

Knowing Me, Knowing You

The role of trust, locus of control and privacy concern in acceptance of domestic electricity demand-side response

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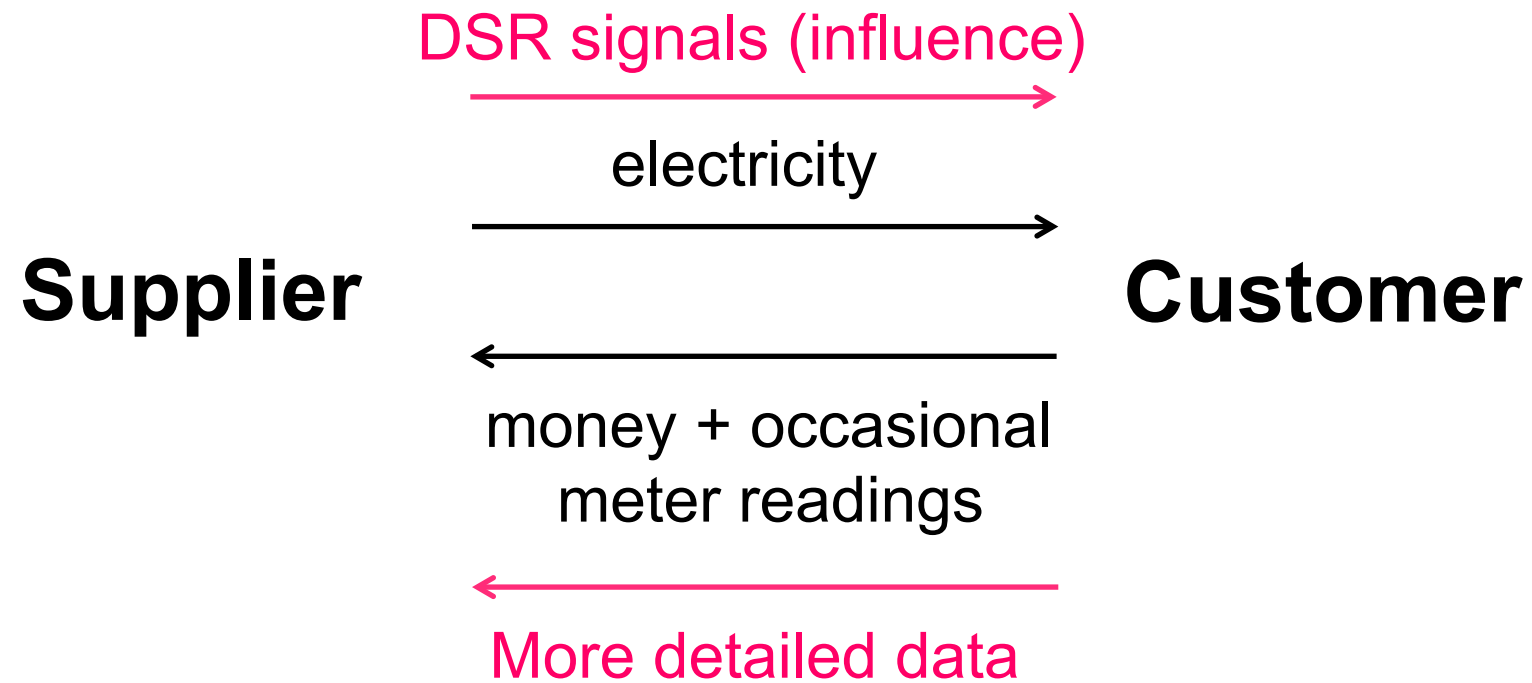
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Demand Side Response (DSR): “change in electricity consumption patterns in response to a signal”¹ – e.g. price, volume, direct.

- Portfolio optimization
- Congestion management
- Balancing





Changing relationships

- Trust
 - '[Trust is] the willingness of a party to be **vulnerable to the actions of another party** based on the expectation that the other will perform a **particular action important to the trustor**' (Mayer et al. 1995, 712)
 - 40% distrust their supplier (Which?, 2014)
- Privacy
 - Information privacy
 - Non-intrusion ('unwarranted intrusion into one's personal space' (Tavani 2007, 6))
- Locus of control (in relation to energy)



The research

- Great Britain representative survey (N=2002) administered August 2014
- Experimental design (static/dynamic TOU, with/without automation, DLC)
- Items to measure willingness to switch, trust in supplier, privacy concern and locus of control (see paper)



Construct	Introduction	Item	Response
Trust	To what extent do you think your electricity supplier is trustworthy or untrustworthy with regard to the following...	<input type="checkbox"/> Ensuring you always have a reliable electricity supply <input type="checkbox"/> Providing information that you can easily understand <input type="checkbox"/> Charging a fair price for your electricity <input type="checkbox"/> Acting in your best interest	Very trustworthy, Fairly trustworthy, Neither trustworthy nor untrustworthy, Fairly untrustworthy, Very untrustworthy
Privacy concern	Please indicate if each of the following statements apply to you:	<input type="checkbox"/> I have refused to give information to a company because I thought that information was too personal <input type="checkbox"/> I have signed up to TPS [Telephone Preference Service, which allows people to opt out of receiving sales or marketing calls] <input type="checkbox"/> I have asked an organization to take my name off of a mailing or email list	Yes, No
Locus of control	How much do you agree or disagree with the following statements?	<input type="checkbox"/> The amount of money my household spends on energy is largely out of my control <input type="checkbox"/> There are external factors that make it difficult for me to take actions to reduce my energy bills <input type="checkbox"/> It is hard to reduce your energy bills even if you want to	Strongly agree, Somewhat agree, Neither agree nor disagree, Somewhat disagree, Strongly agree
Acceptance	How much do you agree or disagree with the following statements?	<input type="checkbox"/> If it was offered to me now, I would sign up to this plan	Strongly agree, Somewhat agree, Neither agree nor disagree, Somewhat disagree, Strongly agree

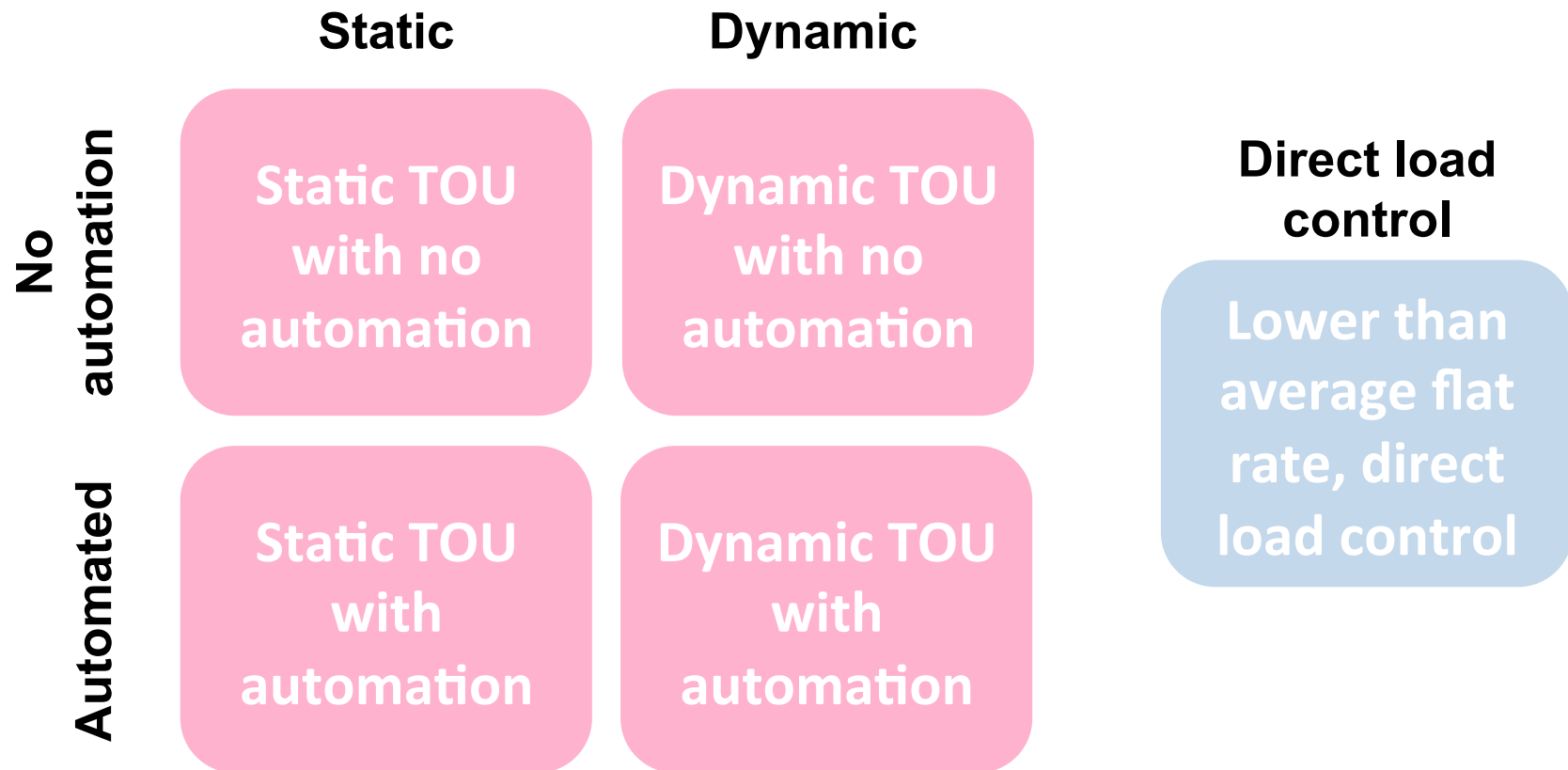


The tariffs

- Static vs dynamic tariffs
- Manual vs automated response
- Direct load control



Experimental design



NB See paper for tariff descriptions

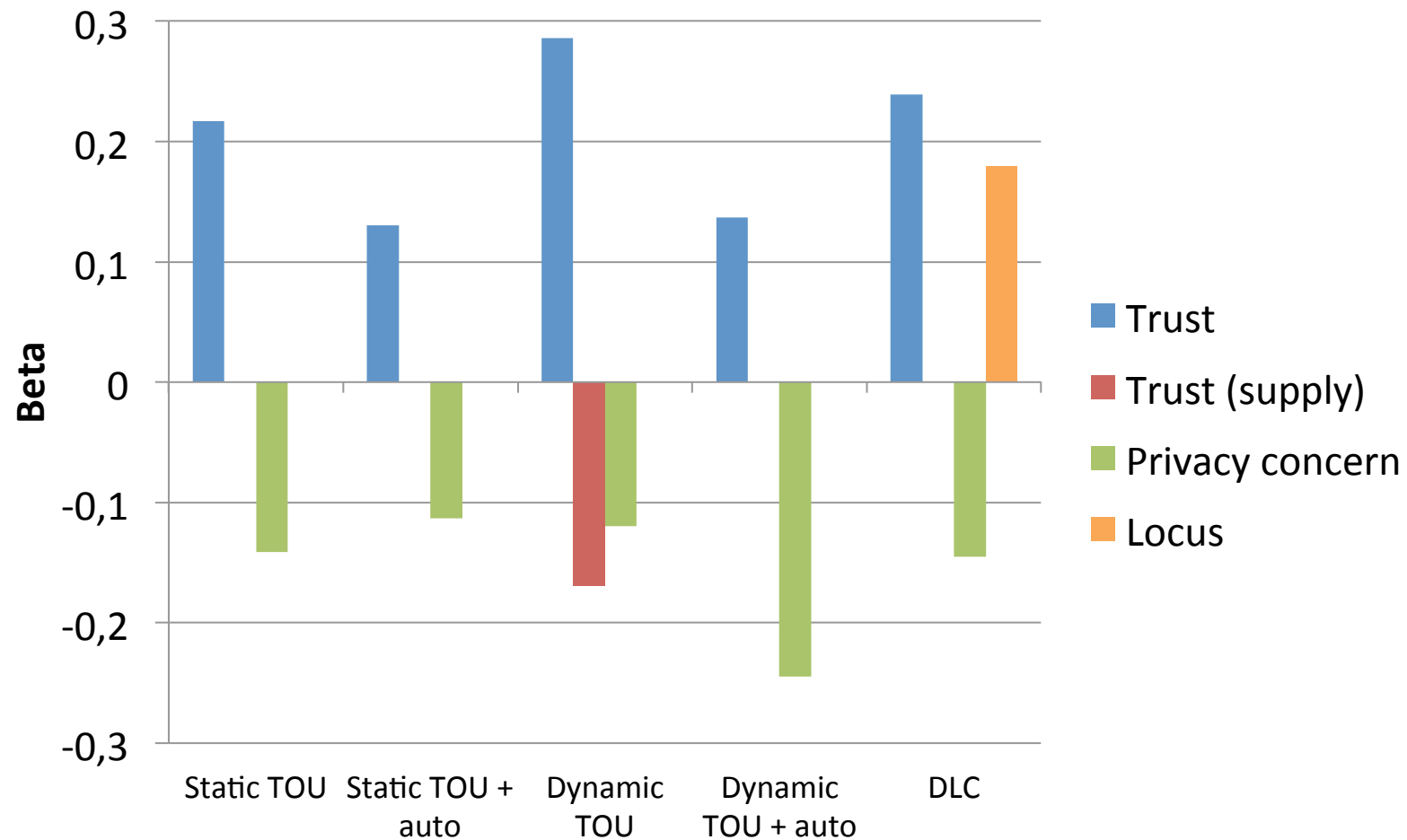
On this plan you have **three different rates** for your electricity – low, medium and high. They apply for **fixed times** of the day and week. Here are the rates:

Weekend (all day)	Low rate (10p/unit)
Weeknight (8pm-7am)	Low rate (10p/unit)
Week day (7am-4pm)	Medium rate (14p/unit)
Weekday peak (4pm-8pm)	High rate (30p/unit)

If you sign up your electricity supplier will give you a smart thermostat which allows you to monitor and change the temperature in your home remotely online or with a smartphone app.



Association with willingness to switch



(R²=0.17) (R²=0.10) (R²=0.17) (R²=0.14) (R²=0.10)

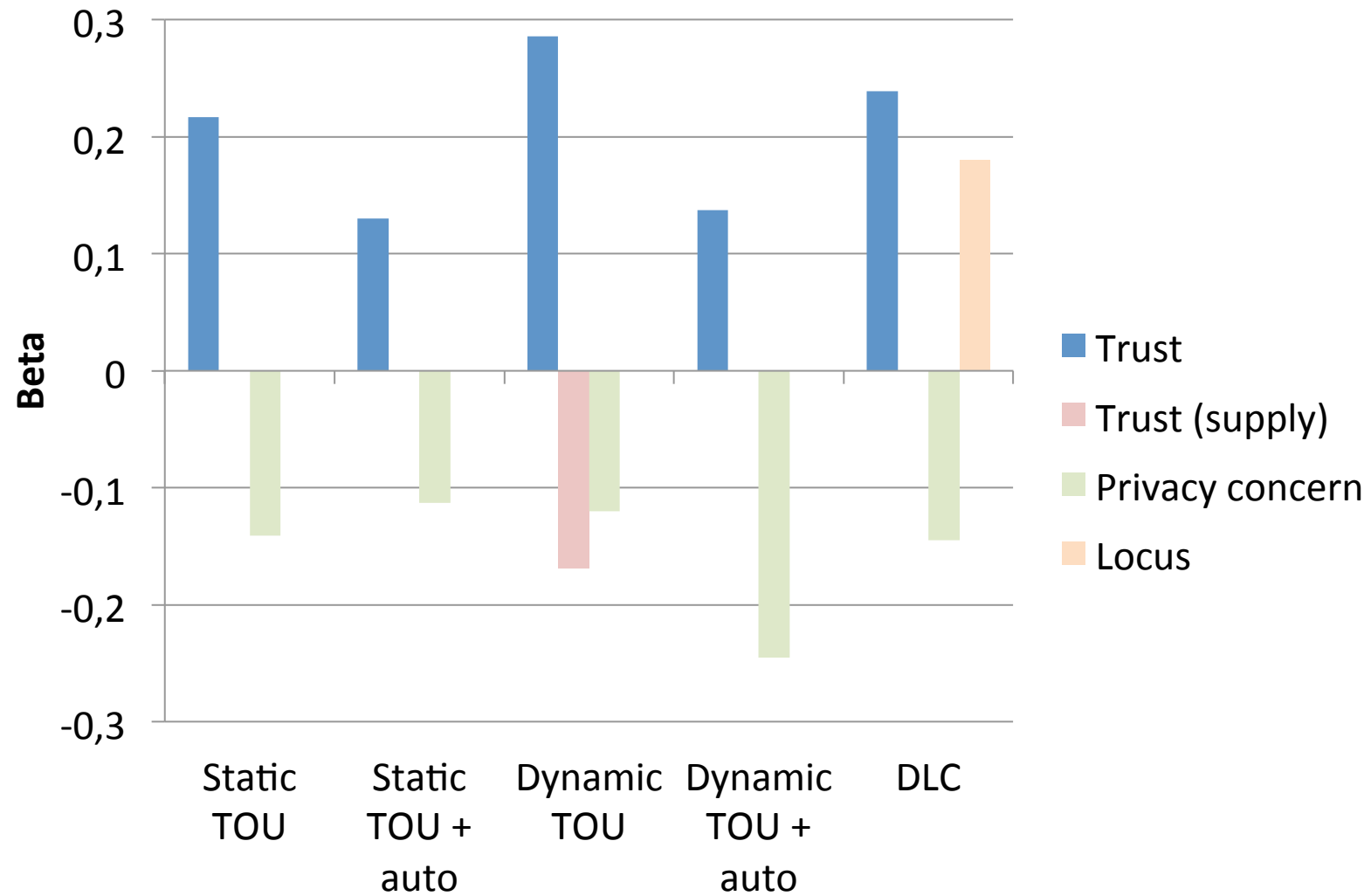
(R²=0.11) (R²=0.08) (R²=0.09) (R²=0.07) (R²=0.03)

incl. trust/priv/locus

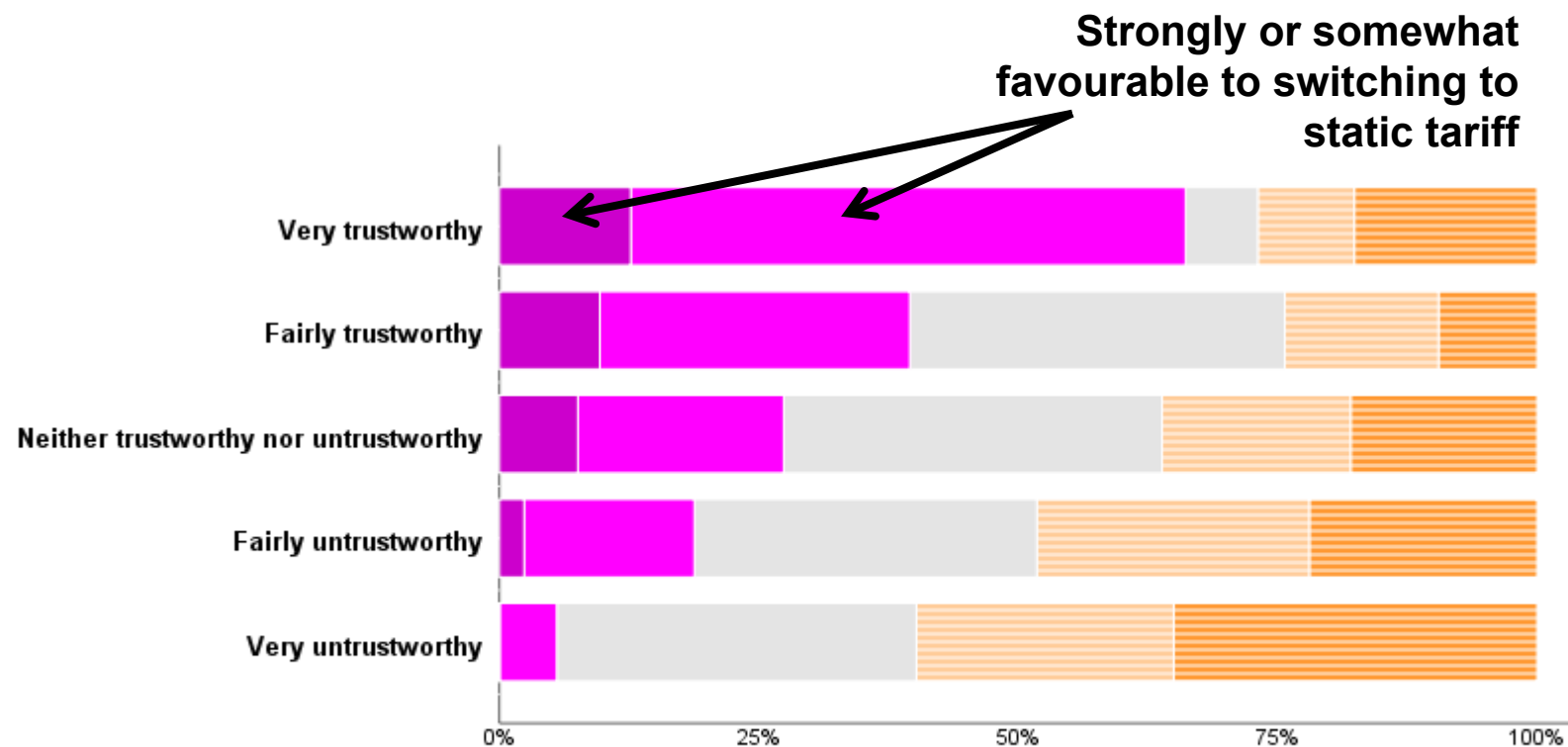
not incl. trust/priv/locus



Trust



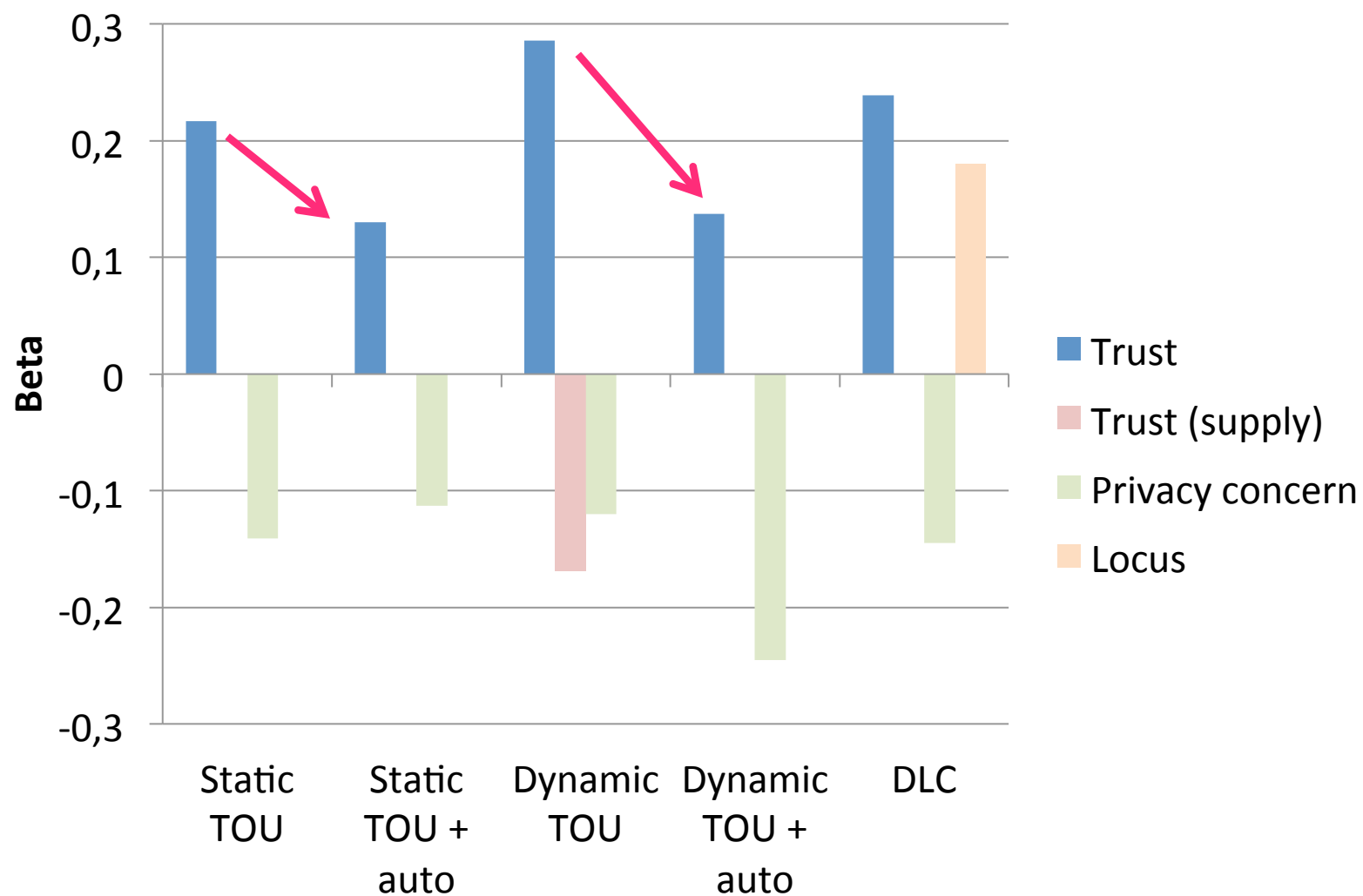
Trust and willingness to switch to static TOU tariff



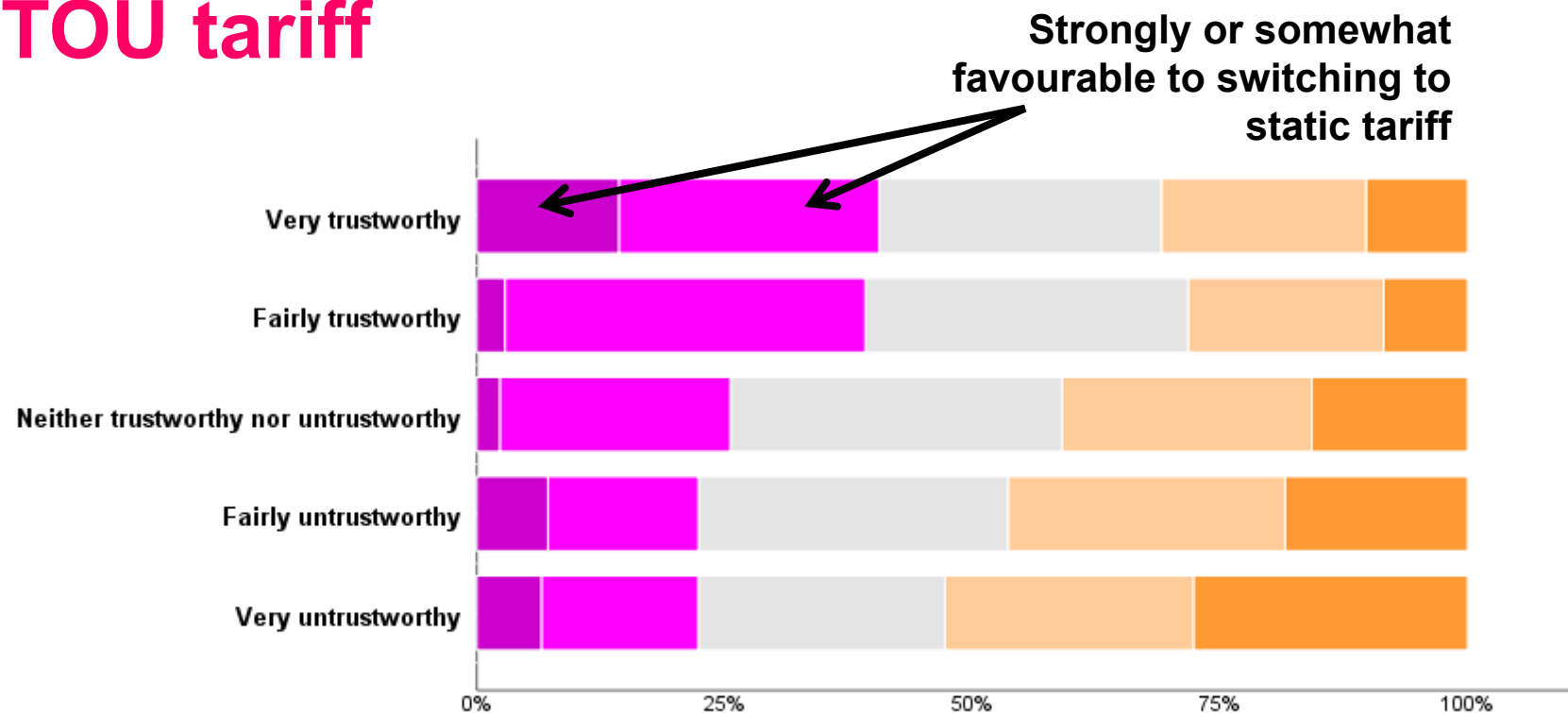
To what extent do you think your electricity supplier is trustworthy or untrustworthy with regard to **acting in your best interest?**



Trust



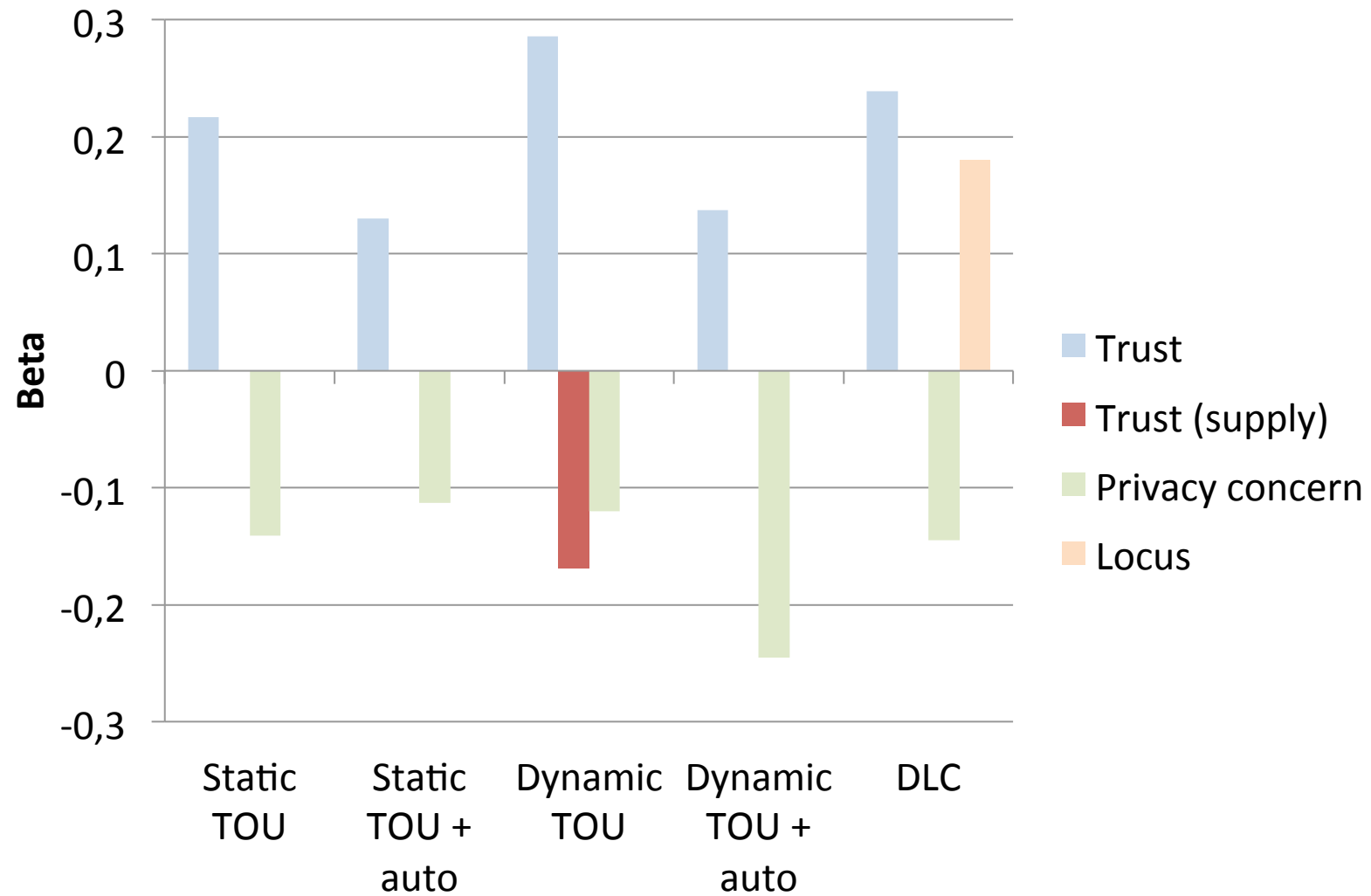
Trust and willingness to switch to automated static TOU tariff



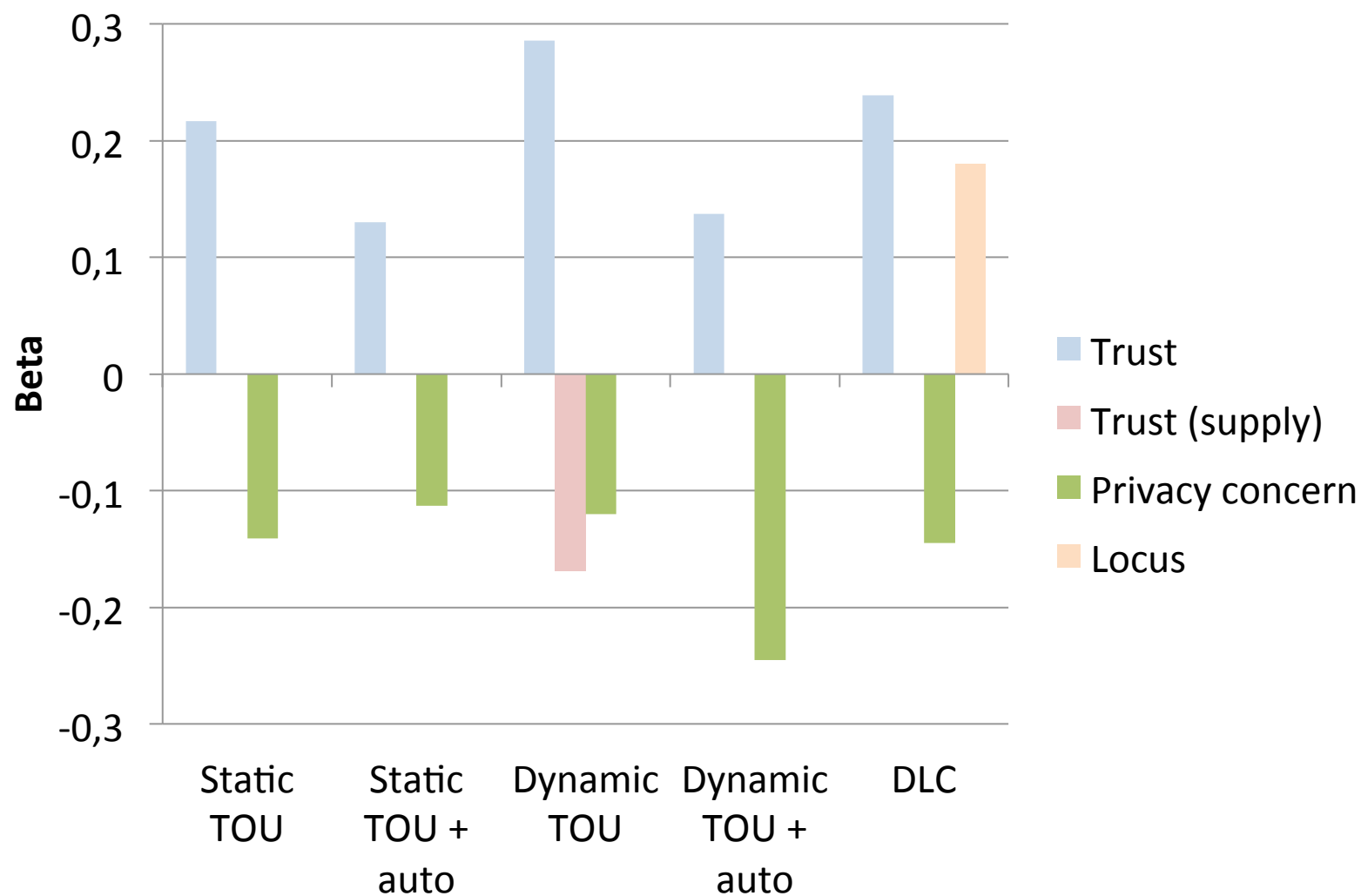
To what extent do you think your electricity supplier is trustworthy or untrustworthy with regard to **acting in your best interest?**



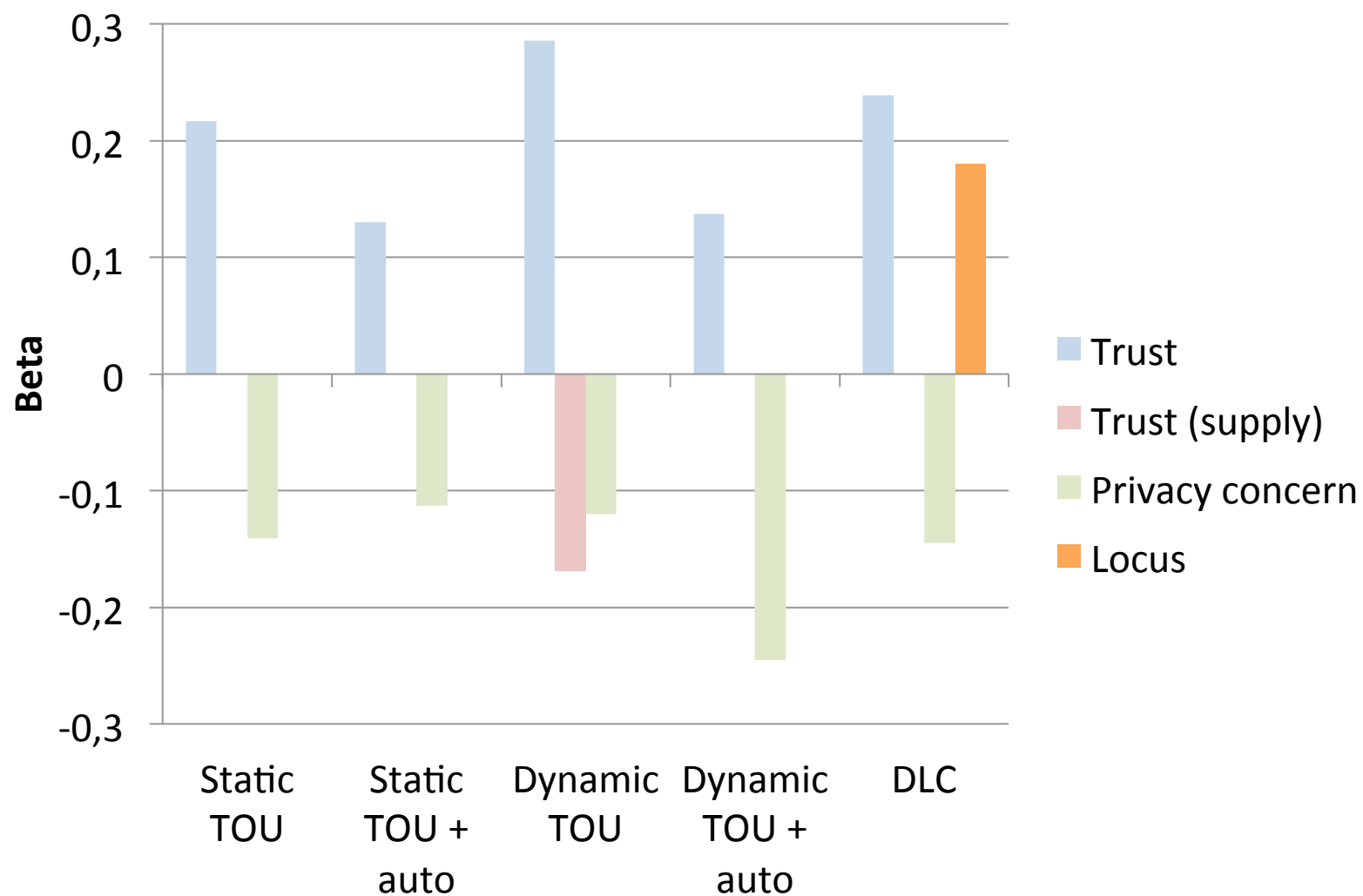
Trust (supply)



Privacy concern



Locus of control



Conclusions and implications

- Trust in the energy supplier positively associated with willingness to switch to DSR tariff with that supplier
 - Low levels of trust in suppliers should pose a concern
 - Opportunity for trusted entrants from other sectors
 - Trust less important where option of automating response
- Privacy concern negatively associated with willingness to switch
 - Re-emphasizes key role of data security
- More external locus of control associated with willingness to switch to direct load control tariff
 - Appropriate protections should be considered



I've been cheated by you since I don't know when
So I made up my mind, it must come to an end
Look at me now, will I ever learn?
I don't know how but I suddenly lose control

-- ABBA, *Mamma Mia*



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References


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Tavani, H.T., 2007. Philosophical Theories of Privacy: Implications for an Adequate Online Privacy Policy. *Metaphilosophy* 38, 1–22. doi:10.1111/j.1467-9973.2006.00474.x

Which?, 2014. Which industry sectors / organisations do people most trust and distrust? [WWW Document]. URL <http://bit.ly/1zEcpbp> (accessed 12.19.14).



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Trust

‘[Trust is] the willingness of a party to be **vulnerable to the actions of another party** based on the expectation that the other will perform a **particular action important to the trustor**’ (Mayer et al. 1995, 712)

- Vulnerability: higher electricity prices at certain times (sometimes unpredictably), control of appliances
- Benefit: Savings, functionality, security/sustainability.
- Trust linked to product/service/innovation acceptance (e.g. Bhattacharjee 2002, Ortega Egea & Román González 2011)
- Trust in energy companies in the UK is low (40% distrust suppliers, compared to 25% for mobile phones and 15% for water) (Which? 2014)



Overall willingness to switch

