

The Actuarial "Watt"?

EDITOR'S NOTE

The SAS Current Affairs Committee proudly presents The Actuarial "Watt"? Formerly known as SASi, The Actuarial "Watt"? is a newly improved and revamped newsletter that will be bringing you the "watt's watt" in the Actuarial world. The Actuarial "Watt"? is free for all Actuarial students in Heriot-Watt University and we hope that the articles might help shed some light on current happenings and also on the future prospects of becoming an Actuary.

EXCITING NEWS: This year, the newsletter is going electronic too! That's right! To ensure that we can give you current news as soon as they happen, we are planning to issue e-mails once every

month on top of our newsletter. The emails will contain short summaries on any relevant current issues with links leading you to a trusted source. Make sure you do register with SAS to ensure that you would receive these monthly emails which will keep you up to date with anything and everything Actuarial. Since the newsletter is fairly new, being only 1-year old, we would appreciate if the readers could give us some positive feedback on ways to improve the newsletter. If there are any suggestions, please kindly send us an email at mcs4@hw.ac.uk. Any feedback is appreciated!

-Mei Chen, Soon-

GETTING TO KNOW THE SAS COMMITTEE

A new term marks the new beginning of a new SAS Committee. We have conducted a recruitment session on the 15th of September and many thanks to those that showed up and volunteered to be a part of this year's SAS committee. For those who unfortunately did not make it to the session but still wishes to join the SAS committee, you can do so by e-mailing the respective committee directors or log on to www.hwsas.com and sign up there! If you are unable to decide which committee you are interested in, there are further details on the hwsas website. The website also contains information on upcoming events, Actuarial facts and many more!

Here is the list of committee members and their emails. The list can also be found on the website.

Role	Name	Email Address
President	Sarah Bingham	president@hwsas.com
Vice President	Mike Wood	vicepresident@hwsas.com
Treasurer	Andrew Summers	treasurer@hwsas.com
Secretary	Diane Baker	secretary@hwsas.com
Careers Director	Mary McCarthy	careers@hwsas.com
Social Director	Anna McMullan	social@hwsas.com
Education Director	Louise Lau	education@hwsas.com
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FASS Representative	Andy Lawrie	fassrep@hwsas.com

AN INTRODUCTION TO ACTUARIAL SCIENCE

BY JACK PATON

Across the educational spectrum, there are many fascinating courses suitable for those with a limitless interest in the field of mathematics and statistics. However, only the discipline of Actuarial Science combines an enthralling numerate degree with an exciting, rewarding future ahead for its graduates. The course, as I'm sure many students studying under the Department of Actuarial Mathematics & Statistics (AMS) are well aware of, is particularly apt for the prospective Actuary.

But what is Actuarial Science and what is an Actuary?

For those of you studying other courses, Actuarial Science can be defined as the discipline that applies mathematical and statistical methods to assess risk in the insurance and finance industries. It produces financial professionals skilled in numeracy, business and risk analysis known as actuaries, employed for making financial sense of the future and they are also in great demand across the globe. They have very diverse backgrounds and may have degrees in any numerate subject such as mathematics, economics and statistics, to name a few.

What does it take to be an Actuary?

To be an Actuary, one must complete a string of Professional Examinations. The Professional Examinations are a tough series of Actuarial based exams required to qualify for fellowship as an Actuary. Based on www.actuaries.org.uk, the following is a detailed explanation of each of the examinations (in brackets are the courses that offer exemptions for the related exams):

There are 9 exams to this stage and **all** of these are compulsory. They are;

- CT1 - Financial Mathematics (Actuarial Financial Mathematics A&B)
- CT2 - Finance and Financial Reporting (Finance and Financial Reporting)
- CT3 - Probability and Mathematical Statistics (Probability & Statistics A&B)
- CT4 – Models (Stochastic Processes & Survival Models)
- CT5 – Contingencies (Life Insurance A&B)
- CT6 - Statistical Methods (Risk Theory & Time Series)
- CT7 - Business Economics (Introductory Economics)
- CT8 - Financial Economics (Portfolio Theory & Asset Models, Derivatives Market & Discrete Time Finance, Continuous Time Finance)
- CT9 - Business Awareness Module

You need to pass or be exempted from all **three** subjects.

- CA1 - Core Applications Concepts
- CA2 - Modeling

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- CA3 - Communications

Once you have completed the CT and CA exams, and a year's work-based skills, you will be able to take a one-day professionalism course and qualify as an Associate. Hurrah! If you wish to continue and qualify as a Fellow, you will need to take the ST and SA exams, have three years of work-based skills and then take a two-day professionalism course.

You will have to pass or be exempted from **two** subjects of these nine.

- ST0 - Alternative Specialist Technical
- ST1 - Health and Care Specialist Technical
- ST2 - Life Insurance Specialist Technical
- ST3 - General Insurance Specialist Technical
- ST4 - Pensions and other Benefits Specialist Technical
- ST5 - Finance and Investment Specialist Technical A
- ST6 - Finance and Investment Specialist Technical B
- ST7 - General Insurance - Reserving and Capital Modeling Specialist Technical
- ST8 - General Insurance - Pricing Specialist Technical
- ST9 - Enterprise Risk Management Specialist Technical

For this stage, no exemptions are available. You will have to pass **one** subject out of these 7.

- SA0 - Research Dissertation Specialist Applications
- SA1 - Health and Care Specialist Applications
- SA2 - Life Insurance Specialist Applications
- SA3 - General Insurance Specialist Applications
- SA4 - Pensions and other Benefits Specialist Applications
- SA5 - Finance Specialist Applications
- SA6 - Investment Specialist Applications

How does a degree in Actuarial Science benefit a prospective Actuary over those with other numerate degrees?

It is only possible to attain all possible exemptions from the Core Technical stage of the exams by taking up the courses mentioned in the brackets and some of those courses are only offered to those pursuing a degree in Actuarial science. Hence, the Actuarial student will be dashing through a fast track route to qualifying for fellowship as an Actuary. Alas, those with other numerate degrees will only have the possibility of a few exemptions.

What can a student studying Actuarial Science expect to gain in the future?

Of course, the Actuarial student can benefit from the large variety of Actuarial based modules offered in later years of the course. This allows the student to cover important areas such as risk management, pensions and life office practice, which many actuaries specialise in, as part of their degree rather than later. Thus, giving the Actuarial student an early opportunity to decide which aspect of the Actuarial profession interests them the most. Therefore, it is obvious that a degree in Actuarial science is incredibly useful for a future Actuary to have.

So why is Heriot-Watt University an excellent choice to study this degree?

One of the best reasons is the fact that it was the first university in the UK to offer a specialized course in Actuarial mathematics. Thus, highlighting the university’s long history and expertise in the subject compared to other universities in the U.K. No words are needed to describe its very reputable department of Actuarial Mathematics & Statistics with a microcosm of this being portrayed through the fact that the department’s Actuarial Science degree is fully accredited by the U.K. Actuarial Profession. And perhaps the most beneficial aspect of an Actuarial degree from Heriot-Watt is the possibility of an impressive eight exemptions from the Core Technical Subjects (CT1-CT8), which make up a significant part of the Professional Examinations. The location is also a positive factor as being situated within a city green-belt means the university is located in a picturesque countryside, ideal to the quiet study needs of an Actuarial student. The university also has excellent bus and rail links into the nearby city of Edinburgh, the financial capital of Scotland.

What to expect after you have completed your Actuarial science degree?

After completing your Actuarial science degree, you can look forward to a very exciting and prosperous future as an Actuary. As many Actuarial students know, arguably the best part of being an Actuary is the fantastic financial rewards. Through <http://www.actuaries.org.uk/becoming-actuary/pages/what-can-actuary-earn>, the average scale of pay for different levels of responsibility as an Actuary can be illustrated as follows:

Responsibility level	Average basic salary (£)
Chief Actuary, senior partner	£227,614
Senior function head, practice director	£125,736
Function head, practice head	£110,418
Department manager, managing consultant	£87,902
Section manager, senior consultant	£80,113
Section leader, consultant	£66,038
Senior Actuary, junior consultant	£56,351
Actuary	£45,329
Student Actuary	£31,755

Hopefully the concept of Actuarial Science has been put across clearly within this article to our dear readers. Microcosms of life as an Actuarial student at Heriot-Watt University and as an Actuary in the future have been illustrated along with the fantastic opportunities open to Actuarial graduates. A combination of good numerical, business and social skills can take you, as an Actuary, anywhere in the world. So long as you have ambition and tenacity. And if you have at long last reached this sentence, then you certainly have the latter.

THE CONTAGIOUS EURO ZONE DEBT CRISIS

BY SHARIFAH SAKINAH, SYARIFAH NORFATIHAH

The debt crisis poses "the greatest challenge" in the history of the European Union. It continues to unfold in Europe, with every country appearing to get sucked in one by one.



Timeline



2009

The Beginning of the Crisis

Slovakia joins the Euro	Estonia, Denmark, Latvia & Lithuania join the Exchange Rate Mechanism	France, Spain, Irish Republic & Greece are ordered to reduce budget deficits	George Papandreou's Socialists win the general election in Greece.	Concerns about some EU member states' debts following the Dubai sovereign debt crisis.	Greece admits that its debts have reached 300bn Euros - the highest in modern history.	Greece is burdened with debt amounting to 113% of GDP - nearly double the Euro zone limit of 60%. Ratings agencies start to downgrade Greek bank and government debt.
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2010

Greece's budget deficit in 2009 is revised upwards to 12.7%, from 3.7%, and more than four times the maximum allowed by EU rules.

Concern starts to build about all the heavily indebted countries in Europe - Portugal, Ireland, Greece and Spain.

The Euro zone and IMF agree a safety net of 22bn Euros to help Greece - but no loans.

Euro zone countries agree to provide up to 30bn Euros in emergency loans

Euro zone members and the IMF agree a 110bn-Euro bailout package to rescue Greece.

The Euro continues to fall and other EU member state debt starts to come under scrutiny, starting with the Republic of Ireland.

EU and IMF agree to a bailout package to the Irish Republic totaling 85bn Euros.

2011

Latest

Euro zone finance ministers set up a permanent bailout fund, called the European Stability Mechanism, worth about 500bn Euros.

Euro zone and the IMF approve a 78bn-Euro bailout for Portugal.

A second bailout for Greece is agreed; a 109bn-Euro package designed to resolve the Greek crisis and prevent contagion among other European economies.

The yields on government bonds from Spain and Italy rise sharply - and Germany's falls to record lows

Economic growth in the Euro zone will come "to a virtual standstill" in the second half of 2011, growing just 0.2% and putting more pressure on countries' budgets.

Greek Finance Minister Evangelos Venizelos says his country has been "blackmailed and humiliated" and a "scapegoat" for the EU's incompetence.

On 19 September, Greece holds "productive and substantive" talks with its international supporters, the European Central Bank, European Commission and IMF.

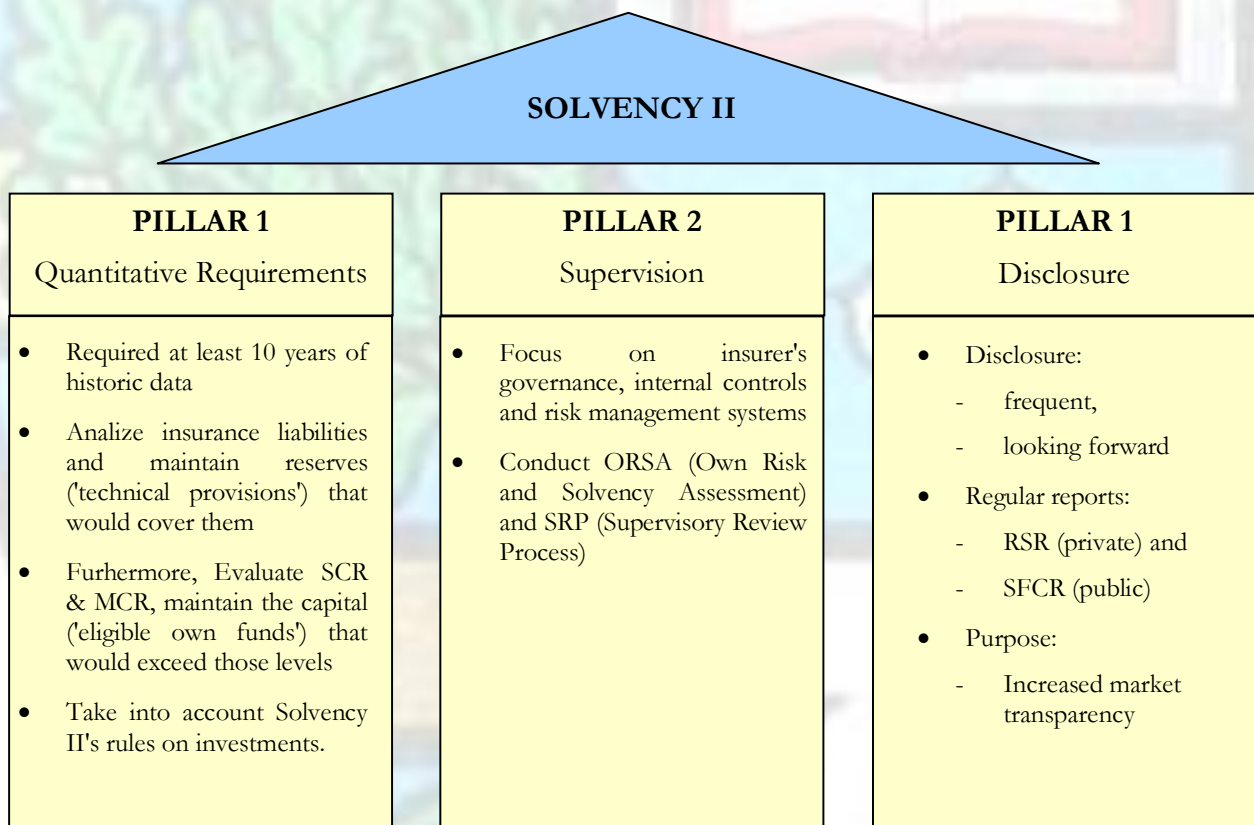
SOLVENCY II

BY NATALIA PIATKOWSKA AND NEIL CHADA

(SPECIAL THANKS TO PROF. ANDREW CAIRNS)

Solvency II

- an EU directive which will affect everyone working in the insurance (and reinsurance) sector
- will replace Solvency I which was implemented in the 1970s and the Individual Capital Adequacy Standards framework (used in the UK)
- describes methods of evaluating necessary reserves, but also outlines requirements concerning supervision and reporting methods
- consists of 3 pillars:



Questions and Answers

Q: What are its main objectives?

- better protection of policyholders (through more comprehensive analysis of possible risks and more data available publicly)
- further integration of EU market → greater competitiveness of EU insurers in the international market

Q: When is Solvency II coming into effect?

- As for today the deadline for the implementation is on the **1st of January 2013**, but **postponing** it until the 1st of January 2014 was suggested (quite likely).

Pillar I:

Q: What are the technical provisions?

- Reserves that should cover the expected costs of future obligations resulting from insurance contracts.
- They are separate from MCR and SCR, which in turn relate to unexpected losses. Separate funds are set up to meet those requirements.

Q: What is the MCR (Minimum Capital Requirement)?

- The minimum level of capital in which the company faces an unacceptable risk. In such a case immediate actions are taken (the business could be even closed).

Pillar II:

Q: What is an ORSA (Own Risk and Solvency Assessment)?

- The process (by an insurer) of identifying, assessing, managing and reporting the risks a company may face, followed by making sure that eligible own funds are sufficient to cover potential losses.

Pillar III:

Q: What is a RSR (Regular Supervisory Report)?

- Prepared annually or quarterly by an insurer, submitted solely to the supervisor.
- Contains all the information necessary for the purposes of supervision.

Q: What is the SCR (Solvency Capital Requirement)?

- Corresponds to the Value at Risk evaluated at the 99.5% level per annum.
- If the reserves drop below the SCR, the national supervisor is responsible to restore the capital to the right level.
- SCR may be evaluated using
 - Standard formula
 - Internal Model
 - Mixture of both.

Q: What is SRP (Supervisory Review Process)?

- A supervisor is required to perform regular checks on an insurer's strategies and reporting procedures.
- The supervisor has the authority to increase the capital level if he believes that the insurer underestimated it.

Q: What is a SFCR (Solvency and Financial Condition Report)?

- Available publicly and published annually.
- Contains details about the insurer such as the company's performance, types of risk and capital management.

Some possible consequences of implementing Solvency II

- an incentive for companies to improve their risk management systems (less risk, less capital required)
- increased demand for qualified specialists
- greater emphasis on collecting and organising data
- significantly increased levels of reserves (especially in case of small companies)
- greater protection of policyholders

WILL THE INSURANCE MARKET CRASH?

BY ERIC WONG

Money, Money, Money! We all know that the subprime mortgage crisis in 2007 still has a huge impact on today's economy. Martin Sullivan, deputy chairman of broker Willis Group Holding Plc, said "Inflation maybe a bigger risk for insurers", and later added "Inflation adds to insurers' costs for rebuilding property, treating injuries and paying legal claims." The rise in costs has triggered the rising premium. However, more importantly, can consumers afford the rising premium?

Many households are under pressure from food and fuel inflation and cost of compulsory insurance. YouGov plc, a research and consulting organisation, has published surveys regarding consumer spending in 2011. The surveys show:

- 55% of the population expect their household's financial situation to worsen in the next year
- 80% are very likely to delay spending on major items such as new cars and properties
- 56% agree they will spend less on everyday groceries

Also, GfK NOP's, a leading market research and consumer insight agency, consumer confidence barometer (January, 2011) shows that the "Personal financial situation" and "Climate for major purchase" indices are -18 and -29 respectively.

Although many households claim to have cut their spending recently, the average premium income in life insurance and property/casualty (P/C) industries raised in 2010. According to Insurance Information Institution (III), the average premium income rose by 14.15% in life and 0.9% in P/C insurance industries in 2010.

Simultaneously, the premium rose by 14.1% in life and 30% in P/C insurance in industry in 2010.

There are certain casualty insurances that are required by law, such as car insurance, which is compulsory under the Road Traffic Act 1988 to all road drivers. However, some casualty insurances are not compulsory under the law, such as mobile phone insurance and commercial insurance.

Another YouGov survey shows that 60% of the participants have never held a mobile phone insurance policy and only a mere 10% used to have one and currently do not.

After the recent riot in England, insurance companies cut their payout to commercial insurance policyholders by making claims in the policyholders' name against the police under the Riot Damage Act 1886, in which the non-policyholders are also entitled to make a claim under this act.

Regarding the topic of this article, there are no obvious answers as to whether or not the insurance market will crash in the future. But based on the data in this article, if there are no improvements in the economic recession and if the inflation does keep on rising, do you think consumers would purchase optional insurance policies? Also, would the consumers be able to afford the premium costs of compulsory insurance policies in the future?

ENTERTAINMENT SECTION

GEEK OUT!

BY JAKUB JULENYI



On a peaceful Wednesday night of 21st October 2011, a group of about 60 "Geeks", or in other words, Heriot-Watt university Actuarial Science and Mathematics students decided to show everyone how to party on our annual "SAS Geek Pub Crawl".

They have made their way through 8 bars; having a great laugh, meeting fellow coursemates from all years and, of course, managed to complete different drinking challenges at every stage.



The tour finally ended up in one of the city's biggest night clubs along with many sports' clubs from Heriot-Watt University.

Overall it was a stunning night out leaving participants with unforgettable memories, new friendships and a hangover for the next morning, in some cases. Anyone who missed it this year can still join many other upcoming SAS events this year. Lastly, I would love to recommend everyone to join in next year to experience probably the best "Geek" night out in Edinburgh.

LAUGHTER IS THE BEST MEDICINE

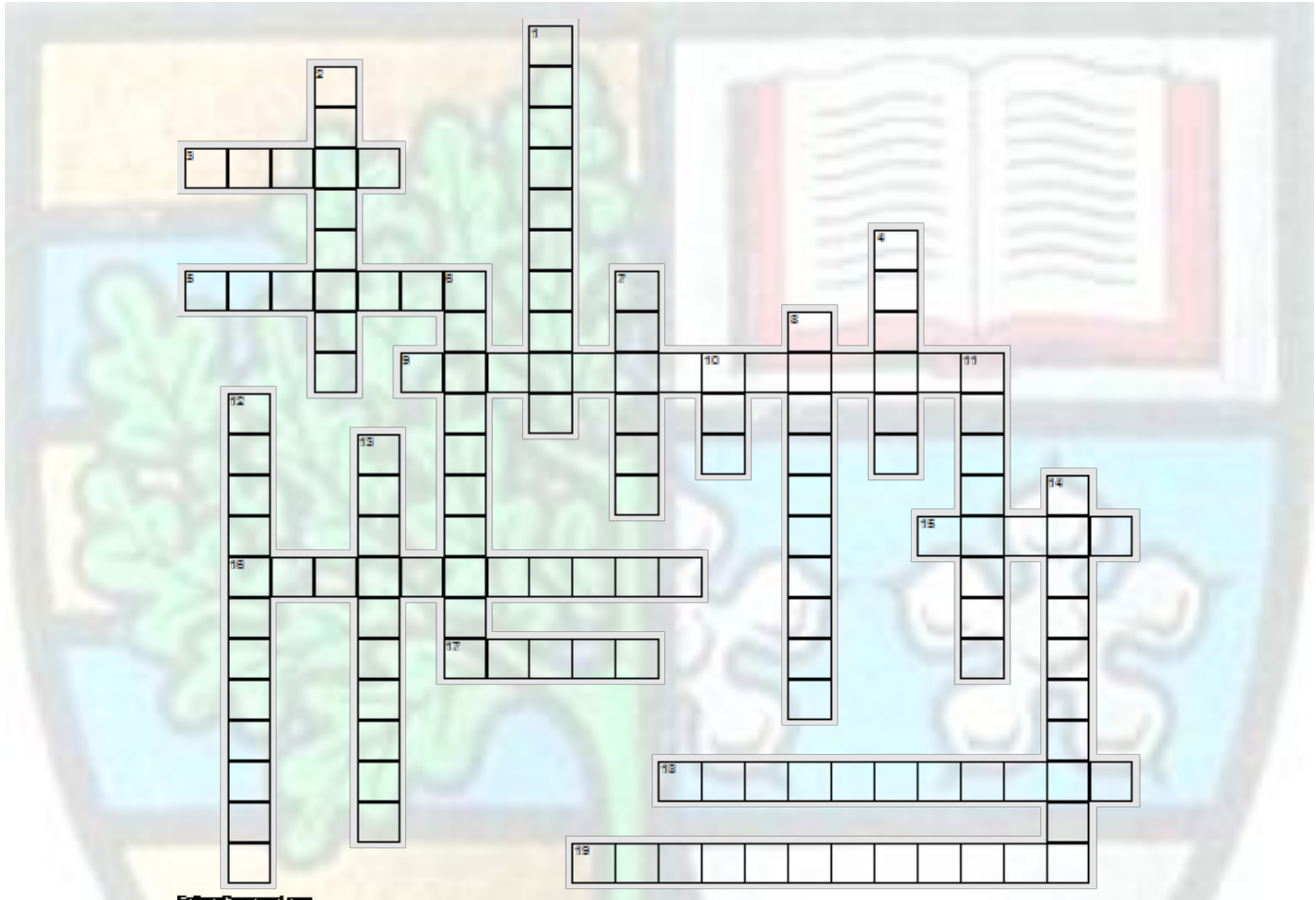
BY GAETANO & DASHA

Some jokes for you to consider:

- An actuary is someone who expects everyone to be dead on time.
- $\text{Exp}(x)$ is standing alone in the corner looking miserable. The other functions notice this and approach him they ask him " $\text{exp}(x)$ why don't you integrate with us?" and he replied "because it makes no difference!"
- "Got any sandwiches?" $f(x)=6x+3$ asks the barman. "Sorry," he replies, "We don't cater for functions."
- It's tougher to be an actuary than to be a mathematician. A mathematician only has to prove he's right. An actuary has to actually be right.
- A casualty actuary priced an automobile "Fire and Theft" policy with an extremely low premium. When asked why it was so cheap, he said, "Who would steal a burnt car?"
- Commutation function: an actuary driving to work.
- An actuary is someone who tells you about a problem you never thought you had, and in a way you can't understand.

COFFEE BREAK

BY GAETANO & DASHA



Across

3. Before tax. (5)
5. ___'s Law : 19th Century for force of mortality. (7)
9. Professor at H-W awarded the Finlaison Medal by the Institute & Faculty of Actuaries. (5, 9)
15. Bernoulli ___ : Key part in a binomial r.v. (5)
16. Memory-less distribution. (11)
17. Life ___ : ELT15. (5)
18. Economics: PPC - Production ___ Curve. (11)
19. Specialist ___ : you must pass one of the exams in this section. (12)

Down

1. ___ company of Actuaries: Livery company. (10)
2. Edinburgh ___ School: 2010 HWSAS Conference Venue. (8)
4. ___ Robertson : actuarial consultancy firm. (6)
6. Insurance is a form of risk ____. (10)
7. A subset of a population. (6)
8. Is found by calculating the annualized standard deviation of daily change in price of security. (10)
10. Models exam code. (3)
11. Commonly denoted " | ". (8)
12. Continuing ___ Development : an on-going learning for actuaries. (12)
13. Null ___ : general position when testing data. (10)
14. First female President of the Institute & Faculty of Actuaries. (4, 6)

Note that boxes do not include spaces between words! Complete the puzzle and stand a chance to win £20! All you have to do is scan the completed puzzle or take a picture of it (make sure it is readable) and email it to mcs4@hw.ac.uk. We will draw a lucky winner with the most correct answers and inform you via email. Contest ends 23rd Oct 2011.