Financial Conduct Authority

Call for Inputs: Big Data in retail general insurance

November 2015

Contents

We are asking for comments on this Call for Inputs by 8 January 2016

You can send comments to us using the form on our website: http://www.fca.org.uk/your-fca/documents/call-for-inputs-big-data-response-form

Or in writing to:

Big Data Call for Inputs
Strategy and Competition
Financial Conduct Authority
25 The North Colonnade
Canary Wharf
London E145HS

Email: BigDataCallforInputs@fca.org.uk

We make all responses available for public inspection unless the respondent requests otherwise. We will not regard a standard confidentiality statement in an email message as a request for non-disclosure.

Despite this, we may be asked to disclose a confidential response under the Freedom of Information Act 2000. We may consult you if we receive such a request. Any decision we make not to disclose the response is reviewable by the Information Commissioner and the Information Rights Tribunal.

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1.
Introduction

1.1 In our *Business Plan 2015/16,* we announced the intention to review how insurance firms use Big Data.[1] The use of Big Data is developing across financial services. Our focus on retail general insurance (GI)[2] reflects how extensively data is already used in the sector and the significance of the sector for consumers. We want to understand how the use of data by insurance firms has developed in recent years and how this might change in the near future. We recognise that the use of Big Data brings both benefits and risks for consumers.

1.2 We want to ensure we form a balanced view of the impact of Big Data. To do this, we are publishing this Call for Inputs (CfI). Its purpose is to seek your input to help us better understand the impact of Big Data in retail GI in relation to three topics:

- Does the use of Big Data affect consumer outcomes?

- Does the use of Big Data foster or constrain competition?

- Does the FCA's regulatory framework affect developments in Big Data in retail GI?

1.3 In looking at consumer and competition outcomes for this review we are only interested in the effects that are a consequence of Big Data. Developments affecting consumer outcomes and competition in the sector more broadly are outside the scope of this CfI.

1.4 The findings from this CfI, along with wider research and engagement with stakeholders, will allow us to take stock of the developments in Big Data for the sector before deciding whether a market study is needed. Alternatively, we may decide to apply other approaches or that no further work is required. We expect to publish our findings and next steps in a Feedback Statement in mid-2016.

1.5 In the following section we set out the background to this CfI, including why we are interested in Big Data and why we have selected retail GI for review. In Section 3 we provide an overview of the framework we intend to use to analyse your responses. Sections 4 to 6 discuss our three key topics listed above. Finally, Sections 7 and 8 provide further details on our next steps and how you can respond to this CfI.

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1 We define Big Data in Section 2, but broadly, we mean: the use of new or expanded data sets; new technologies to generate, collect and store data; and sophisticated analytical techniques.

2 Retail GI is defined here as the provision of insurance products to retail consumers, excluding small and medium enterprises.

What would we like respondents to do?

We are seeking views, supported by examples and evidence where possible, of how Big Data is affecting (and is likely to affect) consumer outcomes and competition in the retail GI sector. We are also seeking views on whether our regulatory framework affects developments in Big Data and unduly constrains innovation in the interest of consumers.

At the end of each section of this document, we highlight areas where we particularly welcome stakeholders' views and intelligence on potential benefits and risks to consumer and competition outcomes. For ease of reference, they are listed in full in Annex 1: Overview of feedback questions.

2.
Background

What do we mean by Big Data?

2.1 There exists no one definition of Big Data. One often-cited way to identify Big Data is by applying the three 'Vs': the volume, velocity, and variety of data[3]:

- **Volume:** where very large datasets are generated through sources such as meta-data from internet searches, credit and debit card purchases, social media postings, mobile phone usage data, or data from sensors in cars and other devices.

- **Variety:** where very large datasets are often brought together from different sources. These can be in the form of structured data (e.g. data in tables and defined fields) or unstructured data (e.g. social media postings), allowing firms to gain new insights into the behaviour of their actual and/or potential customers. For example, external datasets can potentially be combined with in-house data from point-of-sale transactions and loyalty cards to provide detailed insight for a firm's marketing activities.

- **Velocity:** advances in analytics increase the rate (and reduce the cost) at which data can be analysed, including enabling data to be analysed as it is produced or recorded i.e. in real time.

2.2 New technologies are needed to generate, collect and store these new forms of data. The increased velocity, volume and variety of data also give rise to datasets that are too large for traditional data processing systems.[4] This in turn requires new processing technologies.

2.3 When we refer to the use of Big Data, we therefore mean:

- Using new or expanded datasets and data, including data from unconventional sources such as social media.

- Adopting the technologies required to generate, collect and store these new forms of data.

- Using advanced data processing technologies.

- Using sophisticated analytical techniques such as predictive analytics.

- Applying this data knowledge in business decisions and activities.

2.4 We recognise that the deployment of Big Data is not a change that happens at any identifiable point in time, but rather may be evolutionary. For this reason, we are interested in how those

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3 Gartner IT glossary, Big Data, available http://www.gartner.com/it-glossary/big-data as cited in ICO, *Big Data and Data Protection.*

4 Traditional data processing systems generally require all data to be merged into a single database structure before it can be analysed.

features described in paragraph 2.3 have changed over the last five years and how they may change over the next five years.

Why we are focusing on retail GI products

2.5 While we recognise that the use of Big Data is developing across financial services, we have decided to focus on one sector in particular. We selected retail GI to examine the likely effects of the use and prospective use of Big Data for the reasons set out below.

- **Significance of the sector:** retail GI products are acquired by a significant number of consumers in the UK. Of 26.7 million households in the UK in 2013, 17 million had buildings insurance, 20.4 million had contents insurance and 20.1 million had motor insurance.[5]

- **Importance of data to the insurance sector:** the collection or use of data in insurance is not a new development. Insurers have always relied on data to try to assess consumers' risk profiles, which is the expected likelihood of a claim by the consumer, to determine the premiums charged.[6] For example, when buying motor insurance a consumer has historically been asked to provide their age, employment, postcode of primary residence, the make and model of their car, and other personal details. These, amongst other things, are used as risk-rating factors in pricing. Insurers also use their own data, such as from claims experience and profitability analysis, to determine their risk appetites i.e. what risks the insurer is willing to accept. For example, some providers of motor insurance do not insure owners of specialised or modified vehicles. Data, and data analysis, is therefore key to assessing risk in insurance business models.

- **Big Data may alter the way risk is assessed:** Big Data may change what can be achieved through data analysis in retail GI. For example, it may allow firms that are more advanced in the use of data to enhance the prediction of risk, which is key to pricing insurance products. These impacts are discussed in more detail in Section 4 and 5.

2.6 Within retail GI, we propose to select a small and manageable number of products to frame our analysis. We consider that appropriate products in this context are those where uses of new types of data and new analytic techniques may be most prevalent.

2.7 For example, new types of data in retail GI may include:

- Data generated from devices, such as telematics boxes[7] or mobile phone apps.

- Data obtained in the provision of other products and services by the same or a related provider, for example applying home insurance claims data to motor insurance pricing, or applying insights from grocery shopping behaviour to pricing insurance products.

- Data sourced from third-party data providers, such as price comparison websites or credit reference agencies.

- Data from publicly available sources such as social media, for example using information

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5 Association of British Insurers, *UK Insurance & Long Term Savings Key Facts 2015,* available: https://www.abi.org.uk/~/media/Files/Documents/Publications/Public/2015/Statistics/Key%20Facts%202015.pdf

6 The premiums paid by consumers are not solely reflective of the insurer's assessment of expected claims. They include other factors such as operating expenses and profit margin.

7 These are black boxes installed in consumers' vehicles and are used to record a number of metrics on a consumer's driving.

taken from photos or tweets.

- Data from consumer and civil society organisations, for example Scope, regarding consumers in vulnerable circumstances.

2.8 Additionally, insurers now have the opportunity to apply more analytical techniques to the data available. These techniques may include:

- Advances in data processing technology.

- Using more sophisticated data analytics, such as using machine learning[8] to predict which consumers are likely to make a claim or switch to other providers, or which claims might be fraudulent.

2.9 Against this background, we are minded to select private motor insurance and home and contents insurance to frame our analysis:

- **Private motor insurance:** already uses a large volume of consumer data to assess risk and set premiums. We are interested in what additional data or analytical techniques are being used or may be used, and their impact. For example, telematics allows insurers to collect data on consumers' driving habits, which allows consumers to obtain insurance at a price that reflects more accurately their risk profile. This may have the benefit of incentivising drivers to modify their behaviour to reduce their insurance premium.

- **Home and contents insurance:** There has been an increase in the number of objects that are connected to networks and are generating data. This is often referred to as the Internet of Things. These connected devices, together with the development of 'smart home' applications[9], can generate data on the lifestyle and habits of individual consumers. This may allow insurance premiums to better reflect how consumers use and care for their homes as opposed to the traditional approach of pricing on factors such as postcode, size and type of dwelling, estimated replacement value of contents and the security features of the property.

2.10 For the products we select we are interested in the impact of Big Data across the products' value chain including: product design, underwriting, marketing and distributions and claims assessment and processing.

Other work in this area

2.11 We are aware that other regulatory bodies have also recently focused on Big Data, both domestically and internationally. We highlight a few examples of this below.

2.12 In July 2014, The Information Commissioner's Office (ICO) published its paper on *Big Data and Data Protection.* This paper sets out the ICO's views on data protection issues raised by Big Data. The ICO issued a further paper in April 2015 summarising the feedback it received on its paper.

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8 'Machine learning' involves developing computer programmes that can grow and change with new data.
9 For example British Gas' development of Hive Active Heating which allows consumers to control temperature settings in their home through a mobile app. https://www.britishgas.co.uk/products-and-services/hive-active-heating.html

2.13   In November 2014, the House of Commons Science and Technology Committee published a paper on the *Responsible Use of Data.* This paper sets out the Committee's views on the impact of the increasing use of social media data, data security and whether current legislation is sufficient given changes in technology and the way it is used.

2.14   In June 2015, the Competition and Markets Authority (CMA) published *The Commercial use of Consumer Data - Report on the CMA's Call For Information.* The report describes some potential competition and consumer effects of firms' use of commercial data. As a part of its call for information, the CMA commissioned DotEcon and Analysys Mason to conduct research into how and why consumer data is collected and used across the economy.

Feedback request

Q1: How have the sources and types of data used in retail GI products, in particular private motor and home insurance, changed compared to five years ago? How do you think they are likely to change in the next five years?

Q2: How has the way in which data is used and processed in retail GI, in particular private motor and home insurance, changed in the past five years? How do you think it is likely to change in the next five years?

Q3: How does the use of additional data sources or data processing technologies affect the systems and controls necessary to ensure the accuracy of the data?

Q4: In which parts of the retail GI products' value chain, in particular for private motor and home insurance, is Big Data currently being used and to what extent? How is this likely to change in the next five years?

Q5: Are there any applications of Big Data that are currently being used in other industries, or internationally, that retail GI products (in particular private motor and home insurance) may adopt in the future?

Q6: We have indicated that we may use private motor and home insurance as products to better understand the impact of Big Data on the sector. Are there other retail GI products that are also particularly suited for this purpose, either due to the types of data being used, the analytical techniques adopted or the significance of the impact of Big Data on the product?

3.
Our proposed framework

3.1 In analysing the potential benefits and risks arising from Big Data, we propose considering the following three topics:

- Does the use of Big Data affect consumer outcomes?

- Does the use of Big Data foster or constrain competition?

- Does the FCA's regulatory framework affect developments in Big Data in retail GI?

3.2 Further details on these topics are set out in Sections 4 to 6 below.

3.3 We are also interested in whether the impact of Big Data is different for consumers who are considered to be non-standard risk, that is, consumers with characteristics different to those for which standard products have been designed. For example, these could be consumers with an unspent criminal conviction trying to purchase home insurance or consumers with a disability who require modified vehicles. We understand that these consumers may sometimes face a different consumer journey to purchase insurance products, such as having to use a specialist broker to find an appropriate product. We want to understand whether Big Data has different applications and/or has a different effect for these consumers.

3.4 In exploring the impact on these consumers, we will bear in mind our commitment to the Extra Costs Commission to engage with the disability sector in scoping this work. The Extra Cost Commission was established in July 2014 to explore the additional costs generally incurred by disabled people and families with disabled children in England and Wales. The Commission issued its final report *Driving Down the Extra Costs Disabled People Face* in June 2015.[10]

3.5 In looking at consumer and competition outcomes for this review we are only interested in the effects that are a consequence of Big Data. Developments and dynamics affecting the consumer and competition outcomes in the sector more broadly are outside the scope of this CfI.

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10 Extra Cost Commission, *Driving down the extra costs disabled people face,* available: http://www.extracosts.org/index.html

4.
Does the use of Big Data affect consumer outcomes?

4.1 We are particularly interested in how using Big Data affects consumer outcomes. This can include changes in risk micro-segmentation, pricing practices and consumer behaviour.

Micro-segmentation of risk

4.2 Insurance is, in essence, a promise to pay an agreed sum if a specified event occurs. Consumers pay a premium for this promise in order to cover potential losses from uncertain adverse events, such as a car accident or property damage. Retail GI is based on grouping together consumers with similar risk profiles, that is, similar probabilities of making a claim[11] of a certain size and timing. Premiums are set based on the average risk across the risk pool, and the premiums of those who do not claim help to fund pay-outs to those who do.[12]

4.3 Risk segmentation is the term that describes this grouping of consumers into so-called risk pools. These risk pools or segments can vary in size. The ability to create risk pools is based on the insurers' ability to distinguish the riskiness of different groups of consumers. Micro-segmentation of risk is where these risk pools become smaller due to the improvements in insurers' ability to identify individual consumer characteristics.

4.4 Risk segmentation is an established feature of insurance. However, there are limits to the information that insurers can collect about consumers and their risk profiles, and the modelling and predictive techniques used can limit how accurately these risks are estimated. Insurers can therefore only group consumers based on the risk-rating factors they can observe, collect and model.

4.5 We are aware that trends towards risk micro-segmentation predate any developments in Big Data as we have defined it. However, the use of Big Data has the potential to accelerate these trends and may over time result in a shift away from risk pooling. As more information and/or more sophisticated analytical and predictive techniques become available, insurers may be able to estimate risks at a more granular level, which may in turn lead to more granular risk segmentation.[13]

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11 Each consumer in the pool should be as likely as the other to make a claim, even if one consumer ends up making a claim while another does not.

12 Association of British Insurers, *The use of gender in insurance pricing*, available: http://www.oxera.com/oxera/media/oxera/the-use-of-gender-in-insurance-pricing.pdf?ext=.pdf

13 We recognise that gathering more information (or using more sophisticated analytical and predictive techniques) typically incurs more cost, and therefore the insurer will only increase the granularity of their risk segmentation where their benefits outweigh the costs of doing so.

4.6 We are interested in exploring how the increased granularity of risk segmentation is, or is likely to, impact consumer outcomes. This could include changes in premiums for different consumers. As a simplified example, consumers who were previously in the same risk segment may be split into smaller risk segments, see Figure 1 below. Those in a lower risk segment could face lower premiums due to the lower average risk of their risk pool. Conversely, those in a higher risk segment could face higher premiums due to the higher average risk of their segment.

4.7 Figure 1: Simplified illustration of risk segmentation by an insurance firm
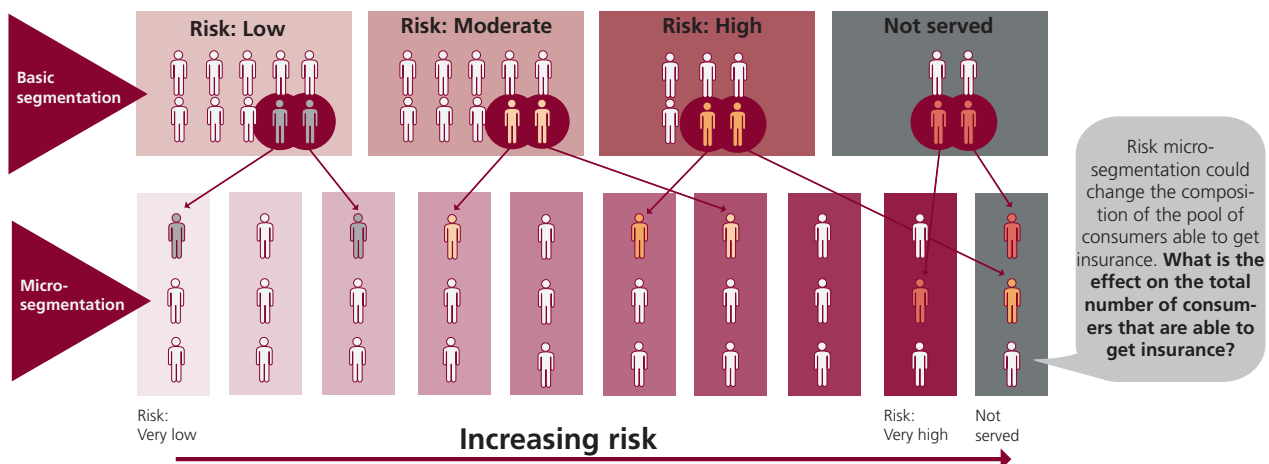
4.8 The ability to segment risk better can also change which retail GI products are available to which consumers. Insurers may be able to select more accurately which risks they choose to take on board. This could impact on the total number of consumers that are able to get insurance.

4.9 Access to insurance could be increased for some consumers. For example, as discussed in paragraph 3.3, some consumers are currently considered as non-standard risk for insurance products and may not be offered coverage by some insurers on this basis. As Big Data may allow firms to estimate risk more accurately, some insurers may now decide to serve some of these consumers. This could increase choice in products and suppliers for such consumers.

4.10 Conversely, it could result in insurers choosing to no longer serve certain profiles of consumers, in particular those that are deemed to be the highest risk.[14] If all, or most, insurers engaged in providing a product make similar judgements about excluding certain consumers due to their risk profiles, it may lead to some consumers being unable to find coverage.

4.11 We are interested in the extent to which Big Data is increasing risk micro-segmentation in retail GI products, in particular for private motor and home insurance, and how this might affect outcomes for consumers. We are seeking to understand this for all consumers generally, as well as whether certain groups of consumers, such as consumers considered as non-standard risk or consumers in vulnerable situations, are particularly affected.

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14 Or alternatively charging a price that, while reflective of the risk, is too high for the consumer to obtain insurance (e.g. because it no longer makes economic sense to purchase insurance).

Pricing practices

4.12 Along with risk based pricing, firms can also take into account consumer characteristics or consumer behaviour when setting prices. Charging different prices to different consumers for reasons other than risk or cost is a practice that is common in many markets. There is forthcoming FCA work looking at price discrimination in financial services more generally.

4.13 Firms can decide what prices to charge in a number of different ways. They could adjust prices on consumer characteristics they can observe. For instance, in the travel sector, firms could charge peak-time travellers higher fares than off-peak travellers. Alternatively, firms may design products that are more likely to be selected by a particular group of consumers, such as younger or more mature drivers, while other consumers with similar risk profiles select another product with higher or lower prices. They may also use behaviour-based factors, where firms decide what prices to charge depending on how consumers behave. For example, a firm may lower prices to compete for a consumer who is about to switch.

4.14 Firms may be able to use Big Data to better identify consumer characteristics or consumer behaviour that do not directly affect the consumer's risk profile but are important for pricing decisions. We would like to understand to what extent this is the case, and therefore what effect this may have on firms' pricing decisions.

Consumer behaviour

4.15 Retail GI products are increasingly purchased through digital channels which generate data about individual consumers. However, consumer data could be generated not just from insurance applications, but also from other data sources, such as data acquired from third parties or gathered from social media. This data could be analysed with more complex algorithms. Machine learning could be deployed to find new correlations that could be used to estimate risk or provide more detailed consumer profiles. This may change the consumer journey as firms using Big Data in this way may use these analyses to inform product design how products are offered and to which consumers. We are interested in how this may affect consumer outcomes.

4.16 We are aware that increased use of data could concern some consumers. This may affect their behaviour as well as their attitudes towards retail GI providers. Consumer concerns about the use and processing of such data may impact trust in retail GI firms, and firms that collect data more generally.[15] Diminished trust could in turn affect consumers' behaviour, such as how they engage with these firms, or what data they choose to share. This may change how willing firms are to invest in Big Data, given the potential consumer reaction. We intend to remain mindful of this as we examine the likely effects of Big Data.

4.17 Consumer behaviour may change in response to some applications of Big Data which are designed with incentives to reduce risky behaviour.[16] For example, consumers could receive discounts for good driving using a telematics box. These incentives could potentially turn into requirements or conditions of accessing insurance in the future. Consumers could also change their behaviour based on how they think their risk is assessed and priced more generally, for

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15 CMA, *The commercial use of consumer data*, available:
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/435817/The_commercial_use_of_consumer_data.pdf

16 This is also referred to as a reduction in 'moral hazard'. Moral hazard is where the person taking the risks does not bear the costs of those risks. In the case of insurance, the consumer might take risks (e.g. drive significantly above the speed limit) that may result in claims that the insurer has to bear.

example, choosing a car model that may reduce their car insurance premium. This happens regardless of whether firms use Big Data, but how risk is assessed and priced could become less transparent with Big Data use.

4.18 We are also aware that not all consumers are able or willing to generate certain types of data, for example consumers who have limited access to the internet may generate substantially less information about how they use or care for their homes. We are interested in understanding how risk and prices are determined for these consumers.

Feedback request

Q7: **Are there groups of consumers that are particularly affected by the use of Big Data? If so, what are the likely benefits or risks for these consumers? How is this likely to change in the next five years?**

Micro-segmentation of risk

Q8: **How is the use of Big Data impacting risk segmentation practices for retail GI products, in particular in private motor and home insurance? How is this likely to change in the next five years?**

Q9: **What are the likely benefits and risks to consumers of any increased risk segmentation? Are there groups of consumers that are particularly impacted by potential changes to risk segmentation, for example consumers that are currently considered non-standard risk?**

Q10: **Has Big Data affected which consumers are categorised as non-standard risk for retail GI products, in particular private motor and home insurance? If so, what is the impact of this for these consumers? How is this likely to change in the next five years?**

Pricing practices

Q11: **How does Big Data affect risk based pricing of retail GI products, in particular private motor and home insurance? What are the likely effects for consumers? Please provide examples for different groups of consumers, for example for vulnerable consumers.**

Q12: **How does Big Data affect pricing decisions based on factors other than risk for retail GI products, in particular private motor and home insurance? What are the likely effects for consumers?**

Consumer behaviour

Q13: How does Big Data affect the consumer journey in purchasing retail GI products or making claims, in particular for private motor and home insurance?

Q14: Do consumer attitudes towards the potential use of data impact firms' decisions to invest in Big Data?

Q15: To what extent is consumer behaviour influenced or affected by the use of Big Data?

Q16: How does Big Data affect consumers who are unable or unwilling to generate certain types of data?

5.
Does the use of Big Data foster or constrain competition?

5.1 When competition in markets is effective, consumers will be offered variety and choice, with firms striving to win custom on the basis of service, quality, price and innovation. This in turn helps to promote growth in the economy and/or increases in the efficiency of the economy.

5.2 Against this background, we want to understand how Big Data could affect competition in retail GI products, in particular private motor and home insurance and what this may mean for consumers of those products. In order to do this, we will consider the following issues:

- **Demand-side factors:** how consumers find, understand and choose the product that best meets their needs. Our intention is to focus on whether, and if so how, Big Data improves or hinders consumers' ability to access, assess and act on the information available to them about retail GI products and providers.

- **Supply-side factors:** how Big Data affects the behaviour of firms, the products they offer and how firms interact with consumers and each other.

- **Other sector features** that may arise from the use of Big Data and may affect competition.

5.3 We are primarily interested in assessing how the use of Big Data affects consumer outcomes and competition within our selected products. We are also interested in understanding the impact of third-party data providers and analytics companies. We want to understand if these firms play (or are likely to play) a significant role in insurers' use of Big Data (for example, through providing the data or the analytical capabilities) in retail GI products, or if they might play an increasingly significant role in the insurance sector.

Demand-side factors

5.4 We are interested in how Big Data affects or could affect consumers' ability to access information about retail GI products in order to choose a suitable product and compare prices. This may have positive implications. For example, Big Data could be used to tailor and predict the information that a consumer would find easy to read. The effects could also be more ambiguous. For example, Big Data could change how easy consumers find it to access pricing information, depending on whether more or less data is requested from them to generate a quote (e.g. whether a consumer would need to fill in the type of lock on each external door, or if 'smart home' applications could be used to fill this in instead).

5.5 Big Data could also have an impact on how easy consumers find it to assess information. For example, new ways of charging for retail GI are emerging as Big Data facilitates the design of usage-based (pay as you go) products. This could offer consumers more flexibility and choice,

but may also make it more complex to compare different pricing schemes, or work out whether they are eligible for certain products.

5.6 Furthermore, we would like to understand how Big Data could affect consumers' ability to act and make effective choices about products. For example:

- Who owns data, and how easily consumers can replicate or port data when they change providers, could affect barriers to switching. This is especially the case if certain types of data become more important with Big Data use, such as usage or behavioural data from a telematics box.

- Big Data might affect the choices that are available to each consumer. This could be as a consequence of changes in risk micro-segmentation. It may also be a result of how consumers change their behaviour as a response to Big Data. We discuss these issues in section 4.

Supply-side factors

5.7 How firms change their behaviour as a result of applying Big Data could also affect competition and, if so, we would want to understand this further. One example of this is how Big Data increases or decreases the ease with which firms can start to provide a product or expand their customer base.

5.8 For example, new types of entrants and products may be made possible by the growth in Big Data. Firms with advanced data analytic capabilities but no previous experience of insurance may find it worthwhile to enter the sector as they have an enhanced ability to predict the risks of individual customers accurately. These entrants could be particularly disruptive by creating new ways of designing, pricing and distributing retail GI products. These effects may also vary for different consumer segments due to risk micro-segmentation, depending on which consumers firms choose to serve, see paragraphs 4.8 – 4.10.

5.9 Barriers to entry and expansion could also be created by using Big Data, for example:

- The cost of the required investment in Big Data in new technologies and organisational capabilities may be significant This could include investment in employees with different skill sets and potential changes to business models, for example to reflect new approaches to product development and distribution. These investments may represent a significant cost to retail GI firms. As Big Data grows in importance, incurring such costs could become a requirement to compete effectively in the sector.

- Critical data may not be bought or reproduced easily by a new entrant. Historic data that is proprietary, that is generated and therefore owned by existing retail GI firms, could fall into this category e.g. customer claims data.[17] Such data could become more important as sophisticated analytics and predictive models are used, where new entrants without such data could be increasingly at a disadvantage.

5.10 If an insurer cannot invest in and use Big Data they could become uncompetitive. For instance, they may be unable to identify or predict lower risk consumers as effectively as competitors who

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17 For example, the CMA found that proprietary historic consumer data was a barrier to entry and expansion in SME banking - *Retail banking market investigation: Provisional findings report,* available: https://assets.digital.cabinet-office.gov.uk/media/563377e8ed915d566d00000f/Retail_banking_market_investigation_-_PFs_V2.pdf

invest in Big Data. These competitors could offer such consumers lower premiums, whereas the insurer who does not use Big Data may lose market share and/or unknowingly end up with more high risk consumers than expected. A similar argument may apply to a firm that cannot make pricing decisions as effectively as its competitors.

5.11 Relationships between firms could complicate these effects. This could involve relationships between firms at different stages in the value chain[18], for example between third-party data providers and insurers. It may also include firms at the same stage of the value chain[19], for example between two insurers. These could be complex and overlapping, and would affect competition in different ways .[20]

5.12 We are also interested in whether there is evidence that Big Data impacts on the number of firms that compete to provide retail GI products, in particular private motor and home insurance, and their market shares.[21] Specifically, we are interested in whether the use of Big Data increases or creates any market power that could result in competition being restricted.[22] For example, a certain type of data, such as shopping habits, could become a critical input to predicting risk. If a retail GI firm gained control of that input, it could give them the market power to prevent rivals from accessing that data.[23] It is also possible that a firm with market power in one market could seek to extend or leverage this into a related market, for instance a data provider who would only supply data on one retail GI product if it is purchased with data on another.[24]

Other sector features

5.13 In addition to the features that relate to consumer and firm behaviour above, there may be underlying (or structural) characteristics of Big Data use that could affect competition. Two key ones are potential economies of scale and scope.

5.14 Any economies of scale in using Big Data could give a competitive advantage to larger insurance firms. Economies of scale are where the larger the firm, the cheaper a certain activity is for that firm. This could apply to Big Data, for example, it may cost a large firm less per customer to invest in Big Data, or it may be that Big Data only becomes profitable with information from a large customer base.

5.15 Any economies of scope in using Big Data could give multi-product firms a competitive advantage over specialist insurance firms. Economies of scope are where the wider the range of activities a firm does, the cheaper a certain activity is for that firm. For example, if a supermarket also distributes insurance, it may have an advantage in obtaining and using data on customers' shopping habits.

5.16 These effects would be exacerbated if investment in using Big Data is a sunk cost, which is a cost that cannot be recovered if firms exit, since this would increase the firm's risks.

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18 This is referred to as a vertical relationship.

19 This is referred to as a horizontal relationship.

20 A hypothetical example of complex horizontal and vertical relationships could be where a price comparison website that is owned by an insurer provides information to a number of insurers but also competes with them in distributing products.

21 I.e. the sector concentration for each product.

22 Market power can be defined as the ability of a firm to raise prices above (or lower quality below) the level that would be expected when firms compete effectively, and to do so in a profitable way.

23 This is termed foreclosure.

24 This is known as tying. A similar effect could be achieved by bundling these datasets together.

Feedback request

Demand side factors

Q17: Is Big Data currently changing the way consumers can assess, access and act on information about retail GI products, in particular private motor and home insurance? This includes whether Big Data affects consumers' ability to switch retail GI providers, particularly in private motor and home insurance. Please explain how this is likely to change in the next five years.

Supply side factors

Q18: Does Big Data affect how easy it is for firms to start providing a retail GI product, in particular private motor or home insurance, or expand their customer base? Can Big Data increase or create any market power that could result in competition being restricted? How is this likely to change in the next five years?

Q19: What is the cost to date, and expected future cost, of investing in Big Data? What are the commercial considerations for incurring these costs, including any expected cost efficiencies?

Q20: Does the use of Big Data in retail GI products create or change relationships (for example vertical or horizontal relationships) between firms, including suppliers of data? Does this affect how easy it is for firms to enter and supply a retail GI product?

Q21: Has Big Data impacted on competition to supply consumers considered to have non-standard risk?

Q22: How is Big Data likely to affect the degree of future innovation (in the interest of consumers) within retail GI? For example, this may be through development of new products, better assistance to consumers or increasing the ease of purchasing products.

Q23: How else might Big Data foster or constrain competition in retail GI?

Other sector factors

Q24: In your view, is the use of Big Data in retail GI likely to result in economies of scale and/or scope (as defined above), and if so, how are these economies likely to be created?

6.
Does the FCA's regulatory framework affect developments in Big Data in retail GI?

6.1 The FCA's regulatory framework includes our Principles for Business, FCA Handbook and Guidance, non-handbook guidance and other regulatory communications and statements.[25]

6.2 We recognise that Big Data has the potential to promote substantial innovation in the interest of consumers in retail GI. The FCA is eager to understand how our regulatory framework currently constrains or can further foster such innovation. We are mindful that the impact of Big Data is evolving. We are therefore interested in constraints that affect current applications of Big Data and applications of Big Data that may be adopted in the future.

6.3 However, there are important statutory protections for consumer data that are outside the FCA's regulatory remit. *The Data Protection Act* and the *Privacy and Electronic Communications Regulations* are important protections currently in place. There is also the proposed *General Data Protection Regulation* which will look to harmonise data protection law across the European Union.

6.4 We recognise that, while these regulations lie outside of the FCA's remit, they may materially impact on how Big Data is being used in insurance and we are interested in understanding these effects.

6.5 On 17 June 2015 the FCA published a CfI on the Regulatory Barriers to *Innovation in Digital and Mobile Solutions*.[26] We are currently in the process of analysing the feedback received from stakeholders and will incorporate relevant feedback in our analysis for this CfI.

Feedback request

Q25: In your view, does the FCA's current regulatory framework constrain or foster the use of Big Data in retail GI? Please provide specific examples.

Q26: What changes may be necessary to the FCA's regulatory framework to promote the use of Big Data in retail GI to foster innovation in the interest of consumers?

Q27: Are there international developments in regulations or changes to regulatory frameworks that have supported innovation in the interest of consumers through increased application of Big Data?

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25 Other regulatory communications and statements include documents such as findings from market studies or thematic reports, Dear CEO letters or any other regulatory communications that provide an indicator of the FCA's expectations or our views on good or poor practice.

26 Available: http://www.fca.org.uk/your-fca/documents/call-for-input-regulatory-barriers-to-innovation-in-digital-and-mobile-solutions-

7.
Our next steps

7.1 This CfI represents the first stage in our broader engagement with stakeholders to understand the impact of Big Data on retail GI. As a part of this, we may also look to:

- Meet (or hold telephone calls) with stakeholders to discuss the questions included in the CfI and the topic of Big Data more broadly. We invite stakeholders interested in a meeting with the FCA to discuss the CfI to submit a request, in writing, to the email address provided in Section 8.

- Engage with academics and other regulators to identify international trends and developments in Big Data (including developments that may not yet be apparent in the insurance sector).

- Seek some additional data from firms in early 2016 to assess further some aspects of the CfI.

7.2 In mid-2016, we expect to publish a Feedback Statement with the findings from this CfI and our next steps in light of the responses. This may include a market study or we may apply other approaches or decide that no further work is needed.

8.
How to respond to the Call for Inputs

8.1 We want to gain a better understanding of how Big Data is impacting (and is likely to impact) competition and consumer outcomes in the retail GI sector, and whether our regulatory framework affects developments in Big Data and unduly constrains innovation in the interest of the consumer. We have set out specific areas that we would like your feedback on through the document. Please also let us know if there are any other areas you would like to call to our attention.

We are asking for comments on this Call for Inputs by 8 January 2016

You can send comments to us using the form on our website: http://www.fca.org.uk/your-fca/documents/call-for-inputs-big-data-response-form

Or in writing to:

Big Data Call for Inputs
Strategy and Competition
Financial Conduct Authority
25 The North Colonnade
Canary Wharf
London E145HS

Email: BigDataCallforInputs@fca.org.uk

We make all responses available for public inspection unless the respondent requests otherwise. We will not regard a standard confidentiality statement in an email message as a request for non-disclosure.

Despite this, we may be asked to disclose a confidential response under the Freedom of Information Act 2000. We may consult you if we receive such a request. Any decision we make not to disclose the response is reviewable by the Information Commissioner and the Information Rights Tribunal.

You can download this Call for Inputs from our website: www.fca.org.uk. All our publications are available to download from www.fca.org.uk. If you would like to receive this paper in an alternative format, please call 020 706 0790 or email: publications_graphics@fca.org.uk or write to: Editorial and Digital team, Financial Conduct Authority, 25 The North Colonnade, Canary Wharf, London E14 5HS

Annex 1
Overview of Feedback Questions

1. We are seeking views, supported by examples and evidence where possible, of how Big Data is impacting (and is likely to impact) consumer outcomes and competition in the retail GI sector. We are also seeking views on whether our regulatory framework affects developments in Big Data and unduly constrain innovation in the interest of consumers.

Section 2 - Background

Q1: How have the sources and types of data used in retail GI products, in particular private motor and home insurance, changed compared to five years ago? How do you think they are likely to change in the next five years?

Q2: How has the way in which data is used and processed in retail GI, in particular private motor and home insurance, changed in the past five years? How do you think it is likely to change in the next five years?

Q3: How does the use of additional data sources or data processing technologies affect the systems and controls necessary to ensure the accuracy of the data?

Q4: In which parts of the retail GI products' value chain, in particular for private motor and home insurance, is Big Data currently being used and to what extent? How is this likely to change in the next five years?

Q5: Are there any applications of Big Data that are currently being used in other industries, or internationally, that retail GI products (in particular private motor and home insurance) may adopt in the future?

Q6: We have indicated that we may use private motor and home insurance as products to better understand the impact of Big Data on the sector. Are there other retail GI products that are also particularly suited for this purpose, either due to the types of data being used, the analytical techniques adopted or the significance of the impact of Big Data on the product?

Section 4 - Does the use of Big Data affect consumer outcomes?

Q7: Are there groups of consumers that are particularly affected by the use of Big Data? If so, what are the likely benefits or risks for these consumers? How is this likely to change in the next five years?

Micro-segmentation of risk

Q8: How is the use of Big Data impacting risk segmentation practices for retail GI products, in particular in private motor and home insurance? How is this likely to change in the next five years?

Q9: What are the likely benefits and risks to consumers of any increased risk segmentation? Are there groups of consumers that are particularly impacted by potential changes to risk segmentation, for example consumers that are currently considered non-standard risk?

Q10: Has Big Data affected which consumers are categorised as non-standard risk for retail GI products, in particular private motor and home insurance? If so, what is the impact of this for these consumers? How is this likely to change in the next five years?

Pricing practices

Q11: How does Big Data affect risk based pricing of retail GI products, in particular for private motor and home insurance? What are the likely effects for consumers? Please provide examples for different groups of consumers, for example for vulnerable consumers.

Q12: How does Big Data affect pricing decisions based on factors other than risk for retail GI products, in particular for private motor and home insurance? What are the likely effects for consumers?

Consumer behaviour

Q13: How does Big Data affect the consumer journey in purchasing retail GI products or making claims, in particular for private motor and home insurance?

Q14: Do consumer attitudes towards the potential use of data impact firms' decisions to invest in Big Data?

Q15: To what extent is consumer behaviour influenced or affected by the use of Big Data?

Q16: How does Big Data affect consumers who are unable or unwilling to generate certain types of data?

Section 5 - Does the use of Big Data foster or constrain competition?

Demand side factors

Q17: Is Big Data currently changing the way consumers can assess, access and act on information about retail GI products, in particular private motor and home insurance? This includes whether Big Data affects consumers' ability to switch retail GI providers, particularly in private motor and home insurance. Please explain how this is likely to change in the next five years.

Supply side factors

Q18: Does Big Data affect how easy it is for firms to start providing a retail GI product, in particular private motor or home insurance, or expand their customer base? Can Big Data increase or create any market power that could result in competition being restricted? How is this likely to change in the next five years?

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Q23: How else might Big Data foster or constrain competition in retail GI?

Other sector factors

Q24: In your view, is the use of Big Data in retail GI likely to result in economies of scale and/or scope (as defined above), and if so, how are these economies likely to be created?

Section 6 – Does the FCA's regulatory framework affect developments in Big Data in retail GI?

> **Q25:** In your view, does the FCA's current regulatory framework constrain or foster the use of Big Data in retail GI? Please pride specific examples.

> **Q26:** What changes may be necessary to the FCA's regulatory framework to promote the use of Big Data in retail GI to foster innovation in the interest of consumers?

> **Q27:** Are there international developments in regulations or changes to regulatory frameworks that have supported innovation in the interest of consumers through increased application of Big Data?

Financial Conduct Authority