



Institute for
Fiscal Studies

Corporate taxes and intellectual property: Simulating the effect of Patent Boxes

Rachel Griffith, Helen Miller and Martin O'Connell

Patent Box

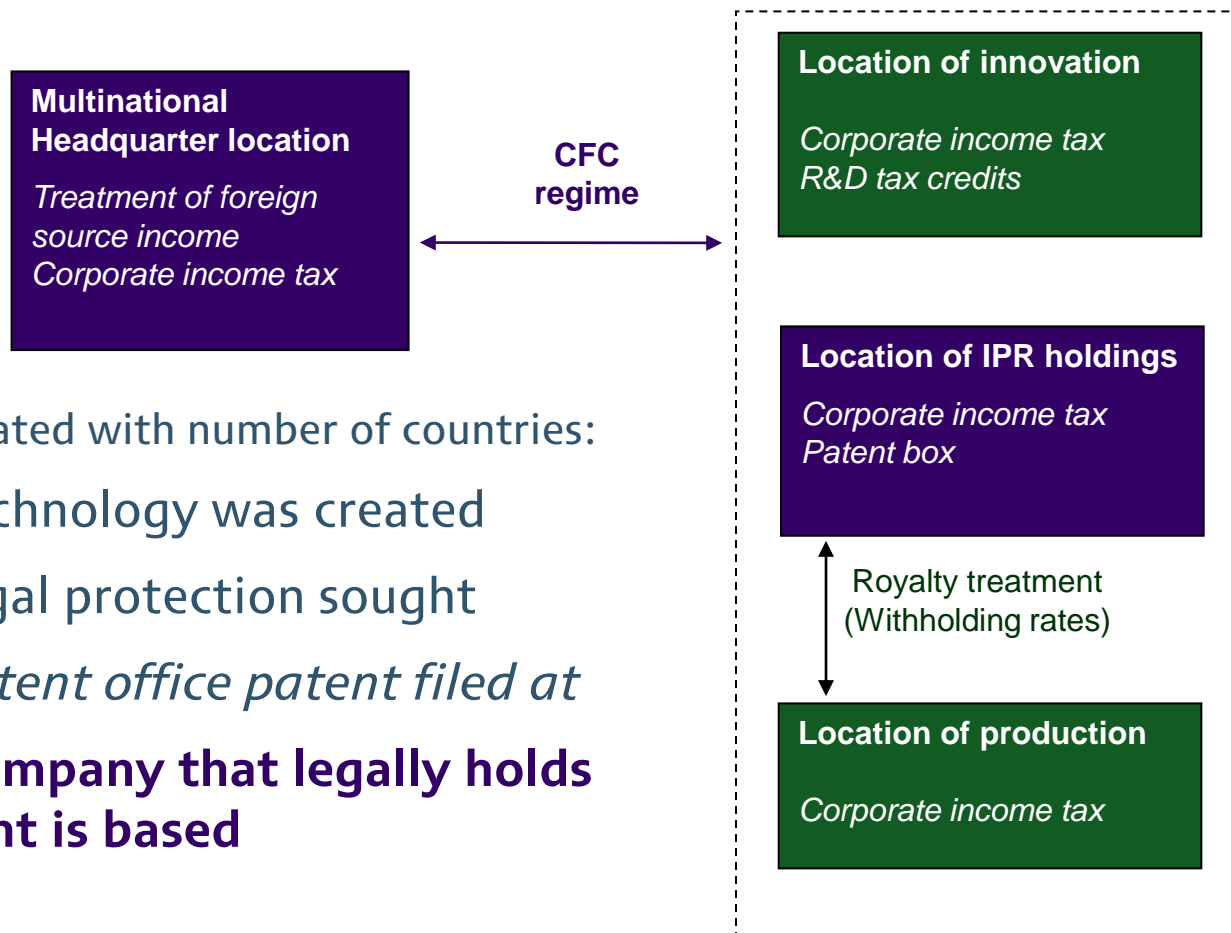


- Due to be introduced in the UK in 2013 at a rate of 10%
- Consultation underway on implementation details
- Already in place in other countries (Benelux and Spain)
 - 2007: Belgium 6.8%;
 - 2007: Netherlands 10% (Innovation box at 5% from 2010);
 - 2008: Luxembourg 5.9%

UK Patent Box

- Broad range of issues
 - including is it a sensible policy/how will it affect real activity/how to implement
 - Part of a wider policy debate on how to tax intellectual property
- How do corporate taxes affect where firms hold patent income?
 - The income derived from intellectual property is increasingly mobile
 - CFC rules to mitigate income moving to low tax jurisdictions
 - Patent Boxes in other countries + UK will become a more attractive location

Location and taxes



Patents associated with number of countries:

- where technology was created
- where legal protection sought
- *which patent office patent filed at*
- **where company that legally holds the patent is based**

Corporate taxes and the location of intellectual property - Griffith, Miller and O'Connell (2010)

- Estimate the responsiveness of European multinationals to corporate taxes
 - Statutory corporate tax
 - Interactions between jurisdictions – CFC regime
(roughly) apply when:
 - a great enough proportion of the subsidiaries income arises from ‘passive sources’
 - the subsidiary is located in a country deemed to be a low tax country

Corporate taxes and the location of intellectual property - Griffith, Miller and O'Connell (2010)

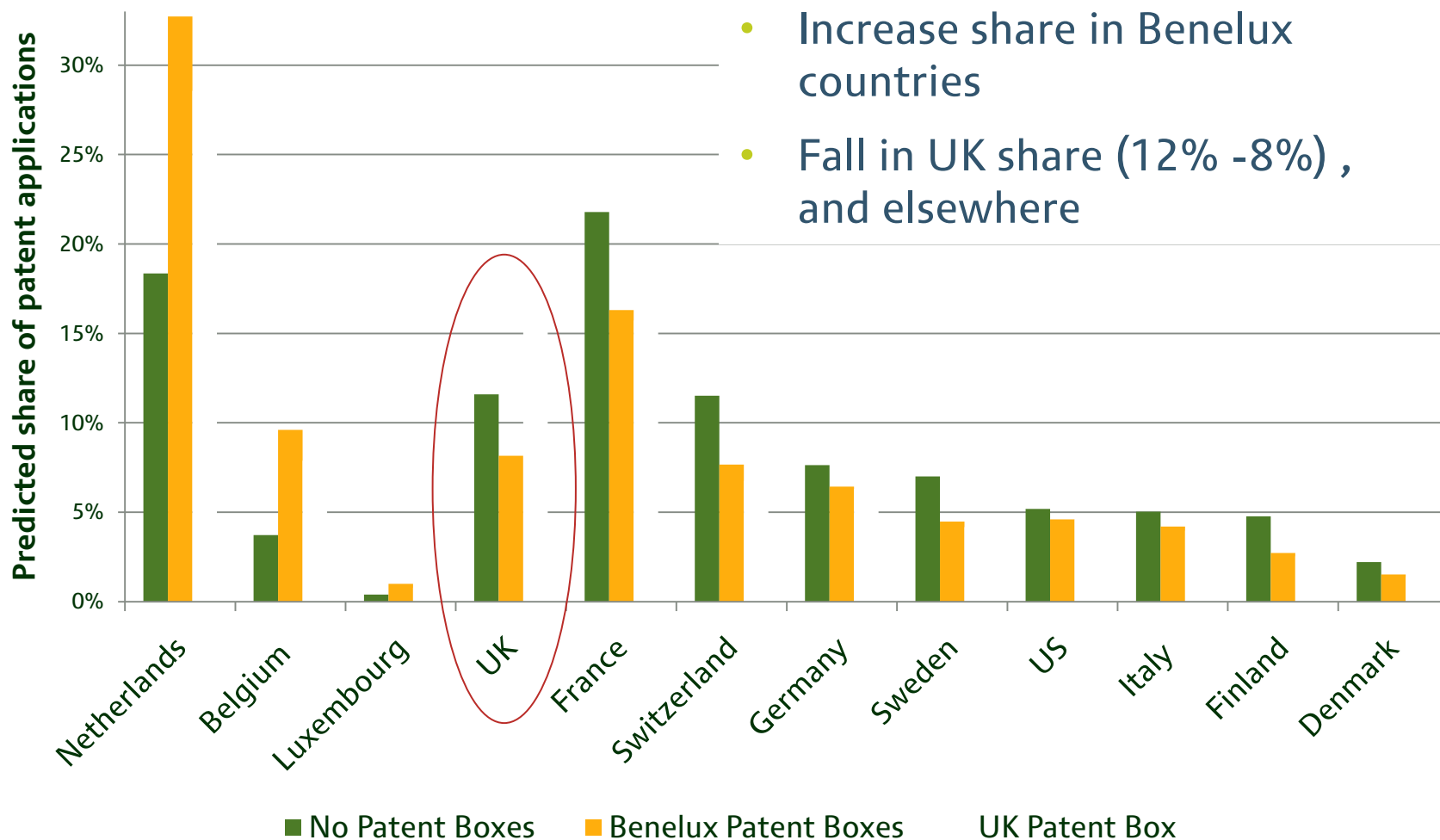
- Estimate the responsiveness of European multinationals to corporate taxes
 - Statutory corporate tax
 - Interactions between jurisdictions – CFC regime
- Econometric model that:
 - Controls for potentially confounding factors
 - Allow firms to have heterogeneous responses to taxes
- Simulate the effect of Patent Box on the location of patents
 - under different assumptions about CFC rules
- Consider the effects on government revenue

Firms respond to taxes

- If a country lowers its tax rate, firms are more likely to locate their patents in that location
 - Large variation across patents
- For a 10% fall in the UK tax rate, the share of patents held in the UK would increase by 12%
 - This varies by country from 3% to 16%
- Change in other countries tax rates affect the share of patents held in the UK
 - differ between pairs of countries
- Simulate the effect of Patent Boxes

The effect of Patent Boxes on location of patents

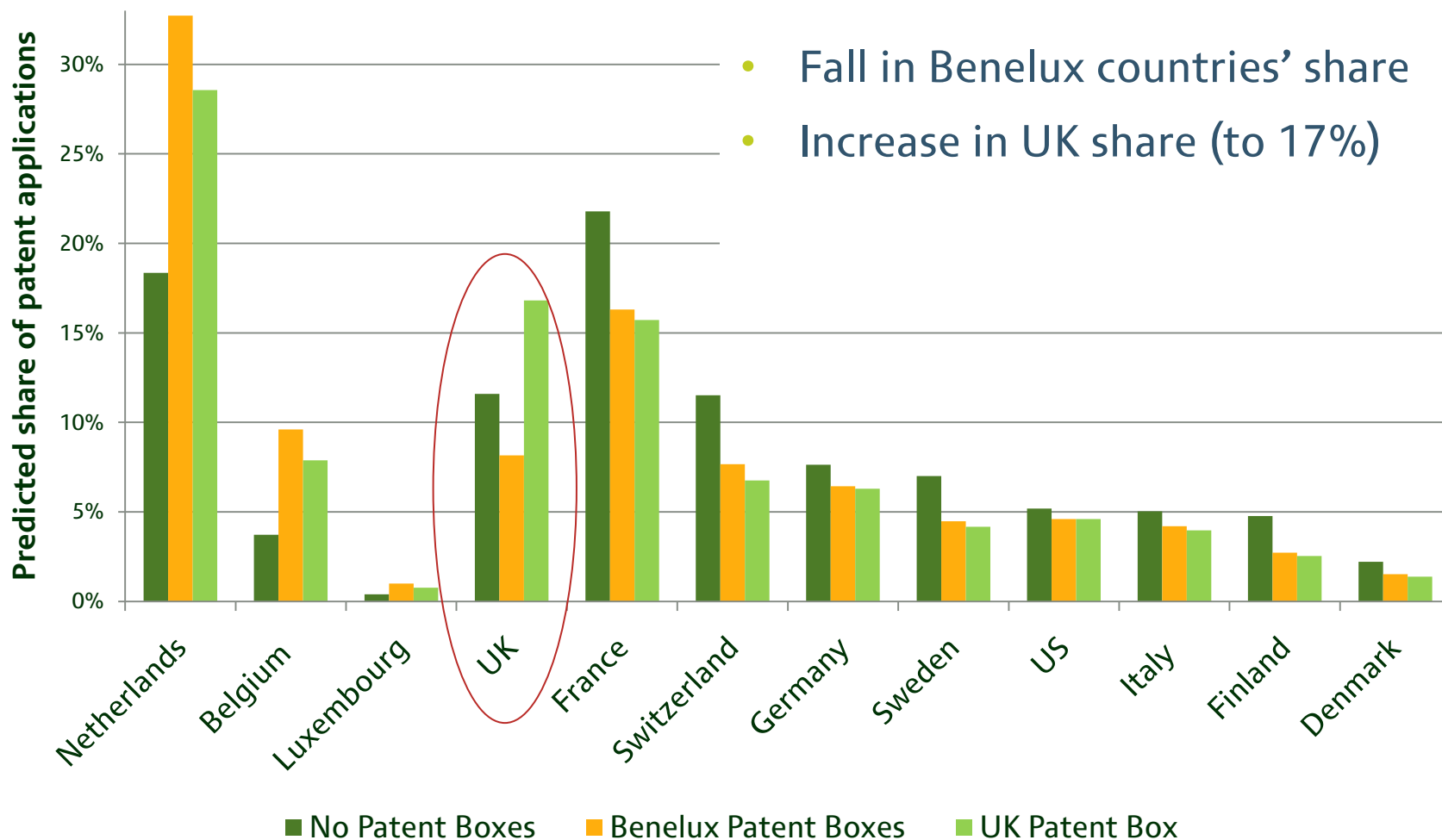
Benelux introductions



- Increase share in Benelux countries
- Fall in UK share (12% -8%) , and elsewhere

The effect of Patent Boxes on location of patents

UK introduction



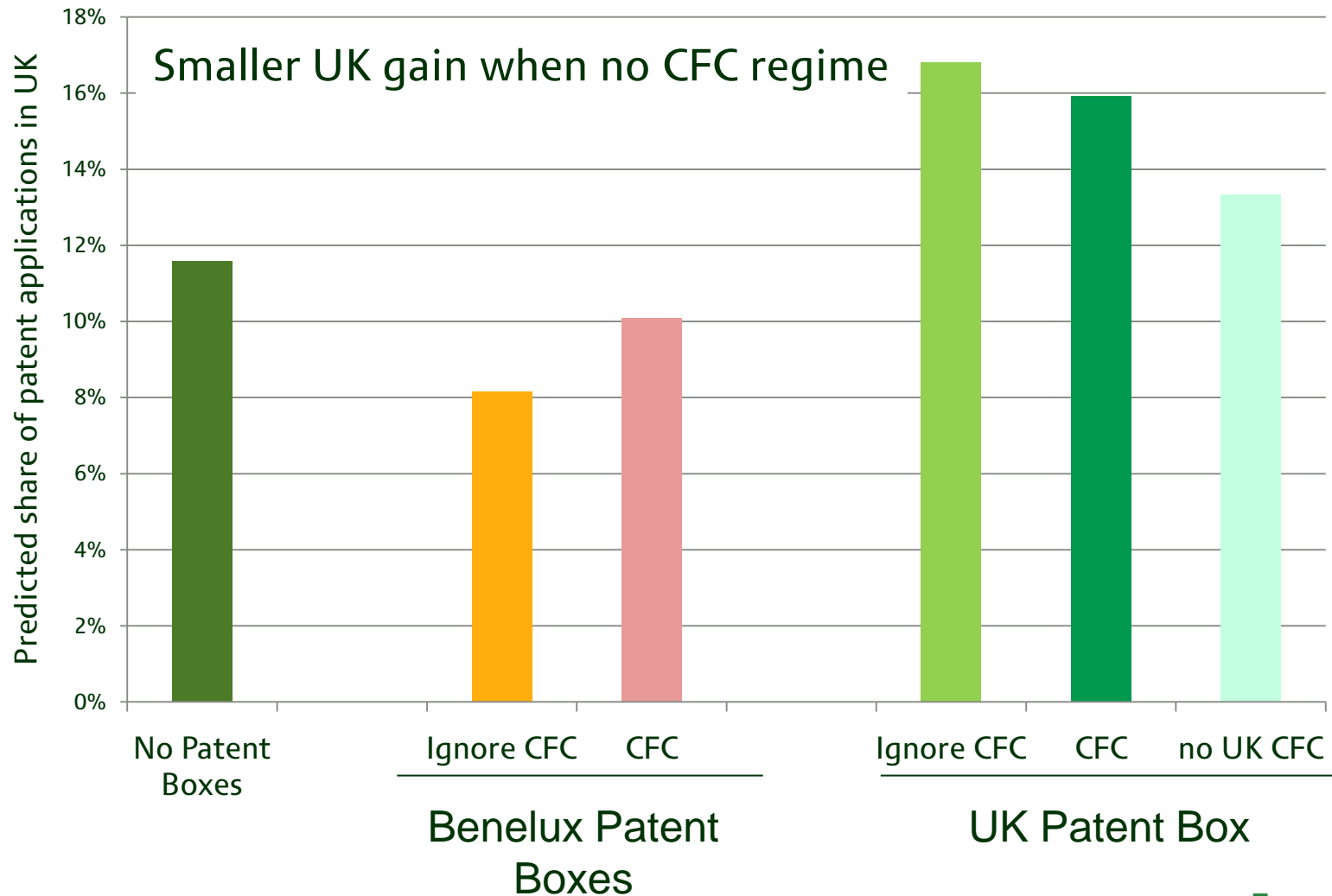
Interactions between Patent Boxes and CFC rules

- **Patent Box has implications for the CFC rules**
 - Other countries' regimes make it more likely that firms will seek to hold patent income offshore
 - A UK Patent Box would reduce such incentives, thereby reducing the burden on the CFC rules
- Government has noted its desire to deter, rather than punish, exit of intellectual property from the UK;
 - *“rather than tightening exit rules,..., the Government would prefer to encourage businesses to retain and exploit IP in the UK through the introduction of the Patent Box”* (HM Treasury, Nov 2010)
- **CFC rules can also affect incentives of a Patent Box**

Interactions between Patent Boxes and CFC rules

- **Patent Box has implications for the CFC rules**
- **CFC rules can also affect incentives of a Patent Box**
 - CFC rules based on statutory corporate rates
 - Patent Box rates in Benelux make them ‘low tax’ for patent income
- **Interactions between Patent Boxes and CFC regimes**
 - How would firms’ responses differ if CFC regimes deemed Patent Box countries to be ‘low tax’?
 - What if the UK no longer operated the CFC regime for patent income?

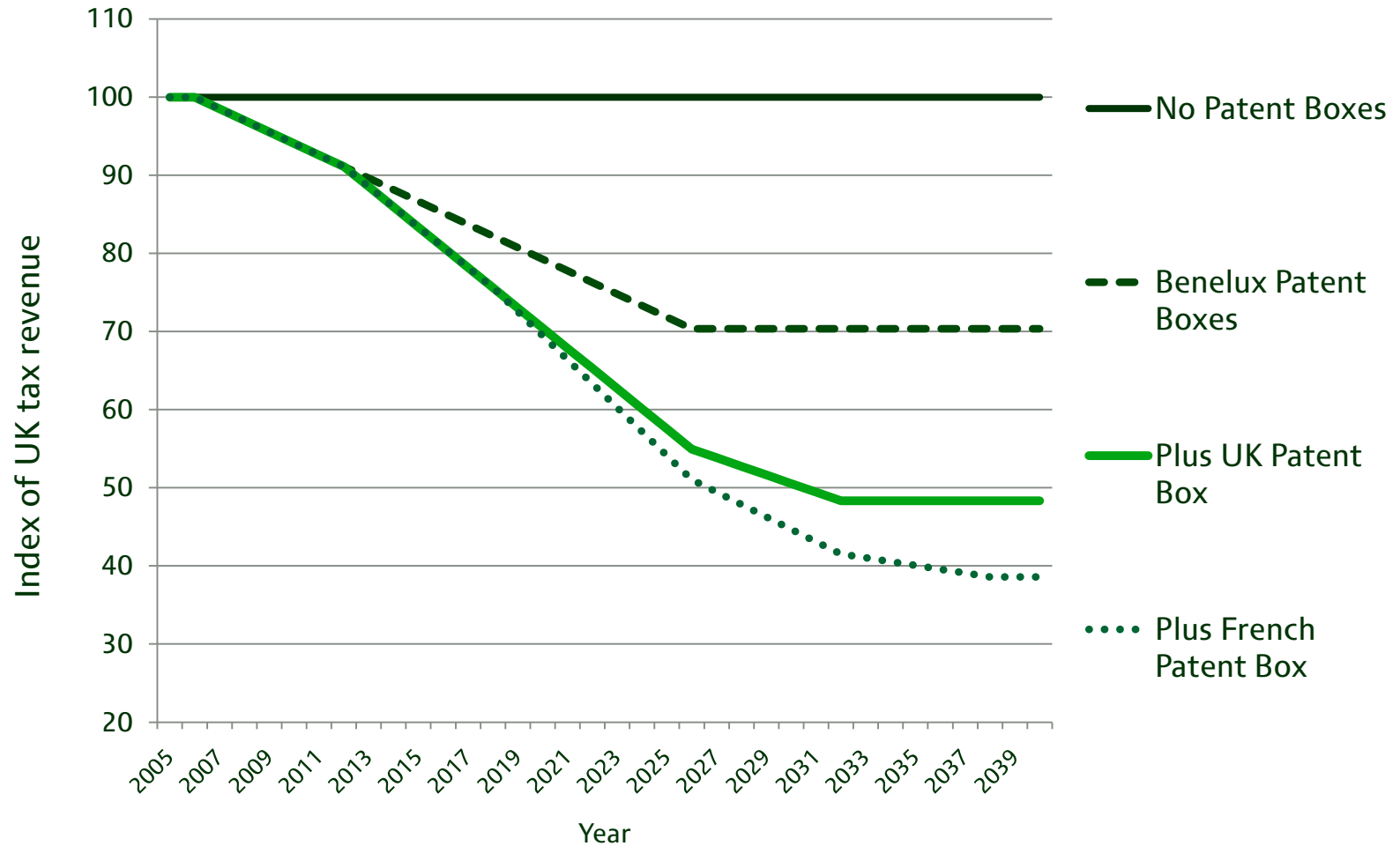
UK shares; no UK CFC regime



Tax revenues

- How will Patent Boxes affect the amount of revenue the UK receives from patents?
 - Lower tax rate (levied on each £)
 - Change in amount of patent income held in the UK
- Official estimate: £1.1 billion in steady state
- We find (back of the envelope):
 - Benelux Patent Boxes reduce UK revenue
 - A UK Patent Box would reduce revenue further; the gain in activity would be insufficient to outweigh the lower tax rate

Tax revenues



It will take time for revenue to fall to its new steady state
(income from the current stock of patents is taxed at the statutory rate)

Tax revenues

- A more complete behavioural response would:
 - Account for other countries changing tax rates
 - Revenue would fall further if other countries followed suit
 - *Change in level of patenting and other activities*
 - Potential to reduce revenue impact
 - OBR forecast seems to suggest revenue will fall as a result of Patent Box
- Taken together, revenue loss seems likely

Summary

- The location of firms' patent holdings respond to taxes
- The Benelux countries' Patent Box will lead to a reduction in the share of patents held in the UK
- The UK share will increase following a UK Patent Box (more than offsetting the previous loss)
- UK Patent Box likely to lead to a revenue loss (even after any behavioural responses)

In addition to the revenue loss

- Large deadweight cost
 - Will subsidise activity that would have occurred in the absence of the policy
- Complex administration needed to operate and enforce
- Benefits accrue to a small number of firms
 - Patent holdings are highly skewed

Other benefits to outweigh the revenue loss?

- Benefits arise from research
 - Patent Box targets income, not underlying research
 - Not clear that a Patent Box provides strong incentives to create additional patentable technologies
- Firms can and do separate income from real activity
 - Under EU legislation, Patent Box rules will be unable to specify that activity take place in the UK
 - Other (tax funded) services attract firms
- Commercialisation and development
 - Increased incentives to maximise income from patents
 - No justification for Government to target these kinds of activities
- Tax competition could erode benefits