



# COMPETITION & REGULATION TIMES

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## Capital Cost and Control in Small-Cap Companies: SIZE MATTERS

Small companies have important economic significance as the most dynamic, innovative and risk-taking sector of the economy. So why do small-cap companies offer only limited corporate governance provisions? Christina Atanasova, Evan Gatev, and Daniel Shapiro find that small companies are incentivised to improve governance by being offered the carrot of easier access to equity financing.<sup>1</sup>

**T**he cost and availability of capital are crucial for small businesses as they are rarely financially self-sufficient. If access to borrowing were unrestricted, having an optimal mix of debt and equity could serve as a disciplining device for a company's manager(s), because default allows creditors the option to force the business into liquidation. Liquidation is expensive, and so managers must run the company prudently to minimise the likelihood of its occurrence. In addition, increased monitoring by banks (who extend credit to the company) can improve efficiency and reduce agency costs.

Small-cap companies have very low debt capacities that are quickly exhausted (credit becomes unavailable), forcing them to issue equity. A different disciplining device is required in this case. Stronger

shareholder rights and legal protection mechanisms can substitute for tight capital structure. Improving corporate governance, however, can be very costly for small-cap companies. Not only are the relative costs of information production (and its external verification and dissemination, for example: auditor fees, financial reports, and analyst coverage) high relative to income, but the company's insiders would have to cede some of the private benefits of control as a result of such improvements. Furthermore, larger board sizes are detrimental to small companies' performance as they are less effective at monitoring because of the higher co-ordination costs.

These considerations suggest a relationship exists between small-cap companies' capital structure and corporate governance practices. We find, using Canadian data, that

small companies with high levels of tangible assets are able to increase their borrowing to finance profitable investment opportunities. As a result, they can shy away from adopting costly mechanisms that ensure higher quality corporate governance. When companies lack sufficient tangible assets they can use as collateral to access debt, they must resort to equity as a source of funding. In that circumstance, they engage in costly reduction of managerial agency costs via improvements to corporate governance.

### Considering Canada

Canada offers a unique regulatory setting in which to examine the impacts of the costs and benefits of corporate governance mechanisms and their relationship with the capital structure of small-cap companies.

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Similar to New Zealand, corporate governance in Canada is influenced by the relatively small size of the capital markets, the large number of small and micro-cap public companies, and the concentration of share ownership.

Canada has two main stock exchanges: the Toronto Stock Exchange (TSX), and the TSX Venture Exchange (TSXV). Since 1995, the TSX has published 14 *Corporate Governance Best Practice guidelines* that companies can implement. The TSXV is designed for small and micro-cap<sup>2</sup> companies, and although they are now subject to the same corporate governance guidelines as companies on the TSX, this did not occur until 2005. Before 2005 (and in our sample) for companies listed on the TSXV both the adoption of the guidelines and its disclosure were left to the discretion of the individual management, resulting in large variation in governance choices.

The TSXV is also characterised by lenient listing requirements. To be listed on the TSXV, a company must meet the following conditions: stock price over CAN\$ 0.15 and post-IPO net tangible assets and market capitalisation higher than CAN\$ 500,000. TSXV has no requirements relating to issuers' profitability; it simply stipulates sufficient working capital for 12 months of operations. The more lenient listing requirements in Canada have enabled smaller and unprofitable companies to access the market, while perhaps reducing investor protection and market quality.

### TSX Venture Companies' Characteristics

Our initial sample consists of all 1474 companies listed on the TSXV in 2004, the last year for which there are no regulatory constraints. The Canadian stock market has a large relative weight of natural resources companies. The Energy (Oil and Gas) sector accounts for 13% of companies listed on the TSXV and 25.22% of market capitalisation. Corresponding values for the Materials (Mining) sector are 46.74% and 50.70%. The majority of companies listed on the exchange have market capitalisation lower than CAD \$5 million. The median stock

price is CAD \$0.27, with an annual volatility of 130%.

Most of the TSXV companies have low debt-to-equity ratios, negative profitability, and property, plant and equipment (PPE) represents a very small proportion of their total assets. These companies also have low-quality corporate governance provisions. The majority of companies have concentrated ownership, with more than half of them having blockholders with voting rights higher than 10%. The median company has four directors on its board of directors. Only 20% of companies have an independent audit committee and a chief executive officer who is not the board's chair. Less than 8% of sample companies have a written charter and less than 16% have an established strategic planning process.

### Empirical Results

Sorting the sample companies by leverage, we find that for the average company in the top leverage quartile, PPE (assets that can be pledged as collateral) represent 22.68% of total assets. For the companies in the bottom quartile, the ratio is only 2.59%. Also, the companies in the low leverage quartiles have much higher quality corporate governance provisions, such as larger boards of directors, independent board chairs, and independent audit committees. These companies have less concentrated ownership, and are more likely to be audited by a Big 4 auditor.

Regression analysis also suggests that collateral is the most important determinant of small company capital structure. Collateral alone explains more than 5% of the variation of leverage. The effect is also economically significant, with a one standard deviation increase in collateral increasing leverage by almost 13%.

When considering the determinants of small company corporate governance and capital structure jointly, we find leverage has a significant negative effect on the level of governance provisions. Corporate governance, however, does not have a significant effect

on leverage. On the other hand, corporate governance measures have a significant positive effect on the probability of new equity issuance. The size of the equity issue is also positively affected by corporate governance characteristics, although the statistical significance is weaker. Finally, cash flow and market-to-book ratio have a significant effect on the amount of equity raised. This is consistent with the argument that good corporate governance acts as an enabling device to raise equity finance, while the particular financing needs of the company determine the actual size of the issue. In summary, our results lend support for the effect of corporate governance on small companies being through easier access to equity financing.

### Regulatory Recommendations

The Canadian evidence suggests that improving corporate governance provides capital market benefits, such as improved availability and reduced cost of equity capital. It also provides support for a more flexible regulatory approach for small-cap companies with high compliance costs.

Companies make choices in their corporate governance arrangements that reflect the trade-offs between costs and availability of external finance, as well as private benefits of control, and how these trade-offs differ for large and small companies. Regulators should account for the interactions between corporate governance and the cost and availability of capital; these are *not* separate issues.

1 This article is based on "The Capital Structure of Small Cap Firms: A Corporate Governance Story", which was awarded the ISCR prize at the New Zealand Finance Colloquium, 2014.

2 Canadian micro cap stock are: 5 cents to \$2 and a market capitalisation less than \$200 Million

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# Sailing the illiquid seas of FOREIGN EXCHANGE MARKETS

Toby Daglish and Phuong Ho review the literature on liquidity in the Foreign Exchange market – a crucial issue for New Zealand, which sources most of its investment funding from overseas.

In most financial markets, expected returns are a compensation for bearing risk. A lot of press has been given in recent times to liquidity risk (the danger of being unable to sell a security for a fair price in a timely manner).

Several studies have established the relationship between liquidity and returns in stock and bond markets, beginning with Amihud and Mendelson (1986).<sup>1</sup> A higher return is demanded to compensate for lower liquidity, which creates a *liquidity risk premium*. Liquidity has been found to co-move cross-sectionally and to vary over time. For example, Chordia, Roll, and Subrahmanyam (2000)<sup>2</sup> show that companies in a particular industry see liquidity wax and wane in tandem, and individual liquidity measures co-move with each other and with other market factors. Chordia, Roll, and Subrahmanyam (2001)<sup>3</sup> investigate the causal factors of the variation in market liquidity and trading activity over time. In short, we have a good idea of the drivers of liquidity for conventional security markets.

Yet, liquidity risk has received little mention in the foreign exchange (FX) market, despite (or perhaps because of) the huge size of this market. Given the average daily trading volume of four trillion USD in 2010 (Bank for International Settlements, 2010), the FX market is considered highly liquid. However, closer examination reveals a different story. Sixty-six percent of the FX market activity involves the six most traded pairs of currencies. In addition to the dispersion in trade volumes across currencies, there are the changes over time, the market's relative opacity, heterogeneity of participants, and decentralised dealerships; the FX liquidity is not well understood.

However, liquidity is a fruitful area of current inquiry. Recently, Brunnermeier, Nagel and Pedersen (2008)<sup>4</sup> highlighted the importance of liquidity in the FX market with their study on currency crashes in the 2008 financial crisis, many of which could be attributed to liquidity 'drying up'. Subsequently, Banti, Phylaktis, and Sarno (2012)<sup>5</sup> and Mancini, Rinaldo, and Wrampelmeyer (2013)<sup>6</sup> provided interesting discussions on the existence of liquidity risk premia in the FX market.

Inspired by the stock and bond market liquidity literature, several measures of liquidity for the FX market have been formed. Mancini et al. divide these into four categories:

- Price impact (and return reversal)
- Trading cost
- Price dispersion
- Principal components

The price impact of transactions measures the extent to which the exchange rate changes in response to order flow (the quantity of market buy orders arriving in excess of, or in deficit of, sell orders). Higher price impact leads to more movement of the exchange rate after each trade, reflecting lower liquidity (stronger responses suggest a shallower collection of limit orders available to absorb the market orders). Order flow data can be hard to find, given the market's opacity. Improvements in the availability of order flow data would make this measure more useful in assessing FX market liquidity. The second measure, trading cost, concerns the cost of implementing a trade. A market is liquid if the bid-ask spread (the difference between the price at which a currency can be bought and that at which it can be sold) is low. The third measure, price dispersion, involves the volatility in the FX market. When dealers in the FX market agree to buy or sell a currency (providing liquidity) they may end up holding undesired inventories, before being able to unwind their positions. The higher the volatility of exchange rates, the more dangerous these positions are. Inventory models of liquidity propose a negative relation between volatility and liquidity; hence by monitoring market volatility, we can guess the level of liquidity. The last measure, principal component analysis, aims to amalgamate the information in the other measures of liquidity.

The work of Mancini et al. is the first formal, systematic study of liquidity risk in the FX market. Using a data set from January 2007 to December 2009, they find significant temporal and cross-sectional differences in currency liquidities. Furthermore, they show liquidity risk is priced in carry trade portfolios. Carry trade portfolios involve borrowing in low interest rate

currencies and investing in high interest rate ones. Low interest rate currencies are found to appreciate in value when liquidity in the market (as a whole) is low. Conversely, high interest rate currencies exhibit the opposite behaviour, depreciating in value when liquidity declines. Typical high interest rate currencies used in these trades are the Australian, Canadian, and New Zealand Dollars, while the Japanese Yen is used as a low interest rate funding source. When high interest rate currencies are being bought and low interest rate currencies are being sold, market-wide FX liquidity improves. This causes high interest rate currencies to appreciate even further, while low interest rate currencies depreciate. This widening spread encourages more carry traders to enter the market. However, the party can all end in a bang: if traders start to unwind their positions, liquidity worsens, and the high interest rate currencies come plummeting down in value.

Banti et al. confirm the presence of liquidity risk premia. They expand the investigation by covering a longer sample period including both crisis and non-crisis periods and a broader currency market (with both developed and emerging market currencies).

Understanding the ebb and flow of investments provides a key to understanding the changes in cost of capital for the economy, making research of this nature promising in the search for better understanding the dynamics of the New Zealand economy.

1 Amihud, Y., & Mendelson, H. (1986). Asset pricing and the bid-ask spread. *Journal of Financial Economics*, 17 (2), 223–249.

2 Chordia, T., Roll, R., & Subrahmanyam, A. (2000). Commonality in liquidity. *Journal of Financial Economics*, 56 (1), 3–28.

3 Chordia, T., Roll, R., & Subrahmanyam, A. (2001). Market liquidity and trading activity. *Journal of Finance*, 56 (2), 501–530.

4 Brunnermeier, M. K., Nagel, S., & Pedersen, L. H. (2008). Carry trades and currency crashes, National Bureau of Economic Research.

5 Banti, C., Phylaktis, K., & Sarno, L. (2012). Global liquidity risk in the foreign exchange market. *Journal of International Money and Finance*, 31 (2), 267–291.

6 Mancini, L., Rinaldo, A., & Wrampelmeyer, J. (2013). Liquidity in the foreign exchange market: Measurement, commonality, and risk premiums. *Journal of Finance*, 68 (5), 1805–1841.

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# Merging Mandatory Saving and Monetary Policy

Alfred Duncan<sup>1</sup> investigates the Labour Party's Variable Savings Rate policy, where KiwiSaver contributions would become compulsory, and contribution rates adjusted by the Reserve Bank in conjunction with changes in the Official Cash Rate to achieve Monetary Policy objectives.

**A** major challenge for institutional design is determining which tasks are best delegated to independent experts, and which are best decided in the political arena. New Zealand has received international acclaim for striking this balance effectively for monetary policy. In New Zealand, monetary policy objectives are determined in the political arena. The implementation of monetary policy to achieve those objectives is delegated to the Reserve Bank of New Zealand (RBNZ), an independent institution.

The Labour Party's Variable Savings Rate (VSR) proposal merges savings policy and monetary policy. However, questions remain about both its potential effectiveness and the extent to which RBNZ would be able to maintain its independence from political pressures.

Under the proposal, RBNZ would be required to make distributional judgments in trading off the objectives of two distinct policies.

## Changing How Kiwis Save

New Zealanders' savings habits have long been a subject of political interest. KiwiSaver has proved extremely popular since its introduction, but many New Zealanders currently save some of their pay over and above their KiwiSaver contributions. These savings mainly take the form of principal repayments on their homes, but will also include savings accounts and other financial assets, including non-KiwiSaver retirement funds.

Making KiwiSaver compulsory and varying the savings rate will have little effect on these New Zealanders' total savings, but will alter

where the savings are placed. Those with savings in financial assets can divert these funds to their KiwiSaver accounts. Many with mortgages will choose to reduce their principal repayments to offset new KiwiSaver contributions.

However, diversions from other forms of saving might not completely offset increased KiwiSaver contributions. Some might be 'nudged' toward an increase in total savings, perhaps attempting to maintain their previous principal repayments regardless of new (or higher) KiwiSaver contributions. Others may have less flexibility. Cash-strapped households and renters might not be able to compensate for changes in the VSR, which will bite into their household budgets. The additional savings may provide a small nest egg for later in life

but, in the meantime, compromises in current spending will occur. What will these low-income households leave out of the grocery basket in order to meet fluctuating KiwiSaver contributions?

### For Marginal Macroeconomic Effect?

At the macroeconomic level, the effect of the policy on aggregate savings is likely to be much more benign. Low-income earners earn a small share of aggregate income. Significant swings in aggregate savings are driven by the savings behaviour of the government, firms and high-income individuals. The savings rates of these groups will be largely unaffected by changes in the VSR.

Assuming that aggregate savings were more responsive to the VSR than anticipated, what would this mean for monetary policy?

While it has a number of operational tools available, the main policy tool employed by RBNZ is the Official Cash Rate (OCR), a short-term interest rate that feeds through to the interest rates that savers earn in term deposits, and that borrowers pay on mortgages and business loans. Increasing interest rates encourages firms to pay down debt, and reduces households' disposable income after mortgage payments. Reduced investment and household spending dampens price pressure for commodities and consumer goods. Higher interest rates also encourage capital inflows, strengthening the value of the New Zealand dollar and further reducing the prices of imported goods.

Increasing the VSR will also reduce households' disposable income, and decrease demand for consumption goods. Holding RBNZ's inflation target constant, this drop in demand can be offset by a reduction in interest rates, leaving output and inflation unchanged. The New Zealand dollar will depreciate, and exports will increase. With both the VSR and the OCR, RBNZ would have two levers to influence both inflation and national savings independently of each other. However, in practice, the VSR's limited effect on savings behaviour at the microeconomic level mean that it is unlikely to have much effect at the macroeconomic level.

### Calibrating Competing Levers

There are clear benefits from treating the OCR as the focal policy tool, with the clear objective of price stability. First, it works. Raising interest rates does indeed reduce demand for scarce

resources, dampening price pressures. Second, it makes policy errors observable. We know that if inflation is consistently above (or below) target, RBNZ has kept interest rates too low (or too high). Third, it ensures that policy doesn't systematically affect the distribution of income or wealth. An increase in interest rates may harm borrowers and help savers, but RBNZ cannot maintain high or low interest rates without missing its policy target. Under a mandate to target price stability using the OCR as their primary policy tool, monetary policymakers cannot systematically favour one group of society over another.

This changes if RBNZ is using multiple tools for a single objective. By augmenting interest rate policy with the VSR, the central bank may perhaps be able to keep interest rates lower over the economic cycle. This might benefit middle-income mortgagors, at the cost of savers nearing retirement and low-income renters whose weekly shopping basket is restricted by increases in the VSR.

There are also risks from introducing multiple objectives for monetary policymakers to achieve. These risks are amplified when the additional policy objective is not easily achieved with the additional policy tool, as is the case with the VSR. When success on one objective requires compromise on the other, how will policy priorities be determined?

### Political Independence, Regulatory Institutions and Monetary Policy

Labour's policy outline states that RBNZ's operational independence would be preserved following the introduction of the VSR. Political independence is paramount for effective monetary policy. Historically, when elected governments have controlled monetary policy, they have chosen to keep interest rates systematically low. Governments enjoy the temporary boom in demand and employment at the cost of higher inflation in the future (preferably following the next election).

The VSR allows RBNZ to decide on whose shoulders the costs of price stability will fall. It is highly debatable whether an independent institution should have control over such distributional powers. In practice, it is unlikely that an institution exercising distributional powers will be able to maintain its political independence for very long. The potential political gains that could be obtained by influencing RBNZ policy would be larger than under the status quo. They would also be more difficult to detect by observers. The open question remains: should the proposal to merge monetary policy and savings policy be implemented, how would RBNZ's political independence be ensured?

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# The GRAPE escape

Guy Robinson and Toby Daghish investigate the implications of fluctuating commodity prices on farm land values.

Land valuation is a peculiar business, and one that a lot of money rides on. Anyone who's tried to buy a house in New Zealand (particularly in the northern parts of the country) will tell you that city prices have changed a lot over the last twenty years. But urban dwellers don't have a monopoly on volatile prices. In the country, varying commodity prices can have interesting implications for farm values.

One region where commodity price fluctuations have been particularly striking has been the Marlborough region, long held in high esteem for the Sauvignon Blanc it produces. Table 1 shows changes in vineyard per hectare profits from 2004 to 2012, while Figure 1 shows a map of the Marlborough region, with coloured dots showing vineyard sales. Both paint striking pictures: as grape prices skyrocketed, many farms converted to vineyards. When grape prices plummeted

during the Global Financial Crisis, they were left "high and dry".

The link between a vineyard's value and grape prices seems clear-cut at first; if grape prices go up, the vineyard's cash flows (and value) go up, and if grape prices go down, the vineyard's cash flows (and value) fall. But what if things got really bad? A vineyard may have started its life as a sheep and beef farm, and under desperate enough circumstances, may find it profitable to tear out its vines and revert to being a farm.

Figure 2 shows a graph of land values for a simple two-commodity model of land values. On the left axis is the level of grape revenues, while on the right axis is the level of revenues from farming beasts. As either commodity becomes valuable, the land's value (the vertical axis) increases, either because it's already being used for this commodity or because

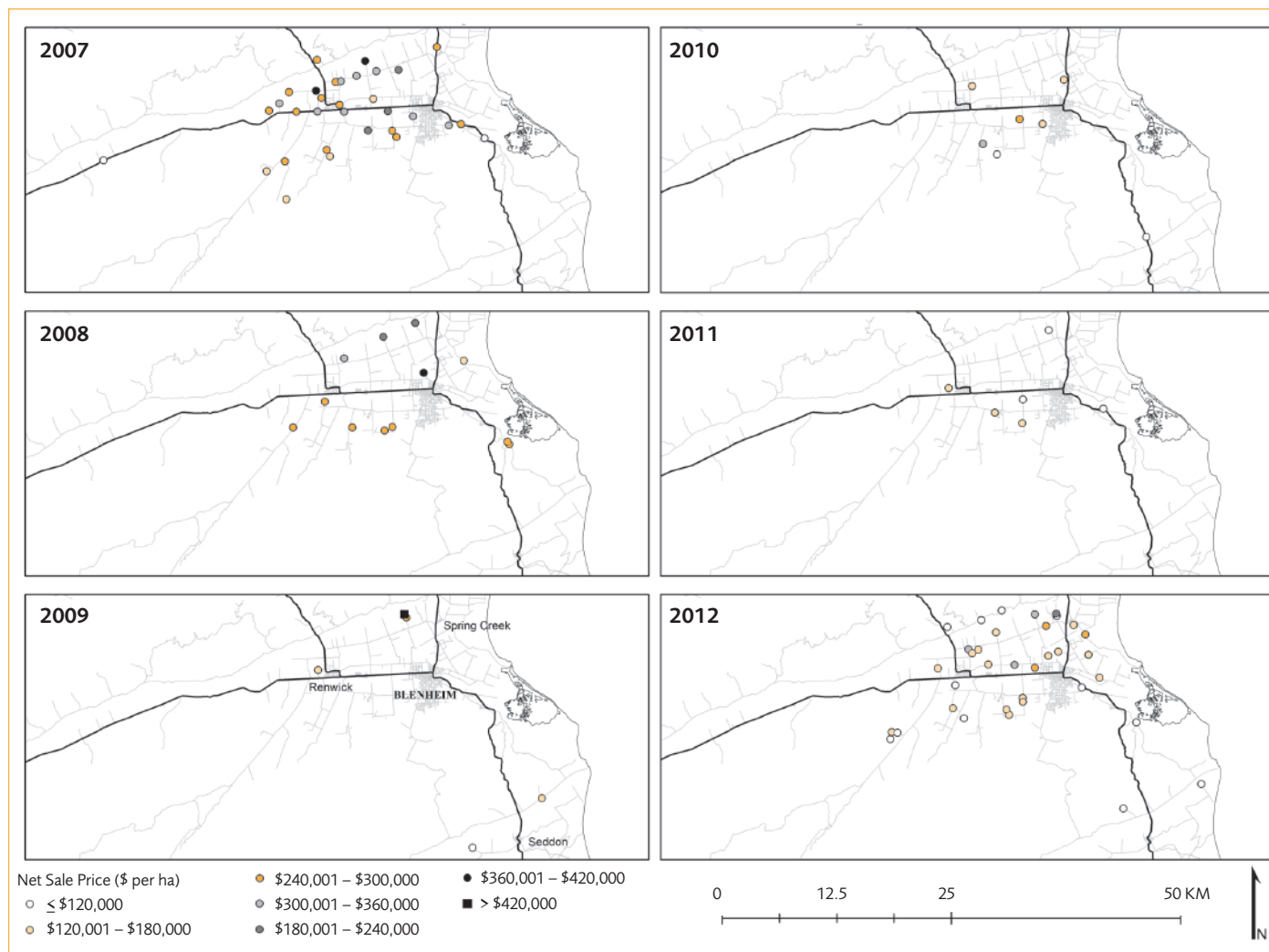
it has the *option* to convert to farming the other commodity. Figure 3 shows the optimal behaviour by the farmer; if grapes prices are high, and meat prices are low, the farm will convert to grapes; while if grape prices are low and meat prices are high, the farm will convert to animals. The no-man's land in the middle of the graph is interesting. For these combinations

Table 1

Year	Vineyard profits (per Ha.)
2004	14,050
2005	11,100
2006	21,118
2007	20,511
2008	28,703
2009	5,809
2010	3,488
2011	7,077
2012	4,663

Vineyard profits, Marlborough Region, Source: Ministry for Primary Industries.

Figure 1: Vineyard Sales 2007 – 2012 (Marlborough, NZ)



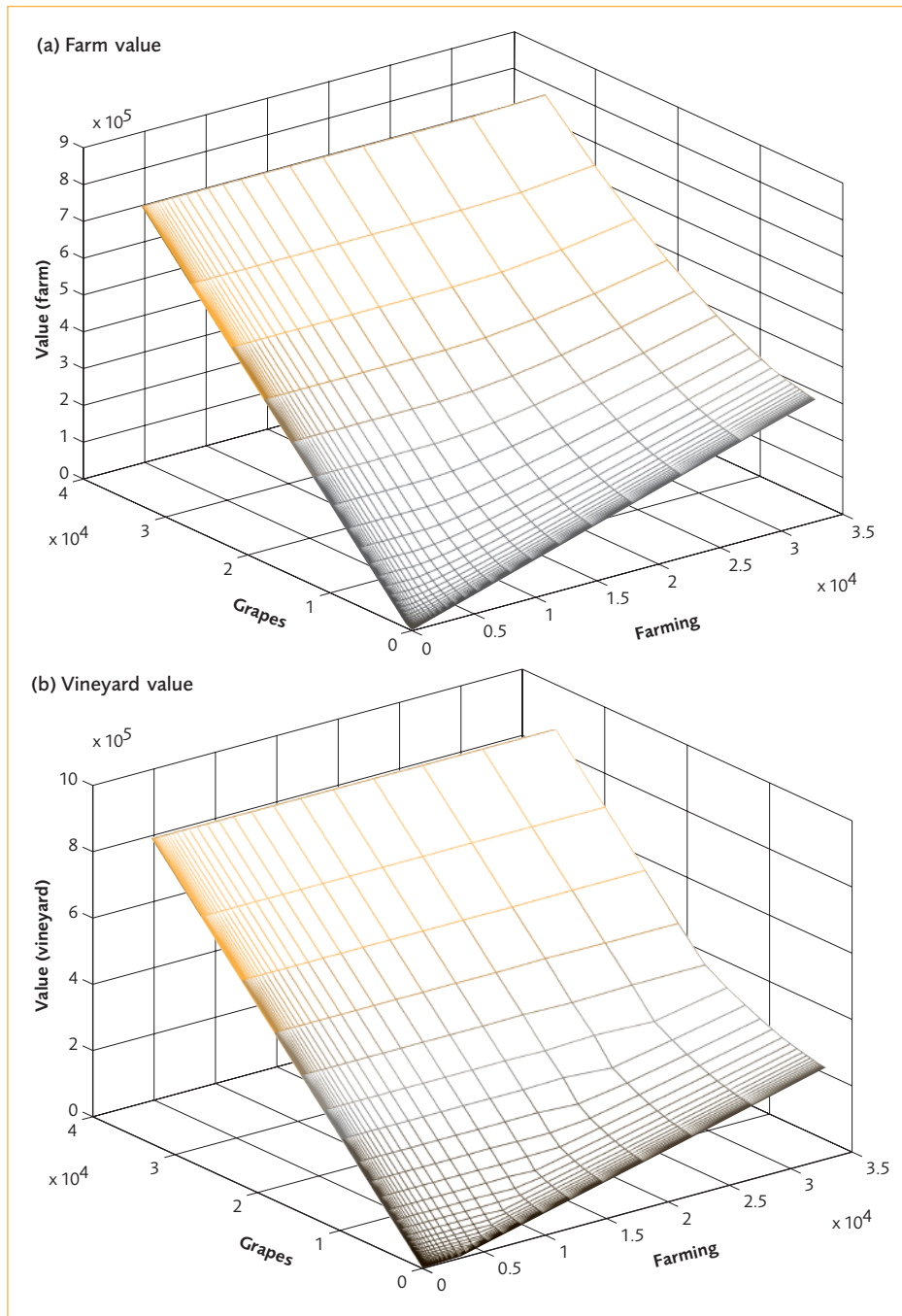
of prices, a farm will stay with whatever it's doing, even if the other commodity is currently more profitable: it's not profitable enough to switch to overcome the switching costs and the option value. As in many investment problems, we would expect to see farmers delaying their land use changes even when a simple net present value rule would suggest that switching strategies is not a bad move.

Two points are worth thinking about in relation to this story. The first relates to human capital. Perhaps a farmer who has splendid skills at commanding creatures has difficulty telling viognier from merlot? Or perhaps a consummate grape grower doesn't know the first thing about docking. In these cases, changing land use is likely to be associated with land sale. Farmers sell their farms to grape growers who can redevelop them, and use the proceeds to purchase a farm in a region where animal husbandry is still optimal (where perhaps grapes are not a viable option). Fluctuating commodity prices are likely to be associated with migration around New Zealand.

The second point concerns the relatively high price of grapes in Table 1. These values per acre are enough to even make a cow cockie raise his/her eyebrows. However, these prices are average values across the region. In reality, not all land was created equal. Just as some regions may not be able to produce grapes, some land may produce a lower quality/quantity than prime land. The classic example of this in Marlborough is the 'Golden Triangle' (not to be confused with the region in Asia), roughly illustrated in Figure 1 by the block bordered by roads to the north of the map where many of the vineyard sales take place. If we think about the story in Figures 2 and 3, we might expect that at any given point in time, different land owners may be facing different relative prices of meat and grapes. In the Golden Triangle, land may be unambiguously destined for grape growing, but outside of it more marginal land owners may flirt with both types of production. These will be the last farms to convert to grapes, and the first to abandon grape growing.

In Marlborough, the decline in grape values played out in an interesting fashion. When the Global Financial Crisis hit, and winemakers realised that demand for wine had contracted, they began retrenching their demand for grapes. The vineyards from which erstwhile buyers disappeared tended to be the new developments (a classic case of last to be hired, first to be fired). These owners

Figure 2



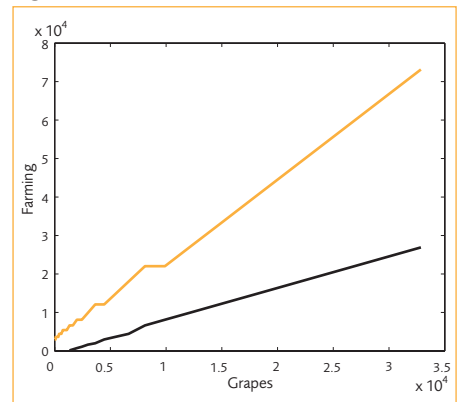
(a) shows the value of a farm, while (b) shows the value of a vineyard, both as a function of farm revenues and grape revenues. Parameters calibrated to vineyard price data.

often incurred large losses when selling their properties. The properties were often purchased by established vineyards, resulting in consolidation of the industry.

So perhaps the next time you're drinking a glass of Marlborough Savvy, you might spare a thought for where it came from, who grew the grapes, and what decisions they might have made with their land. Or you could just enjoy the wine.

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Figure 3



Lines showing combination of farm and grape revenues that would cause a vineyard to convert to a farm, and a farm to convert to a vineyard. Parameters calibrated to vineyard price data.

# Behavioural Economics: The Implications for Competition Policy



Behavioural economics, the interdisciplinary field of research that studies the impact of psychological factors on economic decision making, is a trending topic in policy circles. Annemieke Tuinstra-Karel discusses the implications for competition policy, based on a recent investigation by the Netherlands Authority for Consumers and Markets.

**T**he investigation by the Netherlands Authority for Consumers and Markets (ACM) considered whether and how the behavioural economics literature affects our current understanding of the effects of competition on consumer welfare and on the explanatory value of the economic models commonly used in competition analysis, such as the definition of markets and the assessment of potential entry.<sup>1</sup>

The main findings of behavioural economics are that people do not always have clear, consistent preferences (in contrast to what is assumed in most neo classical economic models) and have limited capacity to process all available information (bounded rationality). Some legal scholars conclude from these findings that the use of standard economic models to predict outcomes and optimise efficiency through 'rule of reason' standards in

antitrust can be questioned, and suggest that prevailing legal standards be brought closer to 'rule of law' principles (*per se* rules). However, the ACM inquiry concludes that the economic toolkit used in concrete competition cases still suffices to analyse the effects of a change in market structure (for example, through a merger) or the behaviour of firms.

However, behavioural economics may potentially add useful insights in the design of (more) effective remedies to competition problems (that is: cartels, harmful mergers, abuse of dominance) and complementary consumer empowerment measures. In addition, it can help identify situations in which consumer biases may be exploited by profit-maximising firms, although such situations are arguably better suited to be addressed by consumer protection measures, if deemed necessary.

## Competition and consumer welfare

The beneficial impact of competition on consumers is an underlying premise of competition law. This premise is supported by a large body of empirical and theoretical work that confirms the welfare-enhancing effects of competition. Therefore, as a first step in analysing the potential implications of behavioural economics for competition policy, it is relevant to know whether behavioural economics offers insights that could, or should, cast doubt on the goals and benefits of competition policy.

Thus far, it does not. Most of the literature on behavioural economics to date appears to be concerned with studying behavioural biases of individuals or, to a lesser extent, firms. Far less is known about the relationship between individual biases and aggregate market outcomes, and the role of competition in all that,



which is exactly what matters when evaluating the implications of behavioural economics for the goals and benefits of competition policy.

However, a recent strand of literature, called 'behavioural industrial organisation', has begun to explore how rational firms may respond to consumer biases, and how this may affect market outcomes. A typical result is that firms may exploit the naivety of consumers by hiding the true quality or price of their products ('shrouding'). According to this literature, more competition (for instance, in the form of an increase in the number of firms, such as through entry) will not always improve market outcomes and may even be detrimental to welfare (for example, if an increase in the number of firms or products further confuses consumers and makes it harder for them to compare offers). The empirical validity of this result, and other findings of the behavioural industrial organisation literature, has not yet been systematically tested. What this literature suggests is that, in specific circumstances, competition may not improve (and may even worsen) consumer welfare – and competition authorities should be aware of that.

### **Consumer behaviour and aggregate demand**

There is plenty of evidence of individuals not maximising utility, and an emerging literature shows that firms may not always maximise profits either. However, this does not mean that the theoretical economics underlying competition analysis have become invalid. As earlier mentioned, the relevant question, from a competition policy perspective, is what these research findings mean for market outcomes.

The theoretical economics used in competition analysis are based on the general principle that the relationship between price and quantity demanded is negative (the downward-sloping market demand curve). In other words, quantity demanded will decrease (increase) as the price increases (decreases). Becker (1962)<sup>2</sup> has shown that this general principle (a) does not rely on consumers making 'rational' and/or unbiased decisions, and (b) is empirically validated, and therefore the explanatory value of standard economic theory is not affected by the presence of irrationality. This is because people usually have a limited disposable income, and as a product becomes more expensive they are simply able to buy less of it, regardless of how

they reach the decision to buy a particular amount of said product.

However, consumer biases (for example, impulsiveness or, conversely, inertia) can have implications for consumers' degree of price-sensitivity and therefore the price-elasticity of demand in specific markets (that is, the slope of the demand curve). Again, this does not invalidate existing economic theory; it simply underlines the importance of empirical research in concrete competition cases. Because potential biases and their effect on the price-elasticity of demand are often taken into account by competition authorities when they estimate demand, such biases are in effect already part of the integral assessment of the economic effects in competition cases.

### **Firm biases**

The literature on firm biases is still developing and is potentially highly relevant. How, exactly, firm biases might affect market outcomes and competition analysis is currently unclear, however. For one thing, it is not evident that individual consumer behaviour (often tested in laboratory experiments with students) is necessarily informative about the behaviour of firms. Firms are repeat players that can learn from and correct their mistakes. They may leave business decisions to experts or specialised departments, and collective decision making may correct individual biases. Even if insights on individual consumer biases (which form the bulk of the behavioural economics research) could simply be carried over to firm behaviour, it is unclear whether (and, if so, how) firm biases would affect competition and, ultimately, market outcomes. Behavioural economics does not, as yet, offer much insight into this issue.

Aside from the issue of whether consumer biases can be carried over to firms, the evidence to date shows that biases can work in opposite directions, resulting in either excess entry (over-optimism) or sparse entry (lack of confidence), stable or unstable collusion (trust or vengeance), and so on. A firm may be subject to multiple biases that do not necessarily work in the same direction. This makes it difficult to predict what the overall effect will be on its behaviour.

As with consumer biases, it is often not the behaviour of a single firm that needs to be predicted, but the market outcome when various firms interact – some of which are subject to biases while others are possibly not. Empirical research on firm biases is still scarce.

However, the literature on this topic is growing and could potentially be of great relevance to competition analysis.

### **Conclusion and further research**

The findings of behavioural economics to date do not necessitate a re-evaluation of the fundamental basis and benefits of competition policy or the explanatory value of standard economic models. Nevertheless, behavioural economics can offer valuable insights in explaining the observed behaviour of consumers (and, to a lesser degree, firms) in markets. The point is that the existing analytical framework allows biases and heuristics to be part of the integral assessment of the economic effects, as long as the analysis in individual competition cases is based on actual empirical research.

A related topic is how insights from behavioural economics and other behavioural sciences can be used to help detect and effectively solve competition problems, complementary to the more traditional instruments. ACM is exploring how behavioural insights can help make market oversight more effective. This approach includes designing innovative measures to increase compliance by firms as well as consumer empowerment.

Another related topic is how profit-maximising firms may exploit consumer biases, and if and when this approach may require intervention. Think, for example, of the shrouding practices mentioned earlier. ACM is researching such issues. However, it is likely that if intervention is warranted, these types of situations are better addressed by consumer protection (or empowerment) measures than by competition policy. Since ACM not only has competition powers, but also has regulatory and consumer protection powers, it can view potential market problems caused by behavioural biases from a broad perspective, and can determine which policy regime, or instrument, is best suited to solve particular problems.

1 The ACM report "Behavioural Economics and Competition Policy" is available on <https://www.acm.nl/en/publications/publication/11610/ACM-publishes-study-into-behavioural-economics-and-competition-policy/>

2 Becker, G. (1962), 'Irrational Behavior and Economic Theory', *Journal of Political Economy*, 70:1, pp. 1–13.

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# Renewable Energy Policy: the Italian Experience



Since worldwide concerns about climate change were made official by the Kyoto Protocol at the end of 1997, renewable energy sources (RES) have been receiving increasingly more attention by policy makers. Teresa Romano investigates.

In this respect, the European Union (EU) set an ambitious, precise target: one fifth of the energy produced should come from RES by 2020. In order to promote the diffusion of renewable technologies, EU member countries have been exploiting different policy instruments which, in the case of electricity, range from investment subsidies (to encourage the development of a renewable industry) to generation incentives (to encourage use of generation in place). Among the latter incentives, the most commonly implemented are *feed-in tariffs* and *quota systems*.

Feed-in tariffs are fixed prices guaranteed to RES power generators for each MWh of electricity produced. They last 15 to 20 years, and normally decrease over time by a rate that incorporates expected technological progress. Quota systems, meanwhile, are based on the creation of a market for certificates (labelled

differently across countries, for example "green certificates" in Italy and "renewable obligation certificates" in the U.K.), with the objective of providing RES generators with an additional source of revenue on top of the market electricity price. More specifically, supply is created by assigning RES generators a number of certificates proportional to the amount of electricity produced, while the demand side originates from the obligation for conventional plants (and importers) to inject a given quota of RES-originated production into the power system (which can be fulfilled by buying certificates).

The academic literature seems to agree on the superiority of feed-in tariffs over quota systems for effectively promoting renewable production. The main argument is that tariffs bring a greater degree of certainty, which is more attractive to potential investors. The evidence

supports this view, as the European countries leading the rankings of RES deployment are Germany and Spain, both of whom implemented feed-in tariffs (or some variant) when RES supply was first implemented.

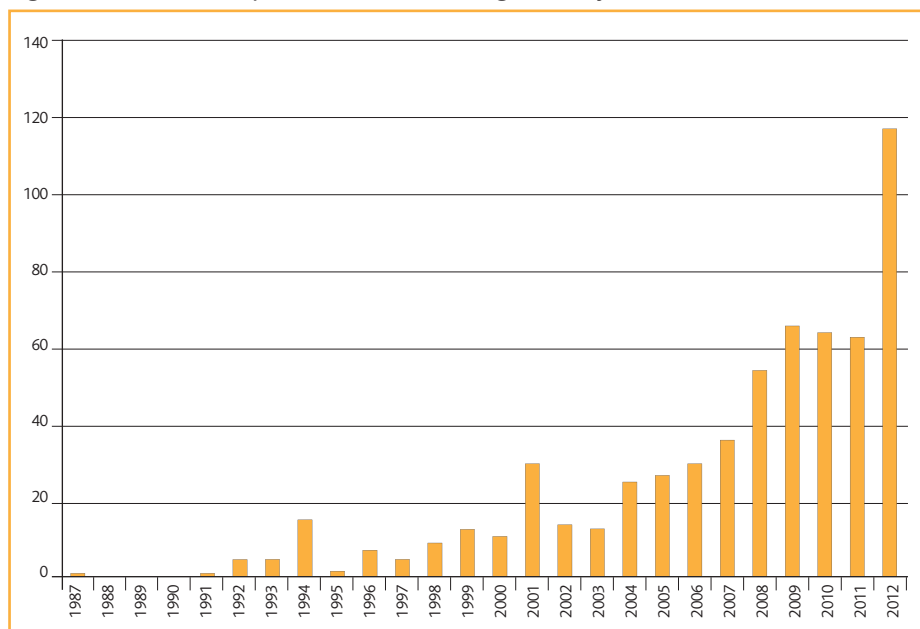
However, more predictable revenues cannot by themselves explain the fast diffusion of RES technologies. In the early 1990s, Italy had also put in place a very favourable system of tariffs which, unfortunately, was unable to solicit investment. Environment and security of energy supply were certainly less of a priority than they are today. Also, renewable technologies were in their infant stages (in this sense, we can easily think of support mechanisms at that time as a form of industrial policy). Therefore, besides citizens' and governments' awareness about environmental and energy issues, the state of supported technologies clearly affects the success of a policy.

Moreover, the overall level of remuneration is as important as its degree of certainty. Looking again at Italy, the case of onshore wind

power (today arguably the most competitive of RES technologies) provides a good example. Except for the early policy period, the country has a long tradition of green certificates. The efforts by policy makers to keep the certificate prices at a high level guaranteed extensive (and relatively fast) diffusion, placing Italy in fourth place in the EU for installed wind capacity (more than 8,000 MW at the end of 2012).

Another important factor influencing investment decisions is the *perceived stability* of political commitment to a policy. It is commonly agreed that, *ceteris paribus*, the higher the level of commitment, the higher the propensity to invest. This reasonable intuition is certainly true in the long run. However, policy and regulatory uncertainty (which in this context can be defined as an unexpected change in the supporting scheme; for example, a change in the level of a tariff or in the length of the period of support) might have short-run effects as well, and not in the expected direction. Figure 1, depicting the number of wind plants that connected to the grid over the period 1987–2012 in Italy, helps to clarify this point. As Figure 1 shows, the wind power sector has had a rather disharmonious development, following a path that bears little resemblance to the S-shaped curve of standard epidemic diffusion models. This holds true even when, instead of this aggregate information, we consider data on specific wind technologies, or at a regional level. It could be argued that the date of connection to the grid, representing only the *end* of a period that includes an administrative iterations and the installation process, does not really reflect the timing of the investment *decisions*. This is a fair point for the first years of the data, in which the time to obtain an authorisation to build a wind plant was very long compared to the actual installation time (less than a year even for big wind farms). However, the year of connection is still a good proxy for the investment decision timing for several reasons. First, administrative procedure has simplified a lot over time, and it has never been extremely cumbersome in Puglia, Campania, and Sicily, the three regions that, because of favourable geographic and climatic characteristics, have the largest installed capacity. Second, the peculiar topography of the Italian landscape makes medium-sized turbines most suitable. They have shorter installation times and represent the major share of turbines erected so far in the country. Nonetheless, we cannot exclude that,

Figure 1: Onshore wind plants connected to the grid in Italy (1987-2012).



for a number of investors, the connection date hides a strategic choice.

Interestingly, Figure 1 can be read through the evolution of RES-related legislation, as each spike can be linked to a change in the supporting scheme. After the first few pioneers, wind technology diffusion starts in earnest in 1992, exactly when the first supporting regulation was put in place. The higher number of connections in 1994 corresponds to a deadline that RES generators had to meet in order to keep accessing the tariffs. Legislative Decree 79 in 1999 ratified the liberalisation of the electricity market, but also a radical change in the support mechanism, as feed-in tariffs were replaced by a quota system for plants entering into operation from 1999 onwards. The first certificates were assigned on the production in 2002, so the jump upwards in 2001 can be justified by investments aimed at benefiting from green certificates since the beginning. Analogously, the sudden increases in the number of connections in 2004 and 2008 can be linked to changes towards more favourable conditions for investors, such as a longer support period and collection of certificates in excess of supply. A ministerial decree in 2012 announced the end of the system based on certificates and the reintroduction of feed-in tariffs for RES plants starting operating since January 2013. The certainty of revenues provided by the new tariffs seemed not to appeal to investors who, instead, sped up installation in order to still be eligible for green certificates. And those who could have profited from the transition period did not. The new tariffs ranged from 127 to 291 Euros/MWh depending on plant size, against

an average unitary revenue of around 180 Euros/MWh in 2012. Hence, differences in the level of remuneration can only partially explain investor choice to anticipate grid connection. In times of political instability and government spending reviews, a certain uncertainty can be preferred to an uncertain certainty! Put another way, a safe environment is definitely a priority for investors, but defining a safe environment seems rather challenging.

Finally, the success of RES policy has also been affected by the increased weakness of EU agricultural policy, an issue that has not received much attention yet. Despite strong government support, farmer bargaining power in the food supply chain has changed little. Once farmers were offered lucrative alternative uses for their land (renting it to RES investors or building their own plants), it is no surprise that solar panels and wind turbines quickly covered otherwise unprofitable land.

Overall, the Italian experience confirms that a good understanding of the effectiveness of a support mechanism goes beyond the argument of certainty for investors, and should include an analysis of factors like state of technology, overall level of support, regulatory stability, and relationship with other potentially overlapping policies.

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# How good is local eGovernment?

Mairéad de Róiste proposes new ways of assessing the usability of local government websites.<sup>1</sup>

**W**eb sites are rapidly becoming a key component of the public face of local government. For businesses, poorly designed websites result in lost customers and reduced sales. For local government, however, the consequences may be harder to detect and measure. Poorly designed websites may redirect residents to more costly interactions with local government, such as by phone or over the counter. Difficult to use websites may mean citizens cannot participate in local government policy revisions, such as land use development plans. Businesses looking to invest in an area may not be able to find relevant information.

Over and above the customer focus of private businesses, government (both central and local) also has a duty to provide websites with universal access to support all citizens. eGovernment, the application of Information Communication Technologies (ICTs) to government, has enabled government processes and service provision to be redesigned and delivered in different ways. But eGovernment is notable for a lack of outward ('consumer') focus. To avoid costly errors, eGovernment applications should be evaluated across dimensions of functionality, usability and accessibility.<sup>2</sup> Functionality "assesses whether the system (or component) actually works in the manner it is intended and provides the results it is meant to deliver"<sup>3</sup> and is primarily based on supply-side metrics. Usability concerns the ease of use and learnability of online applications and how easily users can interact with that website. Accessibility measures web design for universal access (for example, Section 508 of the Rehabilitation Act in the US). These three usability dimensions enable online applications

to be compared. However, in choosing the right comparison or benchmark, it is important to know how users assess their usability. Local government website users compare their experience on one website against other local government sites rather than online resources provided by private organisations (for example, Google or Amazon).<sup>4</sup> While many comparative evaluations of the usability of eGovernment applications have been undertaken, evaluation of local government applications may require special consideration. Much information provided on local government websites is spatial. Standard usability practices may be too general to evaluate websites with spatial technologies.

Heuristic evaluation of websites offers a cost effective means of identifying usability issues. Heuristics are a series of guiding rules of thumb against which the website content is assessed. While heuristics are a recognised means of evaluating web usability, their direct application to web map usability is limited. The five web mapping heuristics (findability, cartography, functionality, user experience and performance) proposed in our paper address this gap. By ranking each heuristic from 0 (unusable) to 5 (excellent) for particular usage scenarios, the effectiveness of the websites of different local government bodies can be compared.

We assessed mapping applications on South Island local government websites against the needs of a potential migrant looking to move into a particular local authority area. The results across the five usability heuristics vary. Findability was the most positively addressed heuristic. Four of the local authorities did not provide a map to meet the needs of our sample user. The lack of

information for potential migrants on four local authority websites suggests low awareness of user needs in those authorities. Low user awareness may reflect a poor outward focus of those authorities and a lack of transparency in their approach to eGovernment. Usability scores of the local authorities surveyed were often similar to those of their neighbouring authorities, suggesting that website provision and user focus are strongly influenced by the approaches of surrounding authorities.

This heuristic framework for evaluating websites based on spatial information offers an insight into how local government deals with the needs of citizens and businesses. This and other such analysis can identify the effectiveness of eGovernment initiatives and provide an objective measure of transparency, responsiveness and public participation. By specifically identifying the different categories of users (for example, residents, businesses and community groups) and assessing online provision against these categories, the success or otherwise of eGovernment and, consequently, eGovernance can be established.

<sup>1</sup> This article is based on De Róiste, M., Boodee, M., Shaw, M., & Swann, D. (2014 forthcoming). *Assessing Spatial IQ: heuristics for web maps*. Geocart Proceedings, University of Auckland: Auckland.

<sup>2</sup> Bertot, J. C., & Jaeger, P. T. (2006). User-centered e-government: Challenges and benefits for government Web sites. *Government Information Quarterly*, 23(2), 163–168.

<sup>3</sup> Bertot & Jaeger 2006, p164.

<sup>4</sup> De Róiste, M. (2013). Bringing in the users: The role for usability evaluation in eGovernment. *Government Information Quarterly*, 30(4), 441–449.

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