Institute for Fiscal Studies

Indirect Tax and Consumer Behaviour

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Role of corrective taxes

- Consumption of some goods is associated with "social costs" e.g.
  - alcohol consumption
  - excess sugar consumption

- Provides a rationale for policy intervention
  - corrective taxes raise prices in order to reduce discourage socially harmful consumption

Designing corrective taxes

- Challenge is to design system in way that most efficiently targets socially costly consumption
- Levying very high taxes imposes large costs on consumers, as people derive pleasure through consumption
- And may actually serve to harm those we're most trying to assist through the policy
  - e.g. if people that suffer in future from disease are very price inelastic

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- Corrective taxes should target the most socially harmful behaviour
- And appropriate level of tax rates will depend on price responsiveness of different types of consumers

What do we need to know?

- What's the distribution of social costs across the population of consumers?
- How do people respond to price change? And how might this vary across the population?
- How do firms respond to the tax?

Application to alcohol taxes

Griffith, O'Connell and Smith (2017). Tax design in the alcohol market.

- How can alcohol taxes best be designed to target problem drinking?
  1. Solve a model of government's task in setting alcohol tax rates
  2. Use longitudinal data on representative sample of British households' grocery purchases to estimate consumer choice in alcohol market
  3. Combine to compute "optimal" alcohol taxes for UK

Government's tax problem

- Government sets tax rates on ethanol content of alcohol products
- Aim: discourage the most socially costly alcohol consumption, taking account of fact that higher taxes also impose costs on consumers
- We consider a single ethanol tax rate
  - Optimal rate is increasing in the covariance of social harm drinkers create and how price sensitive their ethanol choices are to price increases
- And optimal "alcohol type" tax rates
  - Can improve on a single rate by allowing government to tax more highly products that problem drinkers will switch away from more strongly

Estimating consumer choice

- Optimal tax rates depend on consumer's price sensitivities
  - If tax on one type of alcohol is raised, how strongly do people switch from it?
  - And to what alternatives and how strongly do they switch?

- Crucially we need to know not just average responses, but how they vary across different groups e.g.
  - heavy drinkers, mainly responsible for social costs, versus light drinkers

Estimating consumer choice

- Data on off-sale alcohol purchases of 11,500 British households
- Observe households for several years – so can distinguish between light, moderate and heavy drinkers
- Observe prices paid for alcohol products (barcode level)

- Model decision household makes when visiting the store over:
  - whether or not to buy alcohol
  - which product to buy (e.g. branded vodka vs. own brand gin)
  - how much to buy

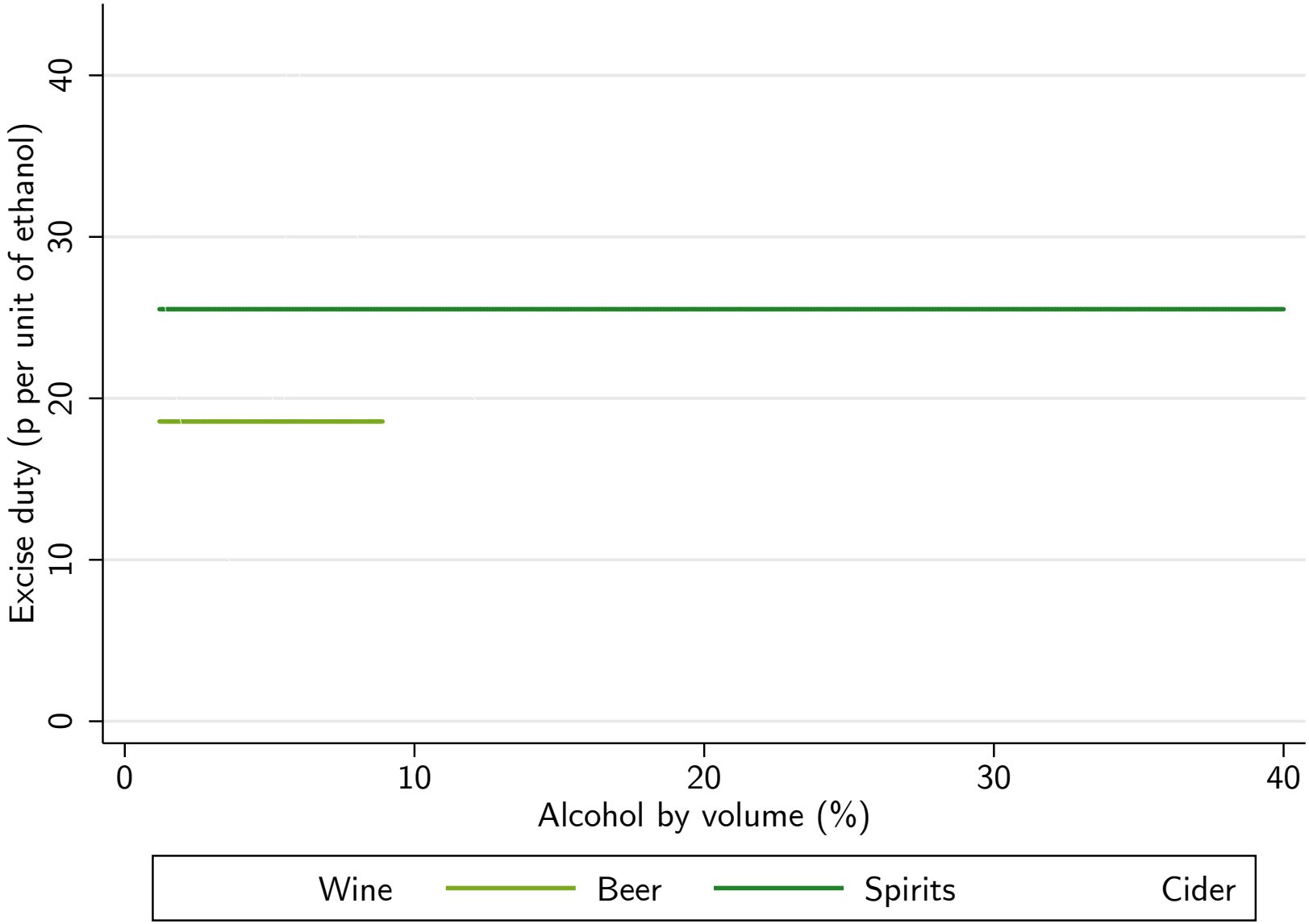
Price elasticities

- Model generates product level price elasticities ...
  - e.g. if price of 0.7l bottle of vodka increases by 1% how much demand will fall and how will demand change for a 0.7l bottle of gin
- ... that vary across households
- We find heavy drinkers' willingness to switch away from a product in response to a price rise is similar to lighter drinkers
- But they are much more likely to switch to alternative alcohol products
- As a result the overall ethanol price elasticity is -2.1 for the lightest drinkers and just -1.0 for heaviest group

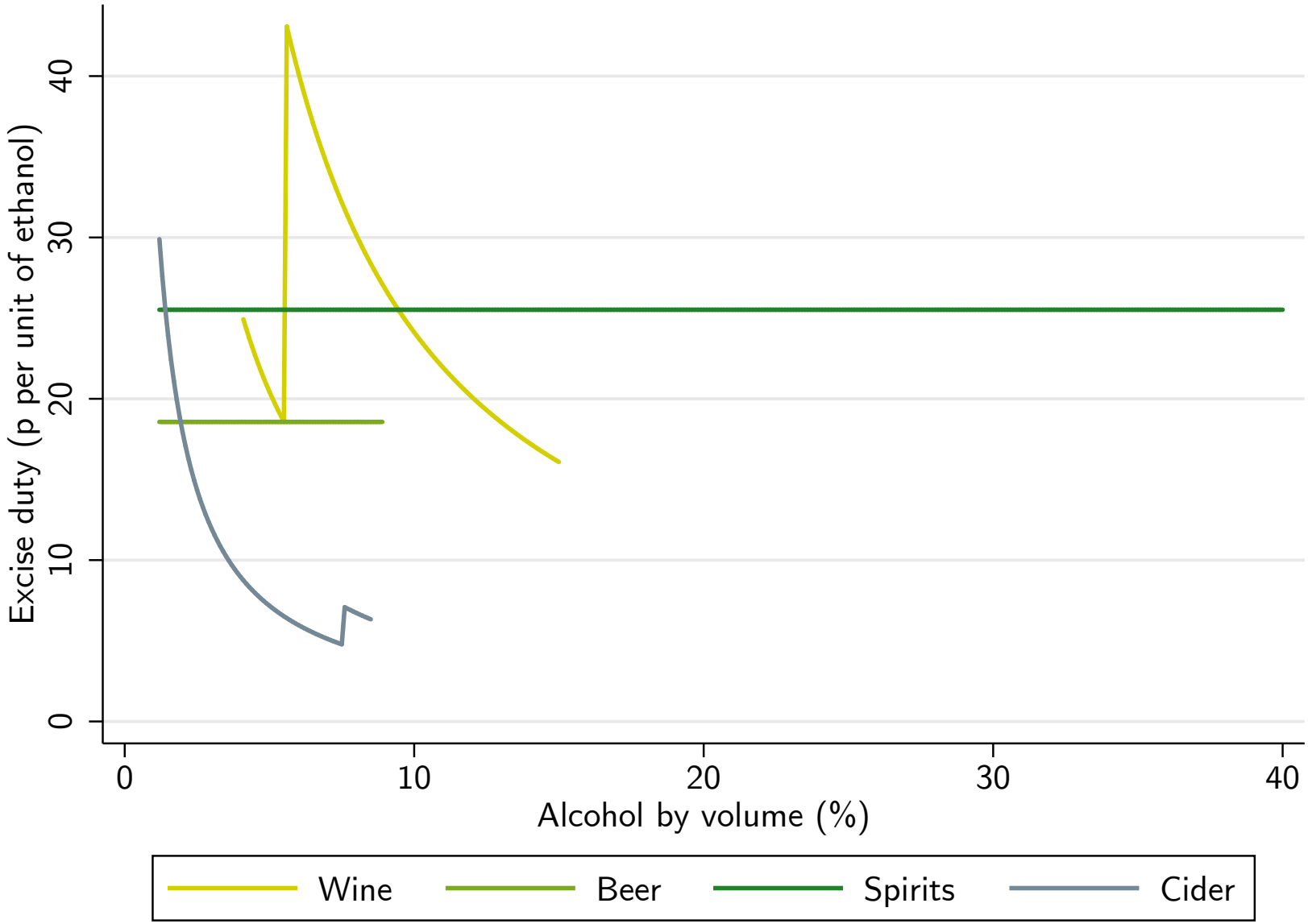
Computing alcohol tax rates

- We combine estimates of alcohol choice behaviour with evidence on how these choices map into social costs
- Exact quantitative results depend on how concentrated social costs are among heavy drinkers
- Qualitative results hold across broad range of calibrations

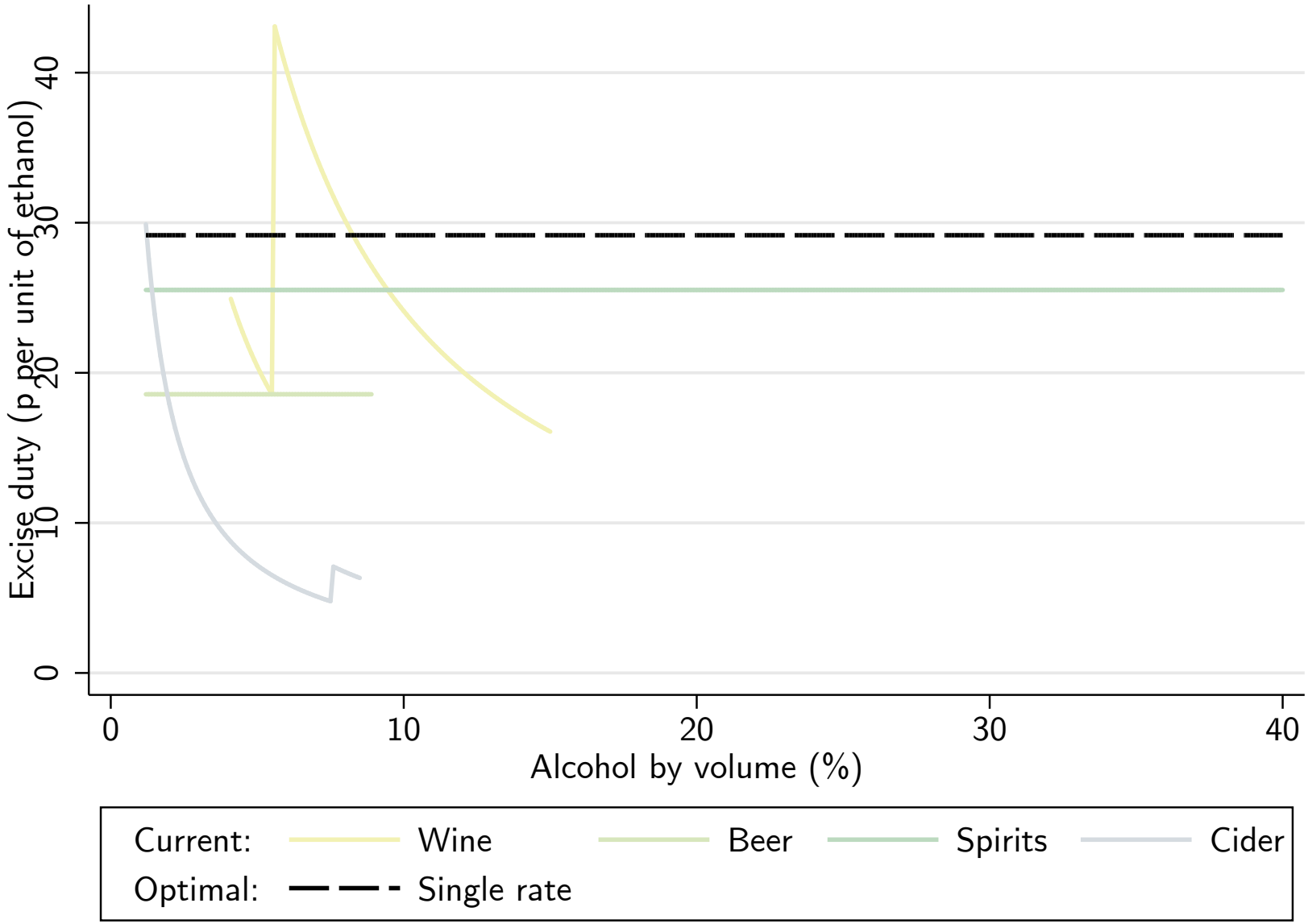
Current UK system



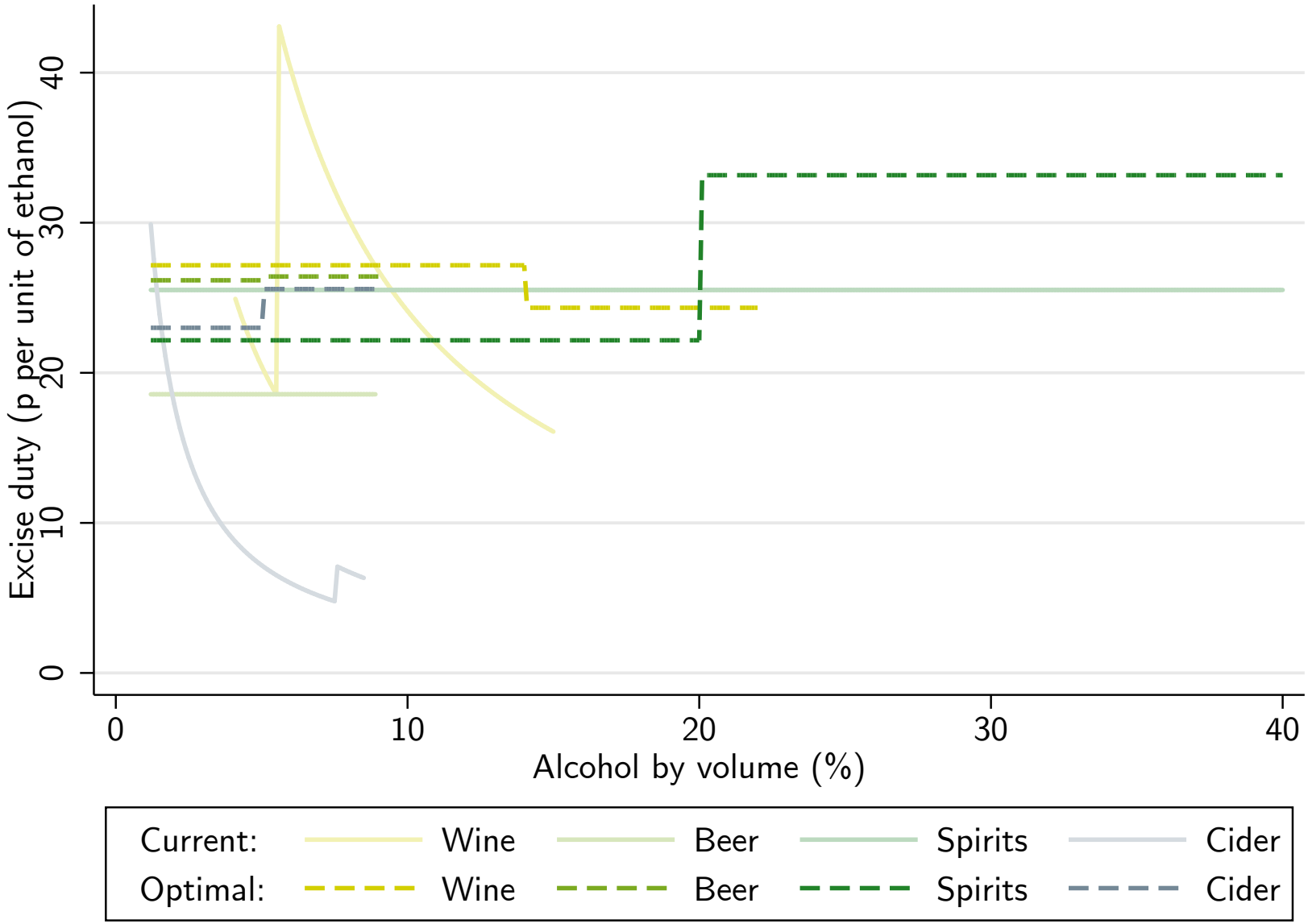
Current UK system



Optimal single rate



Optimal multi rate



Summary

- In this work we consider how to design effective indirect taxes
- It is important to capture how different people switch across products in response to price changes
- We show how UK tax system could be redesigned to substantially improve outcomes

- This project ties into broader agenda in which we also study self control problems, advertising, sugar policy, role played by industry ...