



Insurance markets & genetics – a former actuary's view

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Topics

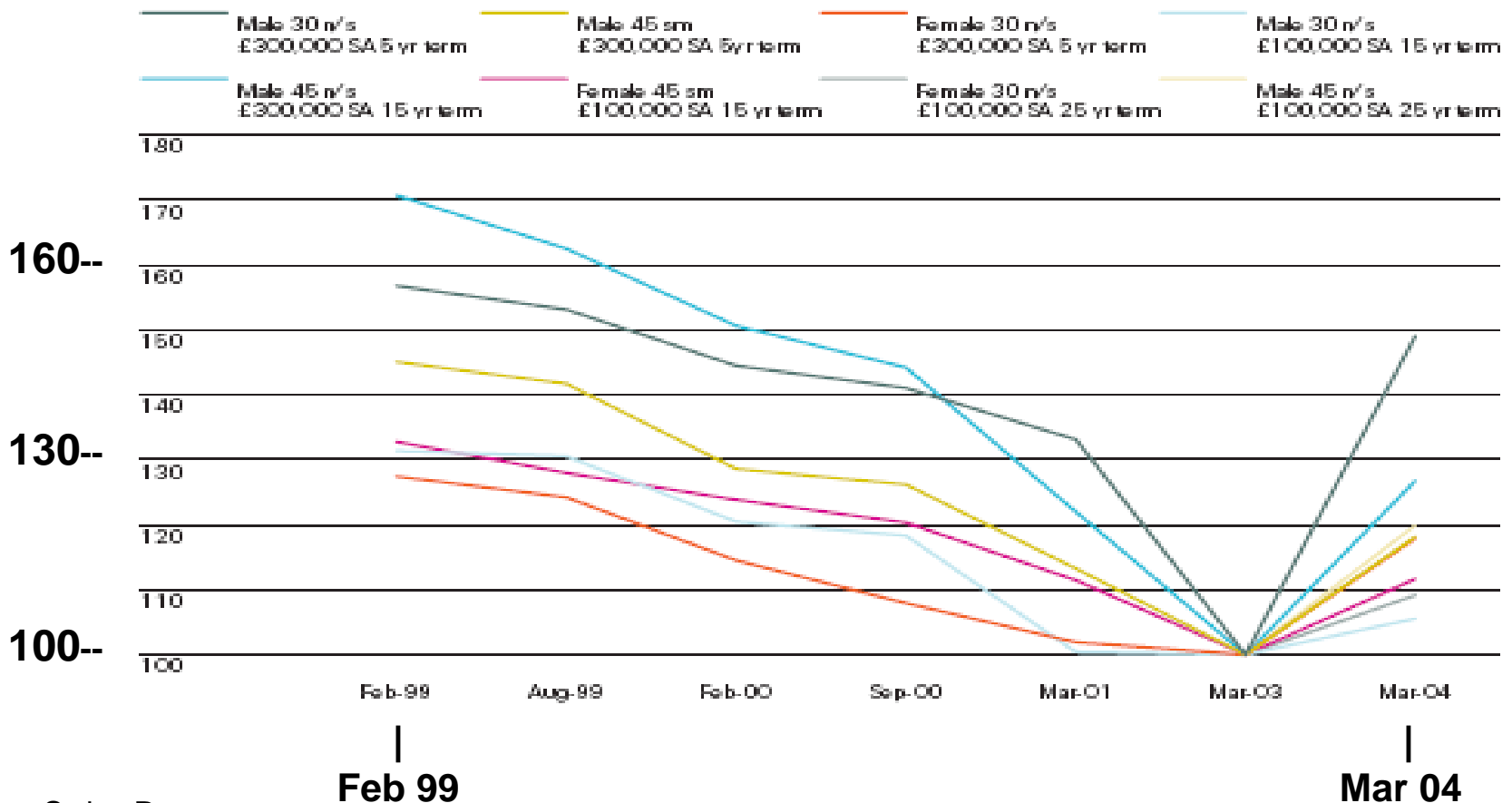
- Market variations in insurance premiums
 - over time
 - between companies
- Risk selection: when in Rome...?
- Adverse selection is not adverse
- Adverse selection – theory & evidence
- Propitious selection
- Adverse selection & large policies
- What HGC & GAIC should do

Variations in premiums over time & between companies

- Term assurance:
 - Typical standard rates down ~30% over 5 years to 2003...
 - ...then up ~20% during 2003
 - 1st to 10th cheapest typically ~35%
- Critical illness (guaranteed rates)
 - Typically down ~20% over 3 yrs to Dec 2002...
 - ...then up 50%+ in 2003.

Average of ten lowest rates for term assurance, 1999-2004

- each line is different age/sex/term/smoking/sum assured combination
- each line indexed to 100 in Spring 2003

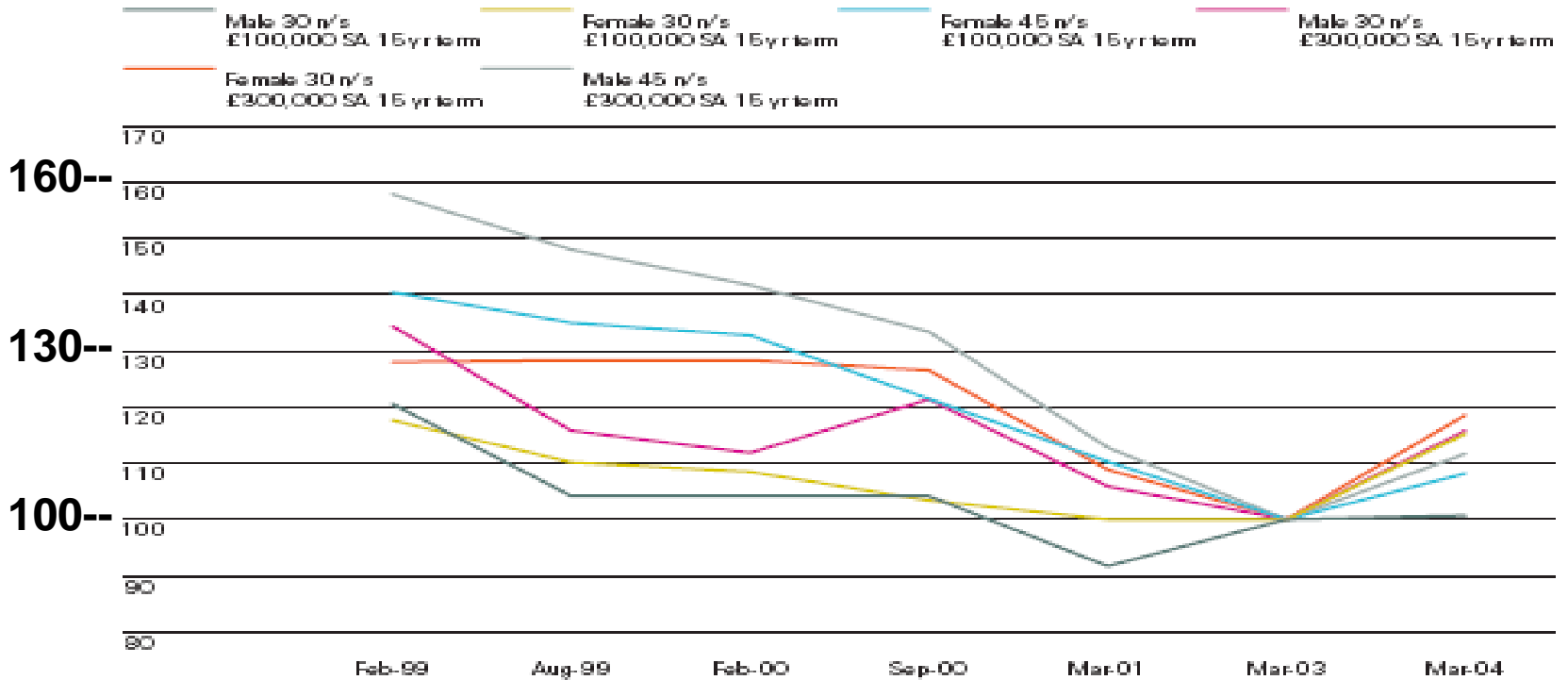


Source: Swiss Re.

All premium rates from The Exchange (electronic quotation system for independent financial advisers)

Lowest rates for term assurance, 1999-2004

- ie same graph as above, but **lowest** instead of “**lowest ten**” rates
- overall a similar story (slightly less increase in past year => **spread** of lowest 10 has **increased** in past year – also evident on next slide).



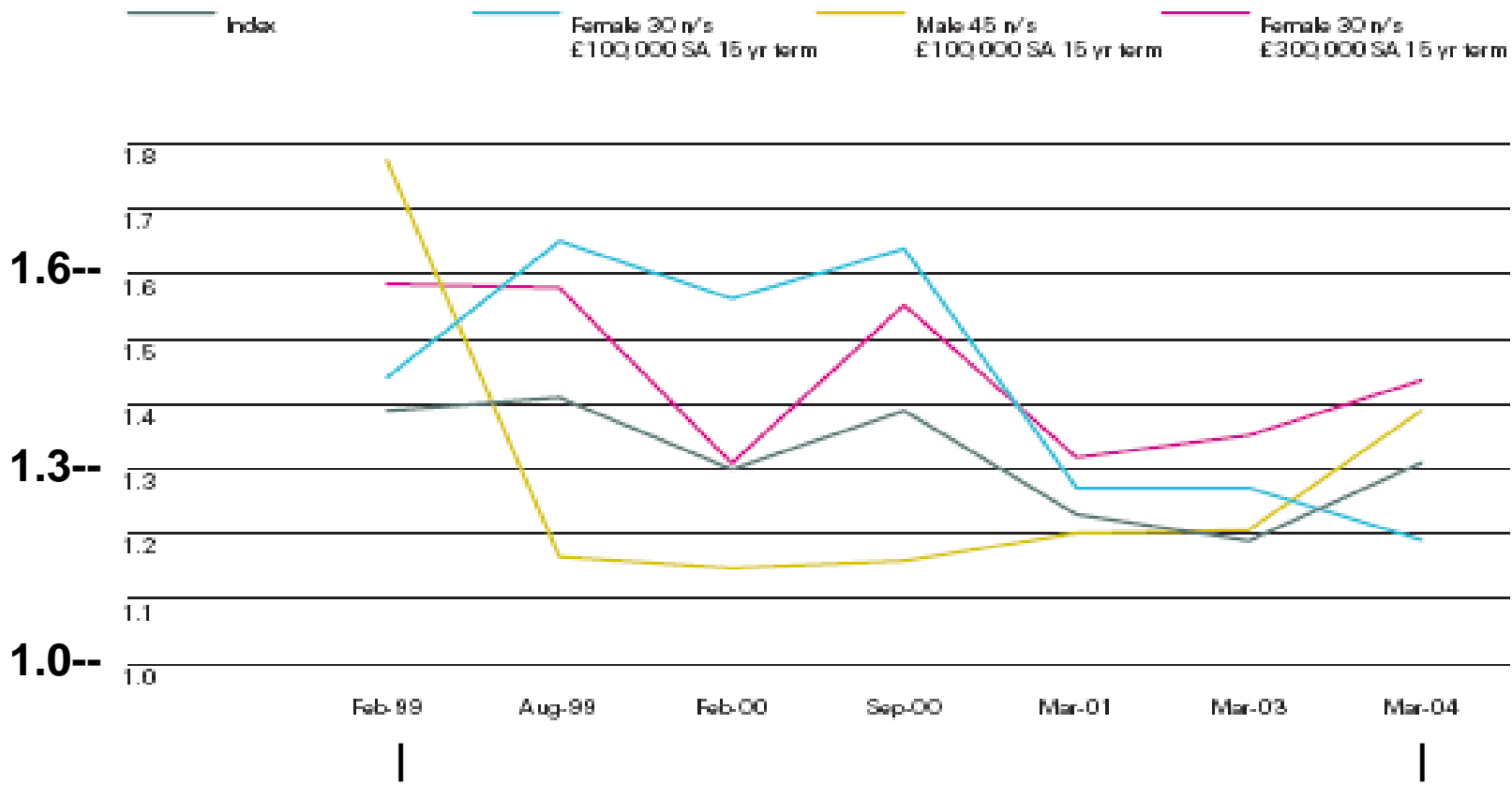
Source: Swiss Re,
The Exchange

Feb 99

Mar 04

Ratio of tenth lowest to lowest rate for term assurance, 1999-2004

- each line is different age/sex combination (all 15yrs, £100k, non-smoker)
- (grey line is a representative index for range of age/sex combinations)



Feb 99

Mar 04

Source: Swiss Re, The Exchange

Is “spread” of 10 lowest rates due to permanent clientele effects?

- table shows lowest (top) to 10th lowest term assurance rates *in Sept 2003*
- numbers are rankings of same companies in lowest 10 *as at Sept 2004*
- “N” = no longer in “lowest 10” in Sept 2004

Male 30, 10 yr term	Male 45, 20 yr term	Female 35, 20 yr	Female 50, 10 yr
N Wren Life	N HSBC	2 Lutine	N Wren Life
1 Foresters	3 Tesco	6 Tesco	2 Lutine
7 Tesco	7 Lutine	7 Liverpool Vic	3 Liverpool Vic
N Halifax Life	6 Liverpool Vic	N Legal & General	N Standard Life
8 Virgin	5 Legal & General	N Norwich Union	10 Virgin
4 NFU Mutual	9 Norwich Union	1 Virgin	5 Tesco
N Scottish Widows	8 Bright Grey	10 Canada Life	N Scottish Eq
N Legal & General	N Scottish Eq	N Scottish Widows	N HSBC
N Scottish Friendly	N Canada Life	N Scottish Eq	N Canada Life
N Zurich Life	N Virgin	9 NFU Mutual	N Bright Grey

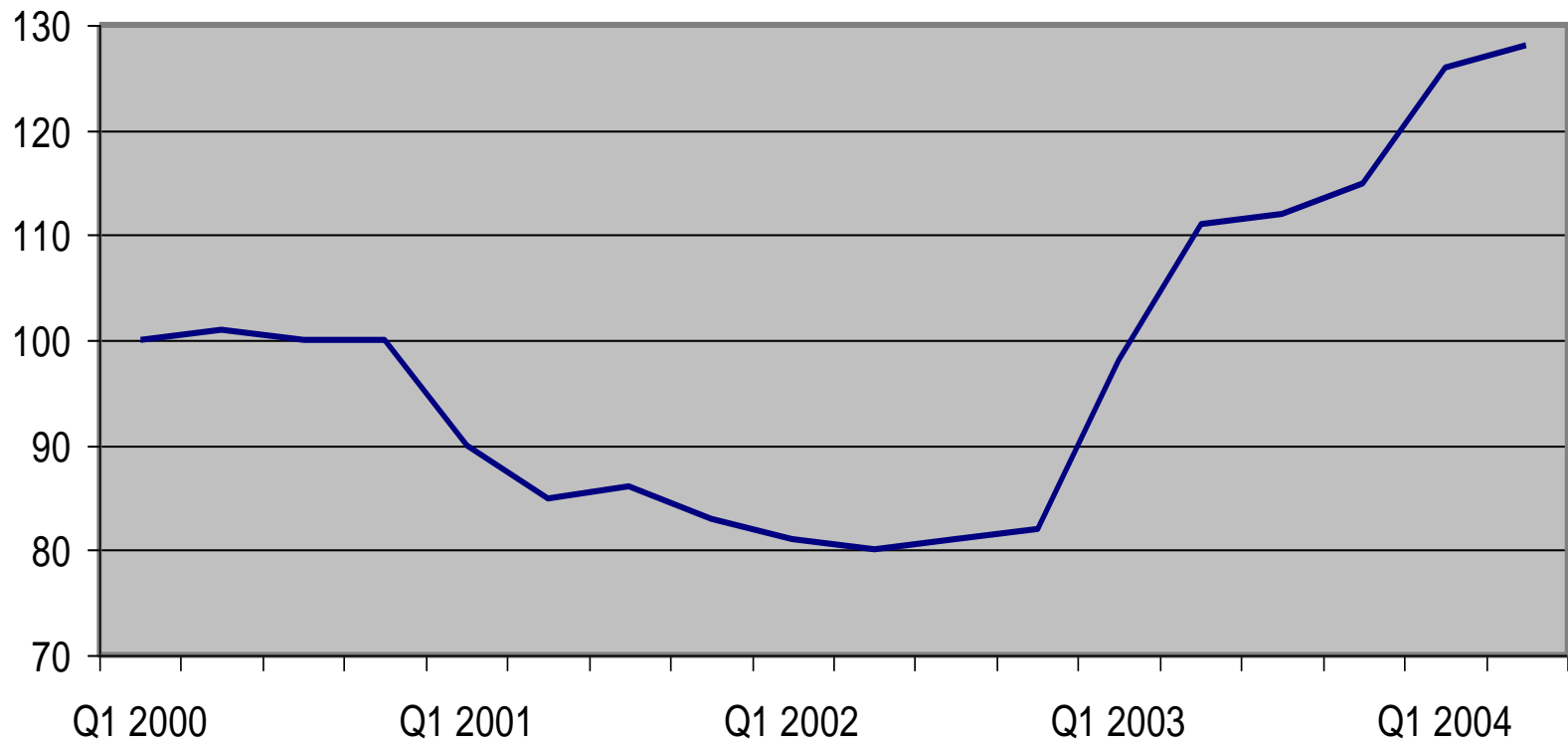
...No obvious evidence of a permanent structure in “lowest 10”

Source: Money Management magazine.

All rates non-smoker, £100K sum assured.

Critical illness (guaranteed rates)

Cheapest rate in market (Q1 2000 = 100)



Source: Lifesearch (independent financial advisers).

Cheapest rate taken from The Exchange.

Changes in CI prices (guaranteed rates)

Dec 2002	Norwich Union +40%
Feb 2003	Standard Life +50%, Swiss Life +20%
March	Norwich Union -19%!
April	Scottish Provident +14%, Prudential +22%
July	Legal & General +36%
October	Friends Provident +30%, Scot Prov +20%
Jan 2004	Legal & General -7%
Feb	Friends Provident -20% Scot Prov +11%
March	Legal & General -8%

Sources: Redmayne (reassurance advisers), Lifesearch (independent financial advisers), trade press cuttings. These sources usually quote a single number as an “average” or “typical” change.

“Costs” of possible adverse selection from ban on access to genetic tests

- All theoretical estimates seem trivial (in practice, immeasurable) cf. the variations just discussed.
- All theoretical estimates for % costs are “risk premiums”
 - need to **halve again** to compare with “gross premiums” actually paid by customer

(typically ~50% of gross premium is expenses and commission).

Risk selection customs: when in Rome...?

- Example 1: Irish health insurance
 - Voluntary insurance – NOT social insurance – coverage ~50%
 - Effectively no underwriting – 3 key features –
 - Community rating – same premium irrespective of age, sex, health
 - Open enrolment – cannot decline anyone, and can leave and rejoin
 - Lifetime cover – insurer obliged to renew each year
 - (*Possibility* of “risk equalisation” payments...but much debate....regulations since 1996...no payments made to date.)

When in Rome...(cont.)

- Consultation in Ireland in 2002: should age classification be introduced?
 - Society of Actuaries in Ireland said yes
 - Some insurers (eg BUPA Ireland) said no!.... “...a hypothetical fear of a ‘vicious cycle’ destabilising the markets has not been substantiated in Ireland. No evidence exists for it...”
- Example 2: life insurance, UK v France
 - UK: different rates for males/females. France unisex.
 - Recent EU proposals (now shelved) to mandate unisex rating: actuaries across Europe could not agree what to say!

When in Rome...(cont.)

- Example 3: UK health insurance
 - Generally unisex, 10-year age bands, insurer can load premiums, apply exclusions or decline.
 - Why different from life? Why different from Ireland?
- In summary, huge variations between markets and countries, with no obvious rationale.
- Several years ago, one could *already* see that *even if* genetics became vastly more predictive, access to genetic test results would **not** be needed to make insurance work.

Adverse selection is not adverse

- “Insurance bought by people who are likely to need it.”
- From a public policy viewpoint this is a *positive* effect
(Note: I assume a benevolent policymaker. Some may have other objectives).
- *Possibility* of negative second order effects (ie adverse selection “spiral”)...but only if adverse selection is severe.
- Optimal (“adverse”) selection = the level which maximises the “overlap” of loss events (eg deaths) and insurance coverages
 - ie high enough that many higher risks are covered
 - but not so high that an “adverse selection spiral” develops.
- As an insurer, my objectives are quite different...and may be furthered by *minimising* the “overlap” of loss events & insurance coverages. “Insurance sold to people unlikely to need it.”

Adverse selection – theory

- Lack of obvious evidence of adverse selection “spiral,” even in quite extreme circumstances (eg Irish health insurance). Why?
- For an adverse selection “spiral” to get started, need insurance purchasing decisions to respond to price and risk differences –
 - For given price, buy more (or more likely to buy) if risk is higher
= **risk elasticity of demand** substantial and positive
 - For given risk, buy less (or less likely to buy any) if price is higher
= **price elasticity of demand** substantial and negative.
- Any evidence on risk and price elasticities?

Adverse selection – evidence

- Evidence 1: crude experiment: UK critical illness sales in 2003 compared with 2002:
 - Premium rates up 50%+ (see earlier)
 - Number of policies sold down...but only 9% (Source: Swiss Re)
 - At least for **overall** sales, it seems there is a limited response to price.... price elasticity over this range ~ -0.2 .
- Evidence 2: “Price elasticity of demand for term insurance and adverse selection”(Pauly, Lemaire et al, 2003):
 - Estimated **individual** response to price/risk changes (for those who buy at least some insurance) from yearly renewable term assurance data in United States
 - Risk elasticity $\sim +0.2$
 - Price elasticity ~ -0.4
 - Their comment: both small, and risk elasticity smaller...(implies adverse selection story doesn't get started.)
- Insurance purchase paradigm = meet protection needs at minimum cost, NOT increase wealth.

Propitious selection

- Insurance purchase may sometimes be associated with lower risk, not higher risk.
- UK example: *“Uninsured drivers are nine times more likely than insured drivers to have been convicted of a serious driving offence.”* (ABI press release 11/8/04).
- Life, CI insurance examples?...probably...conjectures...
- Actuaries have no word to describe this =>neglected (sort of Sapir-Whorf hypothesis!).
- As a public policymaker, would hope that propitious selection weaker than adverse selection – otherwise the wrong people are buying insurance!

Adverse selection and large policies

- the one-shot gambler

- Suppose premium assumes risk of claim $p=1\%$
- Suppose genetic test tells me my real risk is $p^* =4\%$
- So “invest” in a £1m policy?
 - If I could make the bet on 1,000 identical lives, maybe yes
 - But in real life I can only make it **once...**
 - ...and I need to pay the large premium (£10,000)...
 - ...and it's **almost certain** I just lose the premium
 - I would never make such a bet! Ditto for wide range of plausible p , p^*
 - (Only starts to become attractive if $p^*>75\%$ say)
- Insurance purchase paradigm = meet protection needs at minimum cost, NOT increase wealth
 - needs (family structure, mortgage debt etc) dominate the decision
 - price/risk “mis-pricings” are **not exploitable** by a “one-shot gambler”.
 - (these observations consistent with financial advisers’ actual practice.)

“Bans have already been imposed in some other countries....laying the way open for people with knowledge of their genetic condition to take advantage of insurance companies, thus pushing up the cost of insurance for everyone.”

??

....Enoch Powell?

What should GAIC do?

- Historically GAIC has attracted considerable (sometimes unfair?) criticism (eg Select Committee, press comment).
- Underlying reason: many people profoundly disagree with the GAIC project of legitimising genetic discrimination in insurance.
- It will get worse! – most people aren't aware of the numbers yet!
- GAIC should draw ministers' attention to the emerging dissonance between the numbers and the broad concepts underlying GAIC
 - eg concept that genetic discrimination is “necessary” in insurance
 - eg concept that genetic discrimination can be legitimised by “science” (very old mistake...made many times, in many contexts, in past 100 years...)
- Otherwise?... time for another Select Committee enquiry.

What should HGC do?

- Stop drifting!
- Draw attention to the emerging dissonance between the numbers and the broad concepts underlying GAIC.
- Advocate a statutory ban on asking for genetic test results
 - **at least** as stringent as current moratorium
 - **no exceptions** for so-called “information gathering”
- What would make me think again?
 - **obvious** evidence of an adverse selection spiral (ie persistently declining coverage & increasing prices) in socially valuable markets.

What *will* you do?

- GAIC/HGC meeting 7/04: Question to panel:

*“Is there **any** evidence that would convince you to advocate a statutory ban? Is there **any** evidence that could change your mind?”*

- Response:

(Long pause).... “You have to realise that the insurance industry has a lot of political influence.”

- Structural bias...