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Testing for customer markets using survey data

Ali Choudhary, Thorlakur Karlsson and Gylfi Zoega

Address: Ali Choudhary  
Department of Economics  
University of Surrey  
Guildford, Surrey  
GU2 7XH, UK

Email: [A.Choudhary@surrey.ac.uk](mailto:A.Choudhary@surrey.ac.uk)

Address: Thorlakur Karlsson  
School of Business  
Reykjavik University  
Ofanleiti 2  
103 Reykjavik  
Iceland

Email: [Thorlakur@ru.is](mailto:Thorlakur@ru.is)

Address: Gylfi Zoega  
Department of Economics and Business Administration  
University of Iceland  
Oddi, at Sturlugata, 101 Reykjavik  
Iceland

Email: [gz@hi.is](mailto:gz@hi.is) and [gzoega@econ.bbk.ac.uk](mailto:gzoega@econ.bbk.ac.uk)

# Survey Evidence on Price Rigidity in Customer Markets

Ali Choudhary<sup>a</sup>, Thorlakur Karlsson<sup>b</sup> and Gylfi Zoega<sup>c,d</sup>

a Department of Economics, University of Surrey, Guildford, Surrey, GU2 7XH, UK.

b Reykjavik University, School of Business, Ofanleiti 2, 103 Reykjavik, Iceland

c Department of Economics and Business Administration, University of Iceland, 101 Reykjavik, Iceland

d Birkbeck College, University of London, Malet Street, London WC1E 7HX

A number of models of imperfectly competitive goods markets have been used to explain the cyclical behaviour of markups. While some imply counter-cyclical behaviour, others predict the pro-cyclical behaviour of markups. However, the empirical evidence is ambiguous. In sum, the data seem to show that exogenous shifts in demand are met by increased supply at unchanged prices (see Shea, 1993, amongst others). This either implies that firms facing rising marginal costs charge countercyclical markups or, alternatively, that marginal cost curves are flat. On the whole, the evidence appears to support the former possibility, that markups are indeed countercyclical (see Bils, 1987). However, the reasons for this are far from clear. One possibility is that markups are deliberately changed by managers – desired markups are counter-cyclical – but nominal rigidities provide an equally plausible explanation as do lags in the adjustment of price to costs.

In a recent paper Akerlof (2007) argues that prices seem to be especially sticky in customer markets. He attributes this to price norms, that customers have an idea about what constitutes a fair price, which makes firms only change prices very infrequently. In contrast, customer market theory has traditionally been used to explain deliberate changes in markups in response to changes in real interest rate or current and anticipated sales per customer. In this paper we report the results of a survey that tests for the empirical relevance of customer market theory and then has follow-up questions that probe whether price changes are an important choice variable or alternatively, if price inertia is the rule.

## I. Literature

In the customer markets framework of Phelps and Winter (1970) and Okun (1981) firms have market power which stems from either imperfect information about prices and/or habit formation. It follows that a firm can raise its price without instantly losing all of its customers because it takes time for the news of such price increases to spread between customers. However, customers will gradually abandon a firm that charges higher prices than its rivals. Hence there exists an intertemporal trade-off between current and future profits; higher prices raise current profits at the expense of future profits. In essence, price cuts constitute an investment in a larger market share and price setting should hence depend on variables such as real interest rates and the expected growth of purchases per consumer.

The basic customer-market model has clear implications for the cyclical behaviour of markups. When current demand (per customer) is high, current profits matter more relative to future profits, which should make firms *raise* markups. This may not sound very plausible because such a price increase is tantamount to a fall in the real demand wage and real wages are not counter-cyclical in the data (see Barsky and Solon, 1994). Partly in response to this criticism, recent work has enriched the customer-market framework in ways that helps it square up with the empirical evidence. Bills (1989) argues that when the state of high demand involves an inflow of new potential customers who are yet unattached to any one supplier, it is in the interest of firms to lower their markups in order to attract these new customers. In effect, the marginal benefit of cutting prices is raised during boom periods. Similarly, Ravn, Schmitt-Grohé and Uribe (2006) present a model where the firm faces two types of customers, those who have developed a taste for the firm's products and those who have not. The weight of the demand elasticity of the non-habitual customers rises during booms and markups decline. A recent paper by Bagwell (2004) arrives at similar results by assuming a positive correlation between current and future growth in demand. In a somewhat different setup, Ireland (1998) argues that high demand implies more purchases, which in turn fuels consumer search activity undermining the supplier's monopoly power. Finally, Choudhary and Orszag (2007) propose the idea of a fixed cost of servicing each customer. As demand rises, customers purchase more units while the cost of servicing each of them remains fixed. This allows firms to spread these costs over a larger number of units sold, the marginal cost of expanding the market share is now lower and markups become countercyclical.<sup>1</sup>

In contrast to the emphasis on inter-temporal trade-offs in the original contribution of Phelps and Winter (1970) and in later contributions just described, Akerlof (2007) uses customer markets to explain price rigidities. He argues that prices seem to be especially sticky in customer markets and attributes this to price norms, that customers have an idea about what constitutes a fair price which makes firms only change prices very infrequently. If he is right, the emphasis on explaining whether desired markups are counter-cyclical or pro-cyclical in the previous literature is somewhat misplaced. A similar point is also argued in a recent paper by Nakamura and Steinsson (2005) who show that firms operating in customer markets may keep prices unchanged as a part of an implicit contract with habit-forming customers.

It is important to test whether customer market theory helps us explain nominal rigidities as Akerlof and Nakamura and Steinsson are suggesting, or, alternatively,

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<sup>1</sup> Another category of models identifies procyclical demand elasticity as the root cause of the observed behaviour of markups (see Beggs and Klemperer (1992), Warner and Barsky (1995) and Gali (1994)). Yet another category concentrates on the strategic behaviour of firms, such as Rotemberg and Saloner (1986) and Rotemberg and Woodford (1991). Haltiwanger and Harrington (1991) further develop this idea. A fourth category links imperfections in capital and product markets. For example Greenwald, Stiglitz and Weiss (1984) and Chevalier and Scharfstein (1996) propose different mechanisms through which cash-flow problems during recessions lead firms to limit their investments in market shares. A fifth category uses the input-output relations between firms to explain the behaviour of markups. Basu (1995) is one example. The sixth and final category of models is based on the idea of the 'pied-piper,' commonly known as the loss-leader pricing. In these models firms find it more efficient to advertise and commit to a low price when demand is high in order to attract customer who may also buy higher-priced goods so as to avoid search costs (see Lal and Matutes (1994) and Chevalier, Kashyap and Rossi (2000)).

whether it helps us understand cyclical changes in the desired markups, as the previous literature attempted to do. This is the objective of our survey.

Using surveys to test economic theories is of course not without its difficulties. Non-economists may not understand the intended meaning of different questions which make slight changes in the wording of the questions have disproportionate responses. Also, in many cases managers go by their own intuition or gut feeling, which they may or may not be capable of explaining to others. Partly, in response to these anticipated difficulties, we did not ask the managers explicitly whether they choose to keep prices fixed over the business cycle or whether they choose to change them in a systematic way. Instead, we asked specific questions about the nature of the customer-supplier relationship and how they would change prices in response to changes in the macroeconomic environment that will give us an indirect answer.

## II. Survey methods

We use data from Iceland partly because we are knowledgeable about that particular country but also because most of its internal markets are imperfectly competitive due to its small size. The survey differs from previous ones by its focus on customer market theory.<sup>2</sup> Our sample consists of 884 firms, each with 4 employees or more. It is randomly selected from the National register of firms in Iceland.<sup>3</sup> All firms in the sample are separate firms, not branches of larger companies. They are located in all parts of the country, some in the consumer market and others selling their services to other businesses. All sectors are represented; manufacturing, services and retail/whole-sales. In each firm, either the CEO or the CFO responded.<sup>4</sup> We will refer to the respondent as the manager henceforth. Of the 884 firms, 234 refused to answer

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<sup>2</sup> Blinder (1991) and Blinder et al. (1998) initiated the use of surveys in their study of price setting in the United States and found considerable price stickiness due to multiple reasons such as coordination failures, implicit and explicit contracts and pro-cyclical demand elasticity. Bhaskar et al. (1993) conducted a survey of British managers in which they were asked about the actions they would take in booms and recessions. The responses suggested that quantity adjustments were by far more important than price adjustments over the business cycle. A recent paper by Fabiani et al. (2006) shows the results of a survey of pricing behaviour in the euro area. The results are somewhat similar across countries. They find that markup pricing is the main price-setting strategy in the euro area and implicit and explicit contracts between firms and their customers an important factor behind the price stickiness. While firms are likely to raise prices when the cost of production goes up, they choose to keep prices unchanged when demand increases in order not to upset their customers. Similar studies for other countries include Apel et al. (2005) for Sweden, Amirault et al. (2004) for Canada, Small and Yates (1999) and Hall et al. (1997, 2000) for the UK, Hoerberichts and Stockman (2005) for Holland, Kwopil et al. (2005) for Austria, Loupias and Richart (2004) for France, Lünemann and Mathä (2005) for Luxemburg and Stahl (2005) for Germany.

<sup>3</sup> Iceland has a population of 300,000 people, the vast majority of the working-age population belonging to the service sector. Its labour market is well integrated geographically and the population mass is urban and concentrated in the capital city Reykjavik and vicinity. Perhaps partly due to the flexibility of the labour market, the country ranked ninth in the world in terms of (PPP-adjusted) GDP per capita in 2002 and second in terms of a quality-of-life index (*The Economist, World in Figures*).

<sup>4</sup> The survey was conducted over the phone between January 26 and February 20 2006. Calls were made during weekdays by trained interviewers and they always asked for the CEO. If he or she was not in, the interviewer asked for the CFO. If neither was in, a call was made later same day or the following day. Questions were programmed in CATI (computer-assisted telephone interview) software called NIPO. After a call was made and a respondent accepted the interview each question appeared on a computer screen in front of the interviewer and answers were immediately punched in at the keyboard. All answers were saved in a database and after the last interview transformed to SPSS, which was used to analyse the results.

and 146 could not be reached. This yields 504 respondents, which is a 57% response rate.

The survey includes nine questions. All but one of the questions were closed and response categories were read to respondents. A manager was first asked whether his firm was privately or publicly owned. Of the 504 responders, 136 were public and were dropped from the sample. The questions that followed were on the number of competitors in the market; the most and second most important reason for customer loyalty; and an assessment of when the firm is in the greatest danger of losing some of its customers. An open-ended question followed on what the respondents thought was the most effective way of acquiring new customers. Next, they were asked about the most valuable asset of the firm and the second-most valuable asset. Finally, there were three questions on whether the manager would raise markups, lower markups or leave them unchanged in response to changes in the changing economic environment. Respondents were asked about three hypothetical changes; an increase in current demand for the products<sup>5</sup> leaving future demand unchanged; an expected increase in future demand while current demand stays the same, and; an interest rates increase.<sup>6</sup>

### III. Results

It should not come as a surprise that managers consider customers to be an asset. However, it is more interesting to see how they rank them alongside other assets such as the value of trained employees. We first report responses to the question about the most valuable and the second-most valuable asset of the firm. Managers were given a list of possibilities. The results are shown in Table 1 below. While employees received the highest score, customers came in a clear second. Of responders, 21.5% rated customers as their firm's most valuable asset while 35% rated them as the second-most valuable asset. This clearly provides support for customer-market theory. Only the stock of firm's employees received higher ratings, 55.1% said the constituted the most valuable asset and 30.9% the second-most valuable asset. Just over 17% responded that it was their trademark or image. Very few respondents mentioned other assets. An aggregate measure for the most valuable asset (given a weight of 2) and the second most valuable asset (with weight of 1) shows the same ranking, i.e. employees (47.0%), customers (26.1%) and trademark or image (18.6%).

**Table 1.** The most valuable and the second-most valuable asset for firms

	Most valuable (1) %	Second most valuable (2) %	Combined %		Most valuable (1) %	Second most valuable (2) %	Combined %
Workers	55.1	30.9	47.0	Location	2.6	6.7	3.9
Customers	21.6	35.0	26.1	Assets in accounts*	1.7	5.0	2.8
Trademark	17.3	21.3	18.6	Other assets	1.7	1.2	1.5
Total					100	100	100

\* Such as bank deposits, machinery and housing.

<sup>5</sup> By "products" we mean both products and services.

<sup>6</sup> In addition to the nine survey questions, information was obtained on background variables for each firm, such as yearly turnover, number of employees, location, markets (consumer or business to business) and industry (manufacturing, services, or retail/whole-sales).

We next report responses to questions that were aimed at testing whether managers treated price setting as an intertemporal investment decision. In Table 2 responses to the three questions on the effect of hypothetical changes in the economic environment are shown.

**Table 2.** Will prices change when the level of demand changes or interest rates go up?

	Demand increases Temporarily (%)	Current demand unchanged, but expected future demand increased (%)	Interest rates go up (%)
Unchanged	84.1	86.7	57.9
Higher prices	11.9	8.8	41.7
Lower prices	4.0	4.5	0.3
Total	100	100	100

Most managers would leave prices unchanged if demand rose temporarily or was expected to rise in the future (around 85% of respondents). Only about 10% would raise markups and less than 5% would lower them. These results confirm the existence of substantial price stickiness as found in the macroeconomic literature (see Fabiani et al. (2006) cited above). While keeping prices unchanged in the face of increased demand is consistent with both the idea of counter-cyclical desired markups as well as the hypothesis that firms choose to keep prices unchanged because of price norms or an implicit contract with habit-forming customers, keeping prices unchanged when demand is expected to rise in the future is only consistent with the latter. Clearly, an expected demand increase should make the marginal benefit of cutting prices rise which should make desired markups fall.

The existence of price norms within the customer market framework was proposed by Akerlof (2007) and the idea that firms keep prices unchanged as a part of an implicit contract with habit-forming customers was described by Nakamura and Steinsson (2005). These authors argue that keeping prices stable is the best way of attracting customers. The responses to the second question provide support for the existence of price norms and/or implicit contracts about stable prices. Keeping prices unchanged in the face of an anticipated future increase of demand implies that markups are not cut when a future increase is expected.<sup>7</sup> This suggests that prices are kept unchanged in the face of expected demand increases as well as current ones.<sup>8</sup>

Of respondents, 41.7% would raise prices in response to higher interest rates. These responses to an increase of interest rates can be explained by the inter-temporal dimension customer market theory: When interest rates rise, we expect firm to cut back investment in new customers, hence raise markups and prices. However, price norms may also yield this implication. When interest rates rise firms can justify price

<sup>7</sup> Unless firms also increase production – hence experience rising marginal costs – in anticipation of higher sales

<sup>8</sup> In a recent paper, Chevalier, Kashyap and Rossi (2003) use a data set taken from a large supermarket chain in Chicago and find that retail prices fall during periods of peak product demand, in contrast to higher overall demand for all goods. Moreover, they find that the falling prices are due to falling markups. We did not find this effect in the responses. In the case of current demand increases 94% of whole sale/retail firms would leave markups unchanged, while 79% of manufacturing firms would do the same, and 86% of service industry firms.

increases because of increased costs; customers understand the need for price increases when interest rates rise. Hence we cannot use this result to discriminate between our two hypotheses.

The next question we report on was meant to inquire further about the nature of the supplier-customer relationship. Managers were asked about the most important reason and the second-most important reason for customers to stay with the firm, i.e. reasons for customer loyalty. Respondents were given five answer choices in a random order. The results for the most and second-most important reason were then aggregated, were the most important reason got the weight of 2 and second most important reason got the weight of 1. Table 3 shows the results.

**Table 3.** The most and second-most important reason for customer loyalty

	Most important reason (1) %	Second most important reason (2) %	(1) and (2) combined %
Superior service	40.7	24.9	35.4
Superior products	38.7	19.2	32.2
Lower prices	8.3	27.6	14.7
Habit formation	6.9	26.7	13.5
No apparent alternative supplier	5.4	1.5	4.1
Total	100	100	100

Two reasons for customer loyalty received far more support than the others. These were "superior service" (35.4%) and "superior products" (32.2%). In third and fourth place were "lower prices" (14.7%) and "habit formation" (13.5%). Both obtained even greater support as the second most important reason (over a quarter for each).<sup>9</sup> Clearly, it is difficult for managers to claim that superior products and services are not the reason for customer loyalty. The 26.7% of respondents who claim that habit formation is the second-most important reason for customer loyalty provide support for customer market theory.

The next question asked respondents when customers were most likely to leave their firm. This is a test of the hypotheses of Bilal (1989), Ireland (1998), Bagwell (2004), Ravn, Schmitt-Grohé and Uribe (2006), namely that customers are more likely to leave when demand is high. While almost half of responders said customers were more likely to leave during a recession, more than 10% chose booms and about 40% said this was independently of the economic situation.<sup>10</sup>

<sup>9</sup> Firms with more competitors are more likely to mention better service and better products or service as the most important reason for customer loyalty. Those who are in the service industry are more likely to say better service (55%) as the most important reason for customer loyalty, more so than those who are in manufacturing (34%) or whole sale/retail (27%). On the other hand, those in wholesale/retail are more likely to name better product or service (53%).

<sup>10</sup> Firms having none or 1-2 office workers are far more likely to say that their customers are likely to leave them during recession (73% and 52% respectively) than those who have 6-10 office workers (23%) or more than 10 office workers (30%). On the other hand, those who have more than 10 office workers are more likely to say that their customers are likely to leave them in boom years (30%), than those who have none (4%) or 1-2 office workers (8%).

**Table 4.** When is a firm most likely to lose a customer?

	%		%
In a recession	48.9	In a boom	11.2
Independent of the state of the economy	39.9		
Total			100

Not surprisingly, most managers fear losing customers in recessions. However, it may come as a surprise to some that 11.2% of respondents claim that their firm is most likely to lose customers during economic expansions. Finally, we inquire about how firms go about attracting new customers; that is investing in a larger market share.

**Table 5.** The most effective way to attract new customers

	%		%		%
Good service	17.6	Good quality	6.2	Marketing	2.9
Advertising/junk mail	17.1	Trust/honesty	3.8	Customer satisfaction	1.8
Reputation	16.8	Good performance	3.8	Salesmanship	1.5
Visits to customers	14.4	Good prices	2.9		
One-to-one contact	8.2	Other reasons	2.9		
Total					100

In this open-ended question on what would be the best way of acquiring new customers almost 18% mentioned good service, over 17% mentioned advertisements or mail, and almost 17% word of mouth. These were the top three reasons for acquiring new customers. The fourth reason was "visits and information meetings" (14.4%), then "personal interaction" (8.2%) and finally "good product" (6.2%). Other reasons were mentioned with less frequency. Note that price-cutting is only mentioned as the most effective way of attracting new customers by 2.6% of respondents. Apart from good service and quality, managers mention advertising more frequently,<sup>11</sup> as well as visits and one-to-one contacts with customers. Table 5 confirms the overall impression of price rigidity found in Table 2 above. There we found that prices are kept unchanged when demand goes up or is expected to increase. Now we find that price changes are not considered to be an effective way of attracting customers. We can conclude that customer market theory is less suited to explaining price changes and better suited to explaining price inertia.

#### IV. Concluding thoughts

The survey results presented in this paper provide support for the customer market theory of Phelps and Winter (1970). Managers agree that customers are valuable to firms, they rank them second to employees, and they use various means of augmenting their customer base, such as advertising. They also mention habit formation as a source of customer loyalty. However, price setting appears not to be an important tool when it comes to attracting and retaining customers. Instead, advertising and direct contact with customers are listed as the more important.

<sup>11</sup> Chevalier, Kashyap and Rossi (2003) also emphasise the substantial role advertising plays in attracting customers in periods of high seasonal demand.

Customer markets appear to imply rigid prices not frequent prices changes involving intertemporal choices. While rigid prices do imply counter-cyclical markups when marginal costs are rising in output, the fact that prices are not changed in anticipation of increased demand implies that firms do not deliberately adjust markups and price inertia is the rule. This provides support for Akerlof (2007), who argues that prices seem to be especially sticky in customer markets due to price norms, and Nakamura and Steinsson (2005) who argue that firms keep prices unchanged as a part of an implicit contract with habit-forming customers.

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- W05:14 Gylfi Zoega and J Michael Orszag: Are Risky Workers More Valuable to Firms?
- W05:13 Friðrik Már Baldursson: Fairness and pressure group competition.
- W05:12 Marias H. Gestsson and Tryggvi Thor Herbertsson: Fiscal Policy as a Stabilizing Tool.
- W05:11 Tryggvi Thor Herbertsson and Gylfi Zoega: On the Adverse Effects of Development Aid.
- W05:10 Thráinn Eggertsson and Tryggvi Thor Herbertsson: Evolution of Financial Institutions: Iceland's Path from Repression to Eruption.
- W05:09 Tryggvi Thor Herbertsson: The Icelandic Pension System in 2004.
- W05:08 Ron Smith and Gylfi Zoega: Unemployment, investment and global expected returns: A panel FAVAR approach.

- W05:07 Gylfi Zoega and Thorlakur Karlsson: Does Wage Compression Explain Rigid Money Wages?
- W05:06 Thorvaldur Gylfason: India and China
- W05:05 Edmund S. Phelps: Can Capitalism Survive?
- W05:04 Thorvaldur Gylfason: Institutions, Human Capital, and Diversification of Rentier Economies
- W05:03 Jón Daniélsson and Ásgeir Jónsson: Countercyclical Capital and Currency Dependence
- W05:02 Alison L. Booth and Gylfi Zoega: Worker Heterogeneity, Intra-firm Externalities and Wage Compression
- W05:01 Tryggvi Thor Herbertsson and Martin Paldam: Does development aid help poor countries catch up?
- W04:12 Tryggvi Thor Herbertsson: Personal Pensions and Markets
- W04:11 Fridrik M. Baldursson and Sigurdur Johannesson: Countervailing Power in the Icelandic Cement Industry
- W04:10 Fridrik M. Baldursson: Property by ultimatum: The case of the Reykjavik Savings Bank
- W04:09 Ingólfur Arnarson: Analyzing Behavior of Agents of Economic Processes in Time
- W04:08 Otto Biering Ottosson and Thorolfur Matthiasson: Subsidizing the Icelandic Fisheries
- W04:07 Niels Vestergaard and Ragnar Arnason: On the Relationship between Greenland's Gross Domestic Product and her Fish Exports: Empirical Estimates
- W04:06 Ingolfur Arnarson: Modelling Fishery Management Schemes with an Olympic System Application
- W04:05 Ingolfur Arnarson and Pall Jensson: Adding the Sales Markets Dimension to Bio-Economic Models. The Case of Fishery Management
- W04:04 Edmund S. Phelps: Changing Prospects, Speculative Swings: Structuralist Links through Real Asset Prices and Exchange Rates
- W04:03 Ingolfur Arnarson: Analysing Behavior of Agents of Economic Processes in Time
- W04:02 Ron Smith and Gylfi Zoega: Global Shocks and Unemployment Adjustment
- W04:01 Fridrik M. Baldursson and Nils-Henrik M von der Fehr: Prices vs. quantities: public finance and the choice of regulatory instruments
- W03:07 Sveinn Agnarsson and Ragnar Arnason: The Role of the Fishing Industry in the Icelandic Economy. A historical Examination
- W03:06 Thorolfur Matthiasson: Paying paper by paper, the wage system of Icelandic University teachers explained
- W03:05 Gur Ofur and Ilana Grau: Bringing the Government hospitals into line: The next step of reform in the healthcare sector
- W03:04 Ingolfur Arnarson and Pall Jensson: The Impact of the Cost of the Time Resource on the Efficiency of Economic Processes
- W03:03 Torben M. Andersen and Tryggvi Thor Herbertsson: Measuring Globalization

W03:02 Trygvi Thor Herbertsson and J. Michael Orszag: The Early Retirement Burden: Assessing the Costs of the Continued Prevalence of Early Retirement in OECD Countries

W03:01 Eirik S. Amundsen, Fridrik M. Baldursson and Jørgen Birk Mortensen: Price Volatility and Banking in Green Certificate Markets

W02:10 Trygvi Thor Herbertsson and Gylfi Zoega: A Microstate with Scale Economies: The Case of Iceland

W02:09 Alison, L. Booth and Gylfi Zoega: Is Wage Compression a Necessary Condition for Firm-Financed General Training

W02:08 Asgeir Jonsson: Exchange rate interventions in centralized labor markets

W02:07 Alison, L. Booth, Marco Francesconi and Gylfi Zoega: Oligopsony, Institutions and the Efficiency of General Training

W02:06 Alison L. Booth and Gylfi Zoega: If you're so smart, why aren't you rich? Wage inequality with heterogeneous workers