-rating, income cross-subsidies, risk cross-subsidies, mandatory contribution.
- Competitive purchasers, with Risk Equalisation Fund.

## Direct to NHI

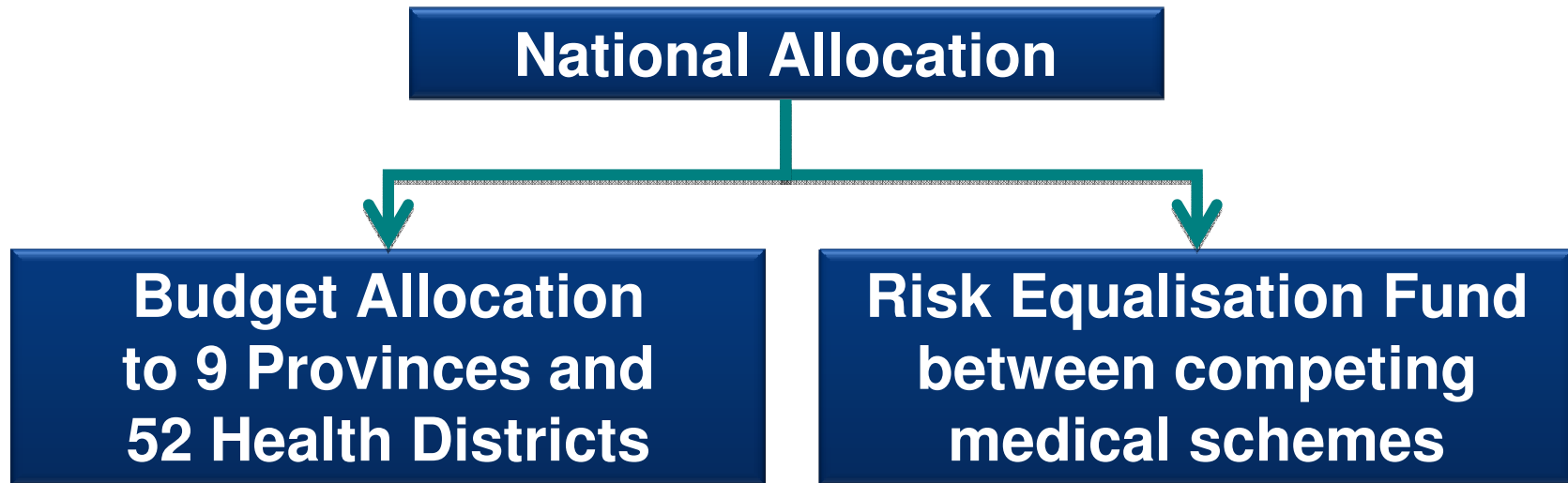
- “Post-Polokwane” Dec 2007
- ANC election promise: immediate “within 5 years”
- Tax and progressive social security contribution.
- Central buyer, with public and private providers.
- Role for medical schemes undefined – perhaps top-up only?
- Package not yet defined.

# Future

- National Treasury not prepared to agree to NHI without costings.
- Acceptance of two-tier system and gradual implementation by some parts of Government but not by ANC task team or unions.
- Massive backlash from private sector if forced closure.
- New Registrar of medical schemes expects REF legislation to be tabled again in parliament.
  
- Most likely outcome:
  - Two-tier system continues but with equitable Government subsidy of both public and private sectors.
  - Budget allocations to provinces on risk-adjusted basis for national Health Service.
  - Medical schemes become mandatory vehicles for employed and higher income population; substitutive cover for NHS.
  - Low Income (LIMS) schemes or options allowed with mix of public and private cover.



# Formula for National Risk Adjustment



- **National Allocation possibilities:**

- Per capita
- Age and gender only
- Age, gender and projected HIV
- Age, gender, HIV and maternity
- Age, gender, HIV, maternity and chronic disease

# Formula for National Risk Adjustment

- **Public Sector Budget Allocation:**

- Age and gender critical (data available from Census and surveys)
- HIV+ (model data available)
- Maternity (prospective model data or birth registrations)
- Chronic disease (but data poor).
- Deaths (death registrations). Problem of double-counting?
- Socio-economic index (no evidence of size of effect)

- **Medical Schemes Risk Equalisation:**

- 2004 formula: age; gender (recommended but not yet implemented); maternity; numbers with 25 chronic diseases; numbers with multiple chronic diseases; HIV+ on anti-retrovirals.
- Argument to use only some diseases or age and gender only at the start. Difficulty in collection of consistent disease data and issues with confidentiality.

integrated  
healing



**Heather McLeod**

**New Zealand**

**[hmcLeod@integratedhealingmbs.com](mailto:hmcLeod@integratedhealingmbs.com)**

**[www.integratedhealingmbs.com](http://www.integratedhealingmbs.com)**



**Discovery**  
Health

**Pieter Grobler**

**Discovery Health, Johannesburg**

**[PieterG@discovery.co.za](mailto:PieterG@discovery.co.za)**

**[www.discovery.co.za](http://www.discovery.co.za)**

# Part 6: Comparison of risk equalisation between countries



**Webcast**  
**30 - 31 March 2011**

# Risk Equalisation system

	Australia	Ireland	South Africa
<b>RE: year of implementation</b>	2007	2009 under age based tax system	Planned for 2010, but legislation still not passed
<b>Risk factors</b>	<ul style="list-style-type: none"> <li>● Age</li> <li>● Health status proxy, i.e. a cap on the maximum insurer's costs per person over a rolling 12-month period.</li> </ul>	<ul style="list-style-type: none"> <li>● Age</li> </ul>	<ul style="list-style-type: none"> <li>● Age;</li> <li>● Numbers with 25 defined chronic diseases, with HIV and with multiple chronic diseases;</li> <li>● maternity events.</li> </ul>



# Risk selection

	<b>Australia</b>	<b>Ireland</b>	<b>South Africa</b>
Preferred risk selection by insurers	<ul style="list-style-type: none"><li>● Selective advertising;</li><li>● Product differentiation;</li><li>● Voluntary deductibles.</li></ul>	<ul style="list-style-type: none"><li>● Selective marketing;</li><li>● Restricted product enhancement;</li><li>● Voluntary deductibles.</li></ul>	<ul style="list-style-type: none"><li>● Selective marketing;</li><li>● Benefits above the prescribed minimum benefits.</li></ul>

# Comparison Paper - Conclusions

- Logic / Rationale for risk based subsidies must be understood
- Wider role of subsidies in health system must be considered
- Introduction of risk equalisation technically complex in VHI countries (e.g. benefit design)
- Significant lobbying likely

# Comparison Paper - Conclusions

- Competition based upon benefit design needs to be carefully considered
- Risk selection is problem in VHI countries
- Definition of risk equalisation is confused in VHI countries – Australia has claims equalisation NOT risk equalisation
- Community rating: How does it advance goal of solidarity?

# Comparison Paper – Community rating

- As a Goal: Each person in the community pays more or less the same premium
- As a Tool: Regulation that creates predictable profits/losses, and thereby incentives for selection that undermines the goal of community rating
- Are there more effective tools to achieve the goal?

# Comparison Paper – NHI

- All 3-countries have been considering the introduction of National Health Insurance (NHI) in the sense of universal mandatory insurance with consumer choice of (competing) health funds
- Australia: National Health & Hospitals Reforms Commission (NHHRC) – “Medicare Select”;
- Ireland: ‘Programme for Government’
- South Africa: ‘National Health Insurance’ proposed since 1994; New elected Government in 2009: “within 5 years” NHI.

# Comparison Paper – Final conclusions

- Risk equalisation in VHI countries facilitates pathway to regulated competition / NHI
- Not sufficient condition there are others
- Without it benefits of regulated competition might be outweighed by disadvantages of risk selection
- **More anon.....**

# Questions