

EcoNZ@Otago

A MAGAZINE ABOUT CONTEMPORARY ECONOMIC ISSUES FOR EVERYONE

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FROM THE EDITOR

This edition of *EcoNZ@Otago* begins with articles about housing – arguably one of the most talked about topics in New Zealand today. We look at how basic economics principles can be applied when buying a house, and at the effect of NZ's ageing population on the housing market. Also in this edition, we look at the implications of not accurately identifying LGBTIQ populations in surveys; what determines the academic performance of first year economics students; and who might win the Rugby World Cup. As usual, each article is accompanied by further questions to consider. We conclude with our regular piece on the state of the NZ economy.

We are very grateful to *EcoNZ@Otago* friends: Dan, Karin and Niven for their contributions to this issue.

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Home Economics

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Purchasing real estate requires some tough decisions. Having completed a home purchase recently, I had the opportunity to dwell on some of the economics of real estate. This article reflects on a few of my experiences.

WHAT IS ECONOMICS?

If you look through a few Economics textbooks, you'll find that each one offers a slightly different definition of 'Economics'. In my mind, the one that is most appropriate is:

Economics is the study of (1) how people choose to allocate scarce resources amongst their alternative uses and (2) the consequences of those choices.

Economists draw upon history, culture, psychology, biology, environmental science, logic, math, statistics, political science, philosophy, finance, management, marketing, information science and computer science to pull apart people's decision-making behaviour. In the end, we develop tools for making better choices. Those tools can be used practically anywhere: in businesses, government agencies, banks, hospitals, schools and at home.

When it comes down to it, there are three prime economic concepts that everyone should know for daily decision-making. These three ideas



are very easy for everyone to understand, although they do take a bit of practice to apply to real-world situations. We can use the process of buying a home as an illustration.

PRINCIPLE #1: THE BEST AVAILABLE CHOICE

Principle #1 is as follows:

For any available decision, X, if the perceived net gain from doing X is greater than the perceived net gain from any other available decision, then you ought to choose X.

So here's the idea. You have a set of desirable opportunities available to you. Unfortunately, you only have the resources to choose one of those opportunities (a situation known as *scarcity*). So which should you choose? First, measure the pros (the *benefits* – everything good to you) and the cons (the *costs* – everything bad to you) of each available option. Then, compute the net gain for each option (which is the benefits minus the costs). Select the option with the largest net gain: the *best* available option. (Yeah... it's really not rocket science.) The bulk of the Economics discipline is built on the assumption that people complete this process when making decisions – they make the best available choice.¹

In the case of home-buying, the first thing you mull over is buying versus renting. I had only ever rented flats since university. Over time, I had managed to put away quite a bit of money in a savings account. My credit card debt had been low for a long time, making my credit rating high. I had a stable job that paid reasonably well. I had enough resources (cash, reputation, etc.) for a home-purchase to become an available option for me. So should I buy or should I continue to rent?

To answer this, let's do a thought experiment. Imagine there exists a residential neighbourhood with a large number of perfectly identical homes. Some homes are for sale while others are for rent. Suppose you are one of many people with the means to either rent or buy one of the homes to live in for the next 10 years. What should you do? All the homes are alike so they should have equivalent perks and quirks, meaning most of the pros and cons

of living in any of these homes should be the same (you'll have an identical experience no matter what home you choose). In this case, it all boils down to dollars and cents. You just need to compute the total cost of buying and the total cost of renting, then go with the financially advantageous option.

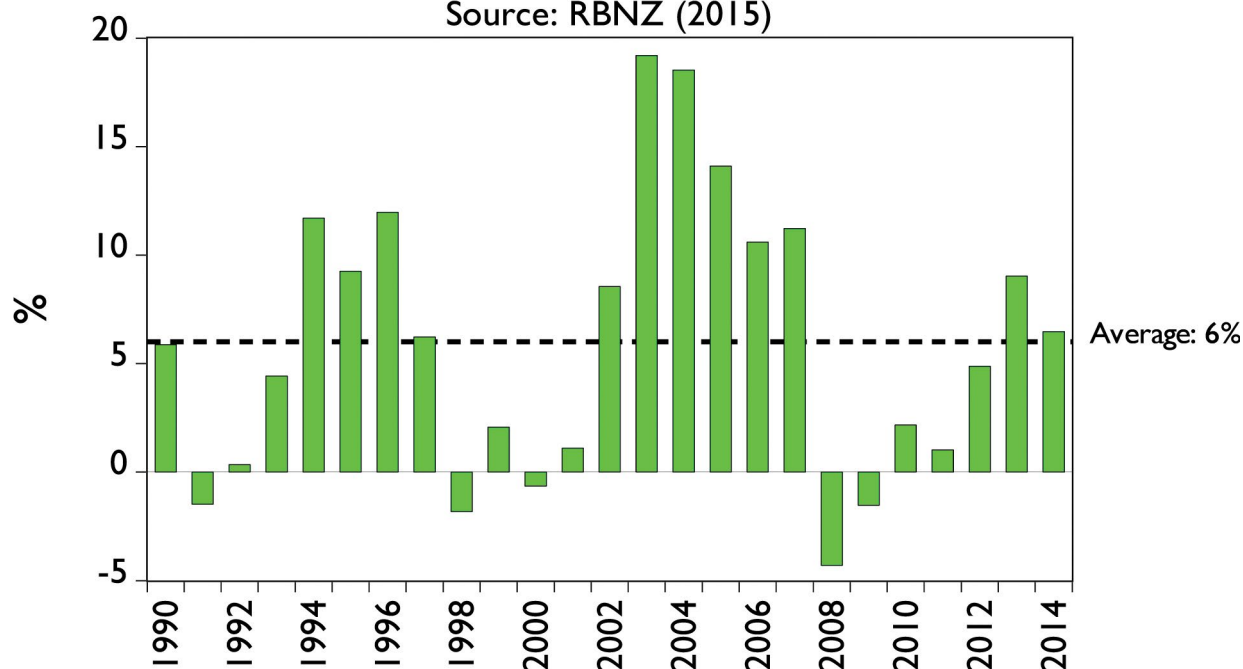
For the rental, you need to know things like the rent amount, the cost of renter's insurance, the value of the deposit (or *bond*, equal to about 4 weeks rent in New Zealand) to cover any damage to the property, and the likelihood you'll get some of your deposit back. For the purchase, you need to know the purchase price, closing costs (costs of inspections, appraisals, taxes, real estate agent costs, attorney costs, etc., needed to complete the sale), upkeep costs (since there won't be a landlord to fix things for you), and the cost of homeowner's insurance. With this option, you also get to sell the house later for some money which will offset your costs (you'll have to pay some additional fees for that sale: advertising, more attorney and real estate agent fees, etc.). With some additional assumptions, you can make adjustments to your calculations for things like inflation or changes in your preferences for future spending. It takes some time and effort, but crunching the numbers is do-able.

Those who wish to skip the math often rely on conventional wisdom, which suggests that buying is always better than renting. Renting will cost you money without question. Buying, however, can earn you money since you get to sell the property in the future. In New Zealand, for example, the growth rate of detached home prices has been around 6% per year on average between 1990 and today. Assuming that's the trend in our fictitious neighbourhood, a home costing \$250,000 (which happens to be the median sale price for Otago in January 2015 according to the Real Estate Institute of New Zealand [REINZ]) can be sold for nearly \$448,000 in 10 years. The gain you make (\$448,000 – \$250,000 = \$198,000) will partially compensate you for the transactions costs, interest payments, insurance, maintenance costs and inflation. If property prices rise fast enough over time, you may even end up in the black with an overall gain.

Annual Growth of Home Prices in New Zealand, 1995-2014

Detached Homes Only

Source: RBNZ (2015)



¹ This is taught during the first week of all Principles of Economics courses at university; the remainder of the class (and most of the other classes in the Economics major, in fact) will largely be about applying this "rule" for different decision-making scenarios.

PRINCIPLE #2: SUPPLY AND DEMAND

Principle #2 is as follows:

In markets, prices affect the transactions between buyers and sellers. Prices tend to adjust upwards if demand is greater than supply, and downward if supply is greater than demand.

Most economies these days are operated using a market system, where goods and services are bought and sold at advertised prices. Prices are extremely important as they both affect and reflect choices made in transactions (through Principle #1).

To see how, let's reconsider the fictitious neighbourhood described above. If conventional wisdom holds, and buying is always better than renting, then everyone looking for a home will want to buy. Seeing buyer enthusiasm, sellers will start to raise prices in the hopes of making a larger gain. Landlords, however, will see that nobody wants to rent and will try lowering the rental price to attract tenants. As prices change, the costs associated with buying and renting change. People who are looking for homes must re-do the calculations to identify the better option in accordance with Principle #1.

If buying is persistently better than renting, rentals will eventually be driven out of the market. Unable to find tenants and seeing real estate prices soar, landlords will begin to put their properties up for sale. Note that the opposite happens if renting is always better than buying: sellers won't be able to find buyers, but they will be able to find tenants, so they will take their homes off the market and rent them out making all available properties lease options. Only when the two options are perfectly equivalent in cost would both rental properties and sale properties exist in that same neighbourhood.

In actual real estate markets, there are a number of other actions being taken. Some people buy homes just to rent them out. Some people may buy homes at a low price, hoping to re-sell them at a high price later on. Some landlords may try to force a tenant out so that they can sell their property, while some tenants may try to break a lease early to buy a house or obtain a cheaper rental. These strategies also depend on how prices are moving.

Prices continue to change as homes go up for sale or up for rent, so you must follow them closely. In some cases, an *equilibrium* may be reached where the quantity of homes supplied (either for purchase or for rent) exactly equals the quantity demanded. In this case, prices will no longer change.

PRINCIPLE #3: INNOVATION

Principle #3 is as follows:

People synthesise strategies to improve their lot.

This is the card that evolution has dealt to *homo sapiens*. To improve our survival in the face of a changing environment, we figure out innovative solutions to our problems. Humans don't need to wait for a 'problem' to come along; we can create opportunities that can generate value for ourselves. This is a great skill, but it makes decision-making much more difficult!

For example, the fabricated neighbourhood described above would never actually exist. If ever many identical homes were constructed in the same area, at least one of the owners would figure out some way to create independent value. Perhaps one owner might paint their home a different colour. They could charge a higher price to a potential renter or buyer for an enhanced experience: living in a red house within a neighbourhood where all the surrounding homes are white. Maybe someone who cares about their reputation and prefers to "stand out in a crowd" would be willing to pay extra. Another owner might install a pool, or put in a high-efficiency heat-pump, or add a vegetable garden. There are many such added features that could garner a higher price for sellers.

When looking at properties to buy, I came across a staggering variety of home options. There was the architectural style of home: federal, colonial, cape cod, ranch, contemporary, even log cabins. There are detached homes, condominiums, townhomes, lofts and apartments. (Tip: I had to look up the difference between a condominium and a townhome; I suggest you do the same.) There are many (MANY!) features to look at which vary from home to home: gourmet kitchens, balconies, large gardens, master bathrooms, hard-wood flooring, tile flooring, decks, spas, pools, basements, attics, garages... not to mention room size, colours and other chattles. If you don't get what you want... renovate. You can install what suits your needs if a home is not up to snuff. (If contestants on *The Block* can do it, so can you!) You can even buy a fixer-upper, do a reno, then try to sell it for again so that you can buy your dream home later. Alternatively, you can even buy the land and build from scratch. The internet has made exploring your options easier, with a slew of websites and mobile phone apps (such as Zillow, Trulia and Realtor.com) now available to help you search for properties and narrow down your choices.

Product diversity makes decision-making much harder. How would you measure the pros and cons of a 3-bedroom 2-bath cape cod in the suburbs built in the 1990s selling for \$220,000 and compare them against those for a 3-bedroom 1-bath loft in the city centre built in the 2000s selling for \$350,000? You can no longer focus on just following the money. You now need to look at layout, location, style, and age and account for them in your decisions.

Rentals don't have quite the same flexibility. Landlords do augment the features of their rentals so they can charge higher rental prices. However, tenants may not renovate the property to suit their personal tastes. Because of this, buying *is* better than renting for many people. You may be able to buy or build the perfect home, but there is slim chance that you'll find it for rent somewhere. As a result, the decision to rent for many comes down to affordability (you do not yet have the resources to buy), tenure (you don't plan to stay in a particular location for a long time), search (you're still searching for the right home to buy) and outside options (you'd rather hold your money in other assets, like stocks and bonds, to earn a return).

IN THE END

In the end, I bought an old federal style home in a rural setting. For me, the net gain of this particular property was larger than the others I had seen once I accounted for all the financial and structural features. (Between us, I weighted playing the 'gentleman farmer' quite heavily.) In future, for this or any other decision that comes your way, consider thinking about the three principles: best available choice, supply and demand, and innovation. A course or two in Economics at university can help you master effective decision-making.

QUESTIONS TO CONSIDER

1. During my home search, one of the things I looked at for each property I considered was the past sale prices for *other* homes in the neighbourhood. Why would those prices matter?
2. Suppose mortgage lenders adopt stricter standards when it comes to approving an applicant for a loan. How might this impact the demand for homes?
3. TV programs that showcase home renovation (like "The Block" or "House Rules") might encourage home buyers to purchase fixer-uppers and renovate them. How might these TV programs also affect *sellers*?

USEFUL WEBSITES

Real Estate Institute of New Zealand (2015), Residential and Rural Market Report, available at reinz.co.nz/reinz/public/reinz-statistics/reinz-statistics_home.cfm.

Reserve Bank of New Zealand (2015), Housing Price Index, available at rbnz.govt.nz/statistics/key_graphs/house_prices_values/

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Squeezed in and Squeezed out - How might population ageing affect New Zealand's housing market?

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The young pay taxes So the old live in mansions They wanted when young

Not many conversations in New Zealand get very far before they turn to housing. Most people want to own their own home at some stage of their lives, for home ownership provides people with security as well as the financial advantages of a lightly taxed asset. But record price levels are making it more difficult for young people to purchase houses, and many young people ask why it is so much more expensive for them to live in New Zealand than it was for their parents.

Many factors have been forwarded to explain the increase in house prices that has occurred since 2000. These reasons include the global decline in real interest rates, increases in building costs, new charges by local authorities, a hike in the GST rate, and land supply restrictions. There is little doubt that all these reasons have been a factor. But there is also another potential explanation, which has received less attention: both the increase in house prices and the declining homeownership rates of younger people may be caused by population ageing.

Without doubt, one of the greatest advantages of rising living standards is that people live longer. But this creates two different types of pressure in the housing market. First, because people don't die at such young ages, the population is bigger than it otherwise would be, creating additional demand pressure for housing, and higher prices. Secondly, because New Zealand has a pay-as-you-go funded retirement income scheme, population ageing also requires higher taxes to fund the additional pension payments. In combination, young people *may* be caught in a pincer trap: the greater housing demand associated with larger numbers of old people increases prices at the same time that the higher taxes associated with greater pension payments reduce after-tax incomes.

THE WISDOM OF AGEING

The word "may" is important here, because even if population ageing means that tax rates and the demand for houses by older people increases, young people will not necessarily be forced to delay the time they first purchase a house. Older people could downsize their housing demands and move into retirement villages. House prices might not rise by much if builders rapidly build new houses. Young people, anticipating that they will live for longer, might start saving for their retirements earlier, and purchase a house earlier. Or they may rent with other people for longer while saving a deposit, reducing aggregate housing demand. In short, because there are many possible adjustment mechanisms, and because each mechanism has complex feedback effects, just about anything could happen depending on the particular features of a society.

To successfully analyse these complex situations, economists generally construct formal mathematical models as these allow the development of internally consistent arguments without the author (or the reader) becoming hopelessly lost. One class of models that helps economists think about population ageing is based on the overlapping generations life-cycle model pioneered by Franco Modigliani. In these models, each person earns a different income in each stage of their lives, rents or purchases housing, pays taxes, and saves for retirement. At any particular time the economy comprises people who differ in terms of age and income, but who all face the same house prices.

The solution to the model is (i) a set of prices, rents, and taxes that equates the demand for housing (rental and owner-occupied) with the supply of housing, (ii) a description of the housing demand of each person at each stage of life and (iii) the amount of new housing construction by builders. Each person's housing demand is calculated from estimates of how much people typically spend on housing and other goods, and the types of borrowing constraints they face if they borrow from banks. The model suggests that most peoples' housing arrangements follow a 'housing ladder' – they



Like most older people, she lives in a big house too.

start by sharing a flat, they then might rent or purchase a small house by themselves, upgrade to a larger house in middle age, and then possibly choose to trade down when they are retired. All of the decisions are determined endogenously in response to the pattern of prices and rents.

SO WHAT HAPPENS WHEN PEOPLE LIVE LONGER?

It depends on a multitude of factors including how responsive the construction industry is to additional demand, and whether or not the pension age is raised as longevity increases. For a wide range of different parameters, however, the model predicts four main outcomes.

First, a smaller fraction of retired people will live in small houses. Because the age when it is optimal for people to “trade-down” to a smaller house increases with longevity, a much larger fraction of people over 65 will live in large houses when life expectancy increases. This prediction accords with what we currently observe in New Zealand. For example, the number of people over 65 living in a one or two bedroom house declined by 9 percentage points between 1996 and 2006, from 41 to 32 percent.

Secondly, most – perhaps 80 percent – of new houses will be large. This is because middle aged and older people want to live in large houses, but fewer of the large houses lived in by older people are ‘recycled’ to middle aged people when older people live longer. To ensure there are enough large houses for everyone as the population ages, almost all new houses have to be large. This prediction also accords with what we observe in New Zealand. Between 1991 and 2006, for example, the average size of a new house increased from 135 m² to 191 m². (Yes, this takes into account retirement villages and apartments.)

Thirdly, homeownership rates for young people will decline. They get caught in the classic squeeze: house prices rise because there are more people, making it harder to gather a deposit, while higher taxes make it harder to pay the mortgage. The model predicts that most young people will eventually purchase a first house and upgrade to a larger house, but they do it at a later age. As is well known, home ownership rates for young people have declined sharply since 1990, and house prices have increased.

The model also suggests that most young people and all future generations would be better off if the pension age were increased in line with increases in longevity. While young people would no

longer get the pension from age 65, they would also face lower taxes. Lower and middle income people would be better off from this approach because the tax reductions would make it easier to raise a deposit for a house when they are young, and help them climb the housing ladder more quickly. (Some of them will also be tempted to save more when they are young as they know they will have a longer retirement period to fund.) High income people will be better off because they pay more taxes than they get in pension benefits, so raising the eligibility age will increase their lifetime after-tax incomes. It is interesting to note that KiwiSaver rules allow young people to withdraw their retirement savings to use as a deposit on a house, which is what the model suggests young people should be doing.

As can be seen, the changes in New Zealand's housing market that took place in the last two decades, a period during which average life expectancy increased by approximately three years, are broadly consistent with the major predictions of the model. This does not mean that the model is correct – the observed changes could have occurred for other reasons. Nonetheless, if average life expectancy continues to increase at one or two years per decade, and if the model is an approximate description of the underlying economic incentives and budget constraints facing New Zealanders, recent trends in the housing market are set to continue. The average size of houses will get bigger and bigger, many of these large houses will be happily inhabited by older people, and young people will find they own their own houses at later and later ages.

QUESTIONS TO CONSIDER

1. Why does housing affordability matter?
2. Who has an affordability problem? How has this changed over time?

USEFUL WEBSITES

Housing Affordability Information Release, available at treasury.govt.nz/publications/informationreleases/housing-affordability.

Real Estate Institute of New Zealand. (2015). Residential and Rural Market Report, available at reinz.co.nz/reinz/public/reinz-statistics/reinz-statistics_home.cfm.

Reserve Bank of New Zealand. (2015). Housing Price Index, available at rbnz.govt.nz/statistics/key_graphs/house_prices_values/.



Who is counting LGBTIQs? Queer populations in national statistics

Karin Schönplugg,¹ Christine M. Klapeer² and Roswitha Hofmann³

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Sexual orientation and gender identity are relevant for social well-being, health and economic status. There is growing international research on LGBTIQs⁴ living and working conditions supporting this evidence (Badgett and Schneebaum, 2015; Botti and D'Ippoliti, 2014; Ahmed et al. 2011; Drydakis, 2014). There are also general policy discussions (Equality and Human Rights Commission 2009); policy oriented research based on community surveys (FRA, 2014), and there are insights from within LGBTIQs movements and their organisations (ILGA, 2015) which all stress that sexuality has a tremendous impact on socio-economic status (poverty rates, income, education levels, migration background, the number of dependents, health status, living situation...), labour market standing (unemployment rates, job progression, hiring experiences, mobbing, discrimination...) and also on social cohesion for lesbian women, gay men and bisexuals.



QUEER CATEGORIES, LABELS AND WORDINGS

For researchers investigating the living situations of LGBTIQ populations, data gathering is associated with some difficulties regarding "(homo-)sexualities", "sexual orientations" and "sexual identities" as those are fluid individual, culture-specific and political phenomena and therefore multifaceted constructs. The questions to be raised are: What can and what should be measured in a survey in order to gain accurate data on the socio-economic status of LGBTIQs – sexual behaviour, sexual attraction, sexual desire, sexual identity, sexual orientation? Does it make a difference for measuring the socio-economic standing of LGBTIQs if the person is living as an "out" LGBTIQ or is "identifiable" as LGBTIQ due to certain (dissident) gender performances or public gestures (e.g. wearing a rainbow flag button)? How can these differences or the impact of such differences be integrated into a survey? This is relevant as theoretical discussions in the field of queer theory as well as experimental economics and some surveys show that especially

gender performance has a strong impact on hiring chances in the labour market (Weichselbaumer, 2003) and an Italian study using wealth data finds that being publicly open about one's sexuality is crucially correlated to the welfare of LGB people (Botti and D'Ippoliti, 2014).

SEXUAL ORIENTATION/ IDENTITY AND HOUSEHOLD DATA

One solution to identification problems of LGBTIQ populations is to investigate households and the relationships of household members in household surveys. Some countries identify LGBs in these numbers and New Zealand is one of the few countries worldwide which at this time publishes data on LGB cohabiting couples regardless of marital status in the census (Statistics New Zealand, 2008).

Table 1: Type of couple for families with couples in occupied private dwellings in the NZ census 2013

Type of couple	Number of families with couples
Opposite-sex couple	926,262
Male couple	3,672
Female couple	4,656
Total families with couples	934,593

Source: Statistics New Zealand.

There are 0.9% LGB couples in the census which seems enough information to look into their socio-economic status compared to other households. This is also the case for the US census. For 2010, the Williams Institute⁵ provides comparative data analysis for each state on LGB(T) demographics, marriage, parenting, and workplace issues.⁶ In Europe, most national censuses are micro census based, which means that a rolling representative sample of the population is combined with register data from sources like social security institutes, unemployment agencies, housing statistics, etc. These are excellent sources to explore the socio-economic status of LGBs. For instance, Sweden's register-based database of health insurance and labour market studies (LISA) has been used by Swedish researchers (Ahmed et al., 2011) to explain inter- and intra- household earnings differentials among homosexual and heterosexual couples. (They confirm that lesbian women's household incomes rank below those of heterosexual and gay male households, most likely because of a doubling of the female to male gender pay gap, even though lesbian women's individual incomes tend to be higher than the incomes of heterosexual women.) But most national register data in the European Union (EU) cannot be easily accessed. Researchers based outside of Sweden have no access to the data due to confidentiality reasons. This is typical for all EU countries that have gathered register data including LGBs. One problem with this data being largely unavailable is that it makes cross-country comparisons within Europe very difficult, if not impossible.

¹ IS, Vienna. This project was funded by the Austrian National Bank's Jubiläumsfonds.

² University of Vienna.

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⁴ The term LGBTIQ in this text refers to *lesbian, gay, bisexual, transgender, intersex and questioning/queer* as forms of self-definition, self-articulation and social modes of existence. The categories are opposed to essentialist and ahistorical understandings of sexuality and sexual identity but are reflecting constructivist, political categories of non-conformity to a heteronormative gender binary.

The official Eurostat data based on national censuses is not particularly useful. Eurostat gives an overview of the European population⁷ for 1 January 2012 by age, sex and marital status.⁸ Selecting registered partnerships, the Eurostat table looks like this:

Table 2: Registered partnerships 2007-2012, Eurostat Database

	2007	2008	2009	2010	2011	2012
Austria	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Belgium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Czech Rep.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Germany	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Denmark	6,827.0	7,357.0	7,898.0	8,364.0	8,799.0	9,079.0
Finland	2,140.0	2,426.0	2,801.0	3,167.0	3,619.0	4,102.0
France	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Hungary	n.a.	n.a.	n.a.	130.0	269.0	351.0
Iceland	24,799.0	25,183.0	25,335.0	25,058.0	25,417.0	25,930.0
Italy	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Lithuania	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Latvia	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Malta	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Netherlands	65,738.0	76,475.0	87,999.0	100,966.0	115,007.0	129,333.0
Norway	n.a.	n.a.	4,029.0	2,563.0	2,291.0	2,094.0
Poland	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Romania	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Sweden	4,188.0	4,649.0	5,294.0	4,314.0	3,731.0	3,384.0
Slovenia	n.a.	n.a.	30.0	n.a.	n.a.	n.a.
Slovakia	n.a.	n.a.	n.a.	0.0	n.a.	n.a.
Switzerland	n.a.	3,765.0	5,644.0	7,220.0	8,887.0	9,944.0

Source: Eurostat; ILGA Europe. No shading: no registered partnership institution, light grey shading: registered partnership available; dark grey shading: registered partnership and same-sex marriage are both optional.



Aside from a third of countries not providing data on marital status to Eurostat via their census reporting at all, the problems with availability of comparable data on LGBTIQs in Europe become obvious with this data source. Where registered partnership is available (countries with light shading), numbers are still not provided for some countries (Austria, Czech Republic, Germany, France), or are only partially given (Switzerland, Slovenia). Only a few countries provide numbers for registered partnerships or gay marriage (Denmark, Finland, Iceland, and Sweden). Still, it could be possible that gay and lesbian marriages are not visible here but are included in the data for “married persons” (which is not shown in Table 2), as Eurostat recommends European countries to count marriages while not distinguishing between heterosexual and homosexual couples.

Another possible source for data on LGBTIQs is the “EU statistics on income and living conditions” (EU-SILC). It is the most important EU household survey and it is an annual EU-wide survey conducted by the national statistics offices. The EU-SILC is Eurostat’s main reference source for comparing income distribution, social exclusion, and the poverty risk of European households. The problem with EU-SILC is the small sample size. In the case of Austria, with a population of about 8 million, the sample consists of 6,232 households (11,475 individuals) for the last available year (2012) which are then weighted in order to represent the Austrian

5 williamsinstitute.law.ucla.edu/

6 Other possible data sources for US research are listed by LGBTdata.com.

7 The data is based on national census and voluntarily contributed. 10 countries (BG, CY, EE, EL, ES, HR, IE, LU, PT, UK) are not providing data based on marital status.

8 Marital status is categorised as: single persons (never in legal union), married persons, persons in registered partnership, persons whose legal union ended with the death of a partner, widowed persons, persons whose legal union was legally dissolved, divorced persons, separated persons, persons with unknown marital status.

population. Numbers for LGB couples are in most countries way too small to make meaningful conclusions for the entire LGB population. For Austria, the evidence would be based on only 17 couples in 2012. Also, about a third of European countries report no data on LGBs in this household survey at all. The reasons for this are varying; some countries have no partnership institutions for LGBs and therefore do not count them. Some statistics institutes claim “their software” is unable to process same-sex data (!). Others are worried about issues of confidentiality as they are regarding sexual orientation as a private matter, like religion, and as part of the private sphere which should be protected.

INVISIBILITY, HETERONORMATIVITY AND HYPERVISIBILITY

This difficult relationship with the LGBTIQ community is reflected on the official web pages of national statistic institutes. After a screening of 30 national statistic web pages in Europe for contents on LGBTIQs we found that there was great ambivalence in reporting on LGBTIQs.⁹ Nearly half of the countries offered no information on LGBTIQs, while almost half the countries counted LGBs when they were legally recognised married/registered couples. More than a third linked LGBTIQs with crime or HIV/AIDS. Megan Ryland blogs about hypervisibility: “There is a world of difference between being seen and being watched. (...) It can be dangerous to be hypervisible. It may mean that when people see you, they see red. There are real, horrifying consequences to your body – your race, your religious expression, your nationality, your sexuality – being deemed a threat. (Perceived) deviance seems dangerous to some and often falls under the watchful eye of those who do not see individuals but a monolithic risk or inferior group.”¹⁰

Table 3: National Statistics Institutes webpage contents

	Search terms found on website	Hypervisibility in connection with... crime	HIV/AIDS	Data on registered/ married LGB couples	Special reports on LGBTIQ issues	Data on Trans-gender Persons
30 countries	17	2	10	14	6	1

Sources: National Statistics Institutes' websites, IHS 2015.

The web page analysis reveals a difficult situation of LGBTIQs in national statistics caught between invisibility, heteronormativity and hypervisibility. Next to the motive of monitoring the shady side of queers it is most interesting to see that in Europe LGBs are only counted in census data if their relationships are officially registered or if they get married. Unlike in New Zealand, cohabitation is in most countries not enough for identifying same-sex couples. As the case of Austria illustrates: “[...] non-registered partnerships are not counted because due to statistic error and data protection, same sex couples which are not registered are re-coded to non-related persons.” (STATAT, 2010: 16)

SEXUAL ORIENTATION/IDENTITY AND DATA ON INDIVIDUALS

Still, the largest problem is that LGBTIQ individuals are not counted in household data, whereas populations of other minority groups, such as migrants, will become visible, since personal attributes such as languages spoken, duration of stay in the survey country or citizenship are usually part of household surveys. Generally these surveys do not include questions regarding sexuality or gender identity, but currently Statistics New Zealand is publicly discussing whether a question on sexual orientation and gender identity should be included in the 2018 census.¹¹

On one hand, including same-sex individual data in census information is problematic because despite a growing legal recognition of same-sex partnerships and protection of LGBTIQs by anti-discrimination laws in European countries, LGBTIQs and people with dissident/non-normative sexualities and gender performances still face a high degree of discrimination and violence (see for Europe: FRA, 2014). This makes people want to remain undisclosed also in national statistics and makes LGBTIQs so called “hidden”, “hard to reach” or “elusive populations” (see Schönplugg et al. forthcoming). As a consequence non-random methods of data collection such as snowball sampling, targeted sampling or respondent-driven sampling have in the past remained the predominant methods to “reach” LGBTIQs, but difficulties arise in the lack of generalisability.

STATISTICS AS A TOOL OF GOVERNMENTALITY

On the other hand, while we do agree that there is a strong need for collecting and generating data on LGBTIQs and their socio-economic status in order to illustrate the material dimension of discrimination, homophobic stereotypes and heteronormative power structures, it must be acknowledged that “[t]here can be little doubt that statistics not only measure and calculate, but also create, control and inform” (Browne, 2010: 232). Legal partnership institutions have a strong effect on LGB visibility in European statistics, much more so than cohabitation, while individual LGBTIQs are not accounted for. Due to this, only certain LGBTIQs become visible in national data which can then be used for research and policy design. Policy conclusions based on such data will not reach the LGBTIQ populations not represented in cohabitating registered/married couples and the most vulnerable LGBTIQ populations will not be adequately represented by such numbers. In Europe there is no data on homeless gay and transgender teenagers and hardly any information on transsexual or intersex people, the LGBTIQ migrant and refugee population, and non-nuclear family structures.

In this way data collection cannot be interpreted as a “neutral” process of “revealing” or making (all) LGBTIQs “visible” but as a productive process in which certain “LGBTIQ populations” are being (re-)constructed along normative frameworks. The question what exactly is to be counted along which parameters is therefore always a “political, as well as, a productive decision” and “what and how” someone is counted, is always shaped on the basis of socio-cultural norms, political decisions and power structures (Browne, 2010: 233). Being statistically “counted” thus brings (only) certain “countable” groups/identities/relationships into existence, thereby shaping the diversity of sexual gender existences into forms that are calculable and can be regulated. Theoretical and political discussions must in this sense highlight the need to consider sexuality less a “private matter” of “erotic desire” or an individual “sexual orientation” but as an analytical category thus giving light to the socio-economic dividing effects of sexuality (Rubin, 1993).

9 Sometimes connections were also purely accidental; the term “gay” appeared on the Austrian web site because one boy in Austria had been named “Gaylord” between 1984 and 2011.
10 thebodyisnotanapology.tumblr.com/post/57763238146/hypervisibility-how-scrutiny-and-surveillance
11 2018census.loomio.org

How the personal is political is demonstrated in Gary Becker's "New Home Economics" (Becker 1981).

This leaves us with a contradiction between a pro- and an anti-data perspective on accounting for LGBTIQs. Data protection and the need for accurate results concerning the impact of sexual orientation/identity on socio-economic status of LGBTIQs remain conflicting items.

QUESTIONS TO CONSIDER

1. Should Statistics New Zealand include a sexual identity question in the 2018 census?
2. Why is it important to accurately identify LGBTIQs in national surveys?

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What determines academic performance in introductory economics?

Nathan Berg and Daniel Hamill

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What observable characteristics of introductory economics students predicts high marks in first-year introductory economics? Does being good at maths guarantee an 'A'? Having previously studied economics? Or perhaps, a more subtle proclivity for thinking 'logically'?

One motive for investigating the question of how information observable on the first day of the semester can be used to predict end-of-semester marks, is to help teachers perhaps do a better job facilitating improvements in how well students learn economics. Another motive for investigating this question is how students themselves might potentially use predicted end-of-semester marks to either change their own characteristics or take early action to move their actual marks higher than what is predicted by their profile of characteristics. In other words, if one believes the prediction equation that we report below has any external validity (i.e., out-of-sample predictive power), then a student could, in principle, use the results we report to modify his or her characteristics with the goal of maximising one's expected mark.

The goal of predicting or explaining final marks in Principles of Economics I (or something equivalent) based on data collected from students on the first day of lectures is not new. A rather large volume of previous studies seek to measure which factors most powerfully affect academic success across different disciplines at different levels (e.g., Anderson et al., 1994; Ballard and Johnson, 2004). Previous studies focused particularly on academic performance in introductory economics point to the importance of mathematical ability, previous test scores measuring English language ability, prior economics education (e.g., in high school), and demographic characteristics with disappointingly stubborn negative predictive effects for females and ethnic minorities (e.g., Stockly, 2009).

LOGICAL CONSISTENCY AND COGNITIVE REFLECTION

We improved upon previous studies by including, as potential predictors, the individual's performance on tests of logical consistency that are very frequently studied both in judgment and decision making as well as in behavioural economics. The

prediction model reported below includes variables that code variation across individuals in logical consistency and so-called cognitive reflection, explained further in just a moment. Based on the positive normative interpretation of 'being more logical' that originators of these measures applied (see Berg and Hoffrage, 2008; Berg and Gigerenzer, 2010; Berg, et al., in press; and Berg, 2014a, 2014b), we hypothesised that both of these variables would have positive effects on a student's expected final mark. We note that there are other hypotheses as to why economics, unlike most other disciplines that use pluralistic or multivariate normative measures, primarily uses logical consistency as a singular standard of rationality (e.g., Berg, 2003 and Berg and Kim, in press).

One way to understand what cognitive reflection attempts to measure is an individual's ability not to blurt out the first thing that comes to mind and instead reflect or introspect further before responding to a test question (or, by extension, making a major purchase in a 'cooled off' rather than 'hot' or emotional state, to avoid impulse purchases that do not satisfy the standard of benefit-cost calculations). Students' responses to the following question are one component of how cognitive reflection is measured: "If a ball and a bat cost \$1.10 and the bat is a dollar more than the ball, how much does the ball cost?" Even among the subpopulation of students with high math scores attending internationally elite math and science programmes, there is substantial variation in student responses. The most common 'impulsive' and, in this case, incorrect response is that the ball costs 10 cents (based on the incorrect belief that the bat costs \$1.00, which violates the condition that the bat costs \$1.00 more than the ball). Students score higher in terms of cognitive reflection if they take time (or write out a system of two equations in the two unknown variables, prices of the bat and ball, respectively) and come up with the correct response that the bat costs 5 cents.

Logical consistency is the singular principle by which neoclassical and behavioural economics define rationality. Consumer sovereignty allows for great flexibility by which economic preferences can 'rationalise' a wide variety of even money-losing behaviours.

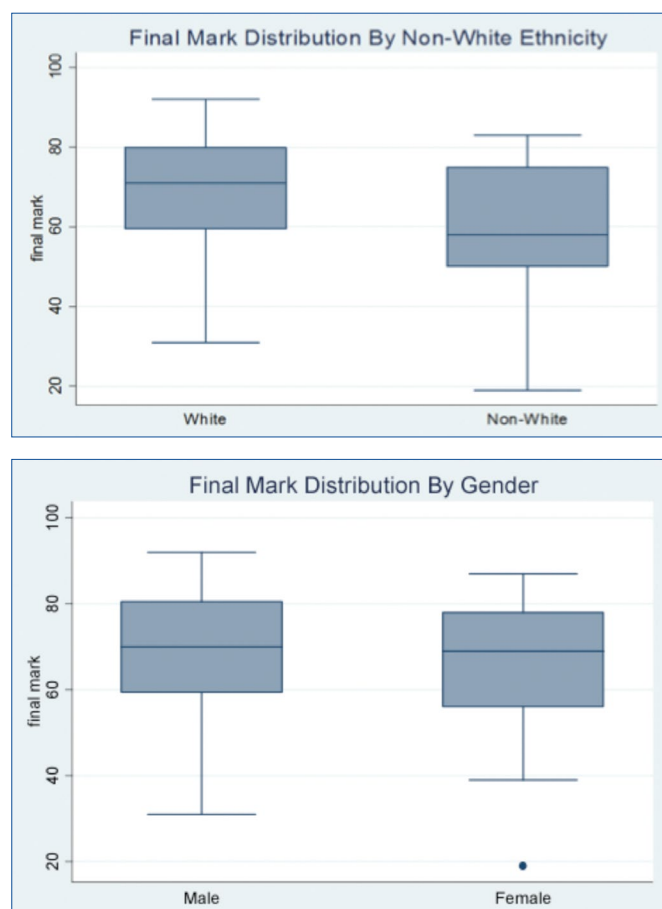
Economic rationality simply requires internal logical consistency. One can lose money or have wrong beliefs that nevertheless satisfy economic definitions of rationality by *consistently* losing money or *consistently* believing what is objectively false (Berg and Gigerenzer, 2010; Kameda et al., 2011; Berg et al., in press, and Berg, 2014a, 2014b). An example of logical inconsistency according to the benefit-cost principle is: given a choice between 1 dollar today and 2 dollars tomorrow: suppose you preferred 2 dollars tomorrow; and given the choice of 1 dollar today and 3 dollars tomorrow: suppose you prefer 1 dollar today; then this combination of expressed preferences would be non-monotonic and therefore logically inconsistent by the definitions of preferences over time trade-offs that experimental and behavioural economists typically use.

EFFECTS OF GENDER AND ETHNICITY

Previous studies by Anderson et al. (1994) and Stockly (2009) found that females and ethnic minorities tend to perform worse in introductory economics than males and ethnic majority types do. We examined whether this pattern showed up in our data, first by inspecting the bivariate distributions of final marks within subsamples defined by gender and ethnicity (shown in the Figure below).

We can see from the box-plot representations of the empirical distributions below that median (and average) final grades for students who identify themselves as white or male are greater. These differences are unconditional with respect to all other information that we can use to predict final grades. These bivariate contrasts therefore provide only a suggestive starting point for testing whether the effects of ethnicity and gender survive the presence of other conditioning information.

Figure 1. Final Mark Distribution by Non-White Ethnicity, and by Gender



RESULTS

The results in Table 1 below show several empirical models of expected final marks. Each subsequent model envelops the previous models (i.e., includes all of the predictors that the previous prediction equation contained and then adds one or more new predictors). The first model includes only gender and ethnicity. The second model includes information about whether students had previous economics instruction. The third includes time preferences and the cognitive reflection measure described earlier, interpreted here as a preference measure of style of thinking. Next, an index of math ability is added to the model. And then our index of logical consistency appears in the next-to-last columns of Table 1. The final model at the extreme right is a robustness check investigating whether information about which stream students chose (earlier versus later) and whether students chose to sit near the lecturer (which has been put forward as a source of otherwise unobservable information about students' degree of engagement or enthusiasm for the academic experience in general), are also significant factors affecting final marks.

Scanning along the first row of Table 1 labelled 'Female', we find that gender is nowhere statistically significant across all empirical specifications, and it also alternates sign, suggesting an absence in our data of any gender effect. In the final empirical model with all predictors included, the results show statistically significant (and we would argue, potentially economically significant) predictive effects associating mathematical ability, logicity, non-white status, and whether the student attends the early stream, with differences in expected final marks. Math ability and logicity are measured on a zero-to-one scale. Therefore, the coefficients on these variables can be interpreted (from the final columns of Table 1) as follows: A student who correctly answered all math-related questions and has average characteristics in all other respects is expected to earn a final mark that is 29.40 marks greater than one who could not correctly answer any of the math items tested on the first day. Similar comparisons of individuals whose responses scored perfectly in terms of logical consistency compared with those who violated all norms of internal logical consistency reveal an expected-final-grade differential of 20.34 marks. These predicted differentials in units of marks only grow larger when expressed as percentage gains relative to the unconditional mean final mark.

From this study we believe we have at least uncovered initial evidence that introductory economics classes do indeed reward logical consistency independently and beyond expected rewards for math ability and previous education in economics. In contrast, cognitive reflection would appear to have, at most, a predicted effect less than half that of logicity. Furthermore, the data (as filtered through the last three empirical models in Table 1) indicate that math ability and logicity absorb any predictive power that this variable had when considered in the presence of less conditioning information. Logical consistency plays a statistically and economically significant role that goes beyond math ability in predicting final marks in introductory economics.

CONCLUSIONS

As for practical take-away points for students who might be interested in using these results to maximise their expected final marks (or strategically signal to their lecturer and other observers that their expected marks are as large as possible), we suggest the following. Math ability is, by a rather large margin, the most potentially powerful differentiator of expected performance in first-year economics papers, at least based on current curricula as they are currently taught and marked. Math ability dominates or attenuates the effects of other predictors such as having previously taken economics or already having a solid understanding of

Table 1: Six Empirical Models of Expected Final Marks in a University-Level First-Year Principles of Economics Class

variables	demographics only		+ previously taken economics		+ time preferences and cognitive reflection		+ math index (competency in highschool-level math)		+ logicality		+ chose to attend earlier stream	
	coeff	t	coeff	t	coeff	t	coeff	t	coeff	t	coeff	t
FEMALE	-2.97	-0.8	-2.83	-0.2	-0.61	-0.2	2.39	0.8	2.70	0.8	3.20	1.0
NONWHITE	-10.50	-2.3	-10.44	-2.3	-9.89	-2.3	-7.38	-1.8	-7.33	-1.8	-8.52	-2.2
PREVECON			8.86	1.8	8.67	1.8	4.76	0.7	3.17	0.7	0.52	0.1
PATIENCE					4.04	0.8	3.66	0.2	0.97	0.2	2.48	0.5
CRT1/0					7.09	2.0	-0.84	-0.3	-1.01	-0.3	-1.10	-0.3
MATHINDEX							25.73	3.5	25.54	3.5	29.40	4.0
LOGICALITY									17.89	2.1	20.34	2.4
EARLYSTREAM											7.33	1.9
CONSTANT	70.18	26.8	68.69	0.8	61.61	14.1	51.79	2.1	44.98	7.8	39.43	6.2
R squared	0.08		0.13		0.20		0.32		0.37		0.41	

All models were estimated using a sample of N = 69 students enrolled in a first-year principles of economics class.

opportunity cost (i.e., already thinking like an economist). Despite visible associations in bivariate contrasts of means and medians that match some previously reported findings, our data contain no gender effect. Once math ability, logical consistency and voluntarily showing up to the earlier stream are included, these variables dominate most others in terms of predicted effect size. The negative effect of non-white status is difficult to interpret, in part because it is such a coarse measure of ethnicity. Its coefficient in the empirical models above is surely a worthwhile topic for future investigation of economics and pedagogy.

Math ability, as we measure it, is based on eight components. This includes knowledge of future-value and present-value formulas (from high school algebra) and adding fractions with unequal denominators, which we thought would have strong predictive power; however, these measures failed to reveal any significant associations with final marks. The components of math ability that are perhaps most useful for students are: solving a system of two linear equations in two unknowns; being able to write very simple algebraic formulas for expenditure as a linear function of prices and quantities; and other basics of percentages and high school algebra. The only two “advanced” components of the math index were a test of the rule of exponents (e.g., simplifying $x^a/x^b = x^{a-b}$) and a calculation of an easy limit (e.g., the limit of $3 + 4/x$ as x becomes large = 3). Interestingly, half of students got the limit problem correct while only 20% of students correctly solved the two equations in two unknowns problem. This runs counter to what one might expect about limits being more advanced than the routine high school algebra that principles of economics papers typically use (e.g., computing equilibrium price and quantity in a single-market, i.e., partial equilibrium analysis, using a demand-supply system of equations).

We can tell students wanting to maximise their expected final marks in principles of economics: the more math, the better; but it is the meat-and-potatoes high-school algebra that counts the most – nothing advanced or esoteric is required. We can say also that economics heavily rewards logical consistency – more than prior familiarity with economics or economic reasoning such as correct understanding of opportunity cost on the first day of class.

Comedian Woody Allen is often attributed as having said that 80% of life (i.e., success) is simply showing up. There has been a lot of other research based on other data sources regarding the benefits of regular attendance. What we can say from our data is that showing up to the *earlier* of the two lecture streams when given the choice to do so appears to have a moderately strong association with academic success. To summarise: high school maths, logicality and showing up early provides what we think is an evidence-based

prescriptive formula based on our data. We thank the students for sharing their information, which will hopefully benefit future cohorts of students in introductory economics.

QUESTIONS TO CONSIDER

1. As a potential student how might you use this information to improve your academic results?
2. How might we try as a society to eliminate the gap in academic achievement between different ethnic groups?

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Who will win the Rugby World Cup?

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It's tough to make predictions, especially about the future

Yogi Berra, Major League Baseball manager

Like most future events, it is impossible to know for certain who will win the 2015 Rugby World Cup (RWC), but we can estimate probabilities of various outcomes occurring. We do this by (1) building a rating system for international rugby matches; and (2) using these ratings to estimate expected score margins (i.e., who will win and by how much) and characterising uncertainty around these predictions.

In the following analysis, I employ the RugbyVision.com algorithm to rate teams. This scheme is an Elo-type system specifically designed to represent international rugby games. The Elo system, named after Arpad Elo, was originally invented to rank chess players and is now used in many other games. In the Elo system, ratings points are based on past performances and differences in ratings points reflect relative strength. RugbyVision.com ratings are designed to predict match outcomes, so they differ from the official World Rugby (formerly International Rugby Board) ratings, which are only used to rank teams.

RugbyVision.com rankings and rating points for 2015 RWC qualifiers (calculated on August 1, see rugbyvision.com for the latest estimates) are displayed in Table 1. By design, the average rank across all teams is 100. New Zealand and South Africa are, respectively, the number one- and two-ranked teams. The next tier of teams is relatively tightly bunched and includes England, Australia and Ireland, with Wales just behind this group. France, who have only won four of their last 10 matches, is ranked seventh.

Differences between RugbyVision.com rating points can be used to predict the average score margin for games played at neutral venues. For example, in a match at a neutral venue, New Zealand would be expected to, on average, beat South Africa by 7 points (130.3 minus 123.3). Home advantage is estimated to be worth 4 points, so this amount is added to the home team's rating if applicable. In the 2015 RWC, England will play all of their games at home, and Wales will have home advantage in two pool matches.

Table 1. RugbyVision.com rankings and rating points (as of August 1, 2015).

Rank	Team	Rating points
1	New Zealand	130.3
2	South Africa	123.3
3	England	121.6
4	Australia	120.6
5	Ireland	119.4
6	Wales	117.4
7	France	112.4
8	Argentina	107.5
9	Scotland	103.7
10	Samoa	102.2
11	Tonga	96.3
12	Italy	96.2
13	Fiji	95.5
14	Japan	91.9
15	Canada	84.8
16	Georgia	84.1
17	USA	83.7
18	Romania	77.0
19	Uruguay	69.2
20	Namibia	62.9



Predicting game scores using ranking points and (when applicable) home advantage provides an estimate of the “average” margin in a game between two teams. As a weaker team will sometimes beat a stronger team, to get the full picture, we also need to know the distribution of scores around the predicted average. To see why this is important, consider our New Zealand versus South Africa example: If the score margin was always within plus or minus 7 points of the predicted average, New Zealand would be expected to win all games between the two teams. However, if the score margin sometimes deviated from the predicted score by more than plus or minus 7 points, South Africa would be predicted to win some matches in which the score deviation went in its favour. We characterise this uncertainty by estimating the shape of the distribution of score margins around the predicted averages. It turns out that, at a neutral venue, South Africa is expected to win 29% of matches against New Zealand.

By combining team ratings and the distribution of score margins around the predicted averages, we can calculate the probability of teams reaching various stages of the 2015 RWC, which are displayed in Table 2.² To assist discussion of the tournament outcome probabilities, Figure 1 displays knock-out matchups assuming that the highest-rank team always wins.

Table 2. Probabilities of teams reaching various stages in the 2015 RWC (as of August 1, 2015)

Pool	Team	Quarter-finalist	Semi-finalist	Finalist	Champion
A	England	90.6%	76.5%	52.7%	24.6%
A	Australia	69.4%	39.3%	17.5%	6.1%
A	Wales	39.7%	19.1%	7.2%	2.0%
A	Fiji	0.3%	<0.1%	<0.1%	<0.1%
A	Uruguay	<0.1%	<0.1%	<0.1%	<0.1%
B	South Africa	99.6%	57.0%	21.7%	11.2%
B	Scotland	57.2%	5.1%	1.0%	<0.1%
B	Samoa	37.8%	2.9%	0.5%	<0.1%
B	Japan	5.0%	0.1%	<0.1%	<0.1%
B	USA	0.4%	<0.1%	<0.1%	<0.1%
C	New Zealand	99.9%	87.2%	63.2%	46.4%
C	Argentina	82.8%	19.6%	3.1%	0.3%
C	Tonga	16.5%	1.2%	<0.1%	<0.1%
C	Georgia	0.8%	<0.1%	<0.1%	<0.1%
C	Namibia	<0.1%	<0.1%	<0.1%	<0.1%
D	Ireland	98.8%	65.7%	26.3%	8.0%
D	France	94.7%	26.0%	6.8%	1.3%
D	Italy	6.1%	0.2%	<0.1%	<0.1%
D	Canada	0.3%	<0.1%	<0.1%	<0.1%
D	Romania	<0.1%	<0.1%	<0.1%	<0.1%

According to these calculations, New Zealand will almost certainly qualify for the quarterfinals, where they will likely play a (currently) below-par French team, so there is a high probability (87.2%) that they will qualify for the semifinals – there are no “ghosts” from 1999 or 2007 lurking in these simulations! New Zealand will likely play South Africa in the semifinal, and their probability of making the final is 63.2%. The All Blacks will probably have to beat England in the final and have a 46.4% chance of winning the tournament.

England, the next most likely team to win the tournament, have a 24.6% chance of lifting the Webb Ellis Cup. Although England are seeded in the “pool of death”, if they win Pool A, they will likely avoid playing New Zealand or South Africa until the final. Additionally, when home advantage is added to England's rating points, they are expected to, on average, beat all teams except New Zealand.

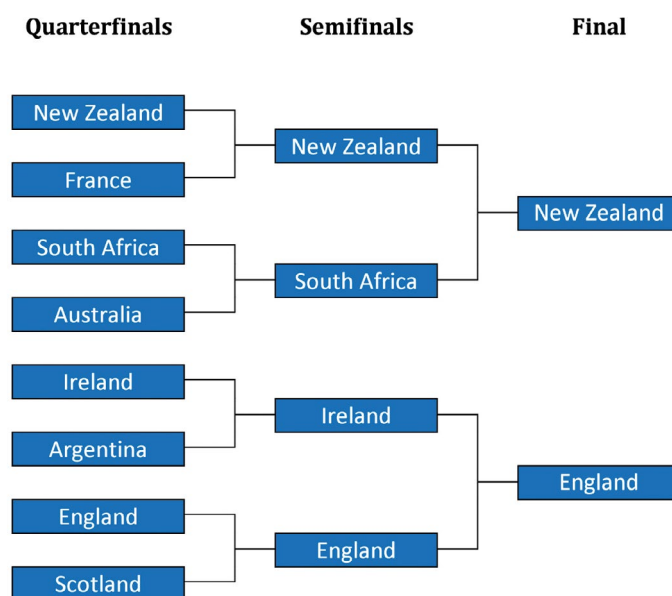
South Africa have the second highest probability of making the quarterfinals (behind New Zealand), but only have an 11.2% chance of winning the RWC. This is because, should they make the final, South Africa's likely opponents in the knockout matches will be Australia, New Zealand and England (at Twickenham).

Ireland have a 65.7% chance of making the semifinals and an 8% chance of winning the tournament, as they would likely have to beat England in a semifinal and New Zealand in the final to win the tournament.

Of the teams that do not play in either the Rugby Championship or the Six Nations Championship, Samoa is the most likely to progress past the pool stages, and has a 37.8% chance of qualifying for the quarterfinals.

Who will win the 2015 RWC? New Zealand have a much higher probability of winning than any other team, but there is still more than a 50% chance that another team will be crowned champion.

Figure 1. RWC knock-out matchups assuming that the highest ranked team always wins.



QUESTIONS TO CONSIDER

1. Wales play their Pool A match against Australia in London. What would happen to the estimated probability of Wales advancing to the quarterfinals if this match was played in Cardiff? What would happen to the estimated probability of Australia making the quarterfinals? Why?
2. Wales has more rating points than France, but France's estimated probability of making the quarterfinals is higher than that for Wales. Why?

USEFUL WEB SITES

Updated RWC predictions and ratings are available at rugbyvision.com.

World Rugby Rankings (formerly the International Rugby Board Rankings), available at worldrugby.org/rankings. A description of this system is provided at worldrugby.org/rankings/explanation.

Further information about the Elo rating system is available at en.wikipedia.org/wiki/Elo_rating_system.

1 Niven Winchester is an economist at the Massachusetts Institute of Technology.

2 As a bonus point is awarded for scoring four or more tries in the pool stages, we also include an algorithm that estimates the number of tries scored by each team in each game, and characterise uncertainty around the predicted number of tries scored.

Commentary on the New Zealand economy

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	Mar 2015	Dec 2014	Sep 2014	Jun 2014	Mar 2014
GDP (real, annual growth rate, %)	3.2	3.3	3.0	2.9	2.5
Consumption (real, annual growth rate, %)	3.5	3.3	3.1	2.9	2.8
Investment (real, annual growth rate, %)	7.1	9.5	9.4	12.2	11.2
Employment: full-time (000s)	1824	1813	1795	1779	1764
Employment: part-time (000s)	528	527	513	514	516
Unemployment (% of labour force)	5.8	5.8	5.5	5.7	6.0
Consumer Price Inflation (annual rate, %)	0.1	0.8	1.0	1.6	1.5
Food Price Inflation (annual rate, %)	1.2	0.5	-0.2	1.6	0.8
Producer Price Inflation (outputs, annual rate, %)	-2.5	-0.8	-1.0	2.5	4.0
Producer Price Inflation (inputs, annual rate, %)	-4.0	-1.9	-2.2	1.4	3.1
Salary and Wage Rates (annual growth rate, %)	1.7	1.7	1.7	1.6	1.5
Narrow Money Supply (M1, annual growth rate, %)	7.1	6.2	5.9	8.3	7.6
Broad Money Supply (M3, annual growth rate, %)	8.3	6.3	5.3	5.5	4.3
Interest rates (90-day bank bills, %)	3.63	3.67	3.71	3.52	3.05
Exchange rate (TWI, June 1979 = 100)	78.3	78.2	78.5	81.5	81.3
Exports (fob, \$m, year to date)	48,943	50,075	51,053	51,161	50,028
Imports (cif, \$m, year to date)	51,350	51,258	50,386	49,972	49,230
Exports (volume, seas. adj.)	1331	1312	1287	1268	1317
Imports (volume, seas. adj.)	2107	2106	2080	2031	1972
Terms of Trade (June 2002 = 1000)	1338	1319	1351	1415	1414
Current Account Balance (% of GDP, year to date)	-3.6	-3.3	-2.6	-2.5	-2.6

Sources: Statistics New Zealand (stats.govt.nz), Reserve Bank of New Zealand (rbnz.govt.nz)

There are signs that the New Zealand economy is going off the boil a little. Economic growth over the March quarter was just 0.2%, somewhat less than most commentators had expected. The dry summer is at least partly responsible for this weak growth, but concern that dairy prices will take longer than originally expected to recover from their recent decline also appears to be undermining business confidence. Growth in investment spending – especially once construction spending is excluded – has slowed markedly over the last few quarters. Concern about the ongoing strength of the economy (rather than the very low rate of inflation that, as discussed in the previous *Commentary*, is likely to be short-lived) was also a factor in the RBNZ's decision in June to cut the Official Cash Rate and signal that further interest rate cuts are likely. This change in monetary policy together with the ongoing weakness of dairy prices contributed to a significant depreciation of our dollar. At the time of writing (in mid-July) its value against the US dollar is more than 20% below the high point it reached a year ago.

The slide in dairy prices over the last year or so has also affected several other series in the table. It is the main reason for the terms of trade's fall, which was only arrested in the March quarter because of the recent slide in oil prices. Both measures of producer price inflation have turned negative, as the dairy processing industry is not only experiencing falling prices for its output, but the cost of the raw milk it buys has also fallen. The fall in oil prices has also played a role in dampening producer price inflation. Finally, declining receipts from dairy exports have played a major role in shifting the trade balance back into deficit and, consequently, in the growth of the current account deficit over the last year.

Based on this it would be easy to conclude that the economic outlook is rather grim, but that would be an overly pessimistic assessment. Although down from its recent peak and likely to ease a little further yet, New Zealand's terms of trade are still at a historically high level. The March terms of trade figure is still 30% above its average for the twenty years *before* the Global Financial Crisis. Moreover, dairy prices should eventually recover to some extent as the low current prices discourage production and encourage demand around the world. Consumption spending is still growing steadily – partly due to ongoing positive net immigration – and construction spending in Christchurch and Auckland will continue to underpin economic growth for the time being. Growth may also get a boost from the dollar's depreciation if it is sustained. The effect of immigration on the supply of labour may limit the extent to which the unemployment rate is able to fall over coming quarters, but employment should continue to rise.