THE ANATOMY OF THE VAT

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Views should not be attributed to the IMF

- Presentation is about some emerging tools for thinking about VAT performance
  - Various decompositions

- Essentially descriptive
  - Anatomy—diagnosis, at best—not medicine

(See "The Anatomy of the VAT", forthcoming in *National Tax Journal*

Context

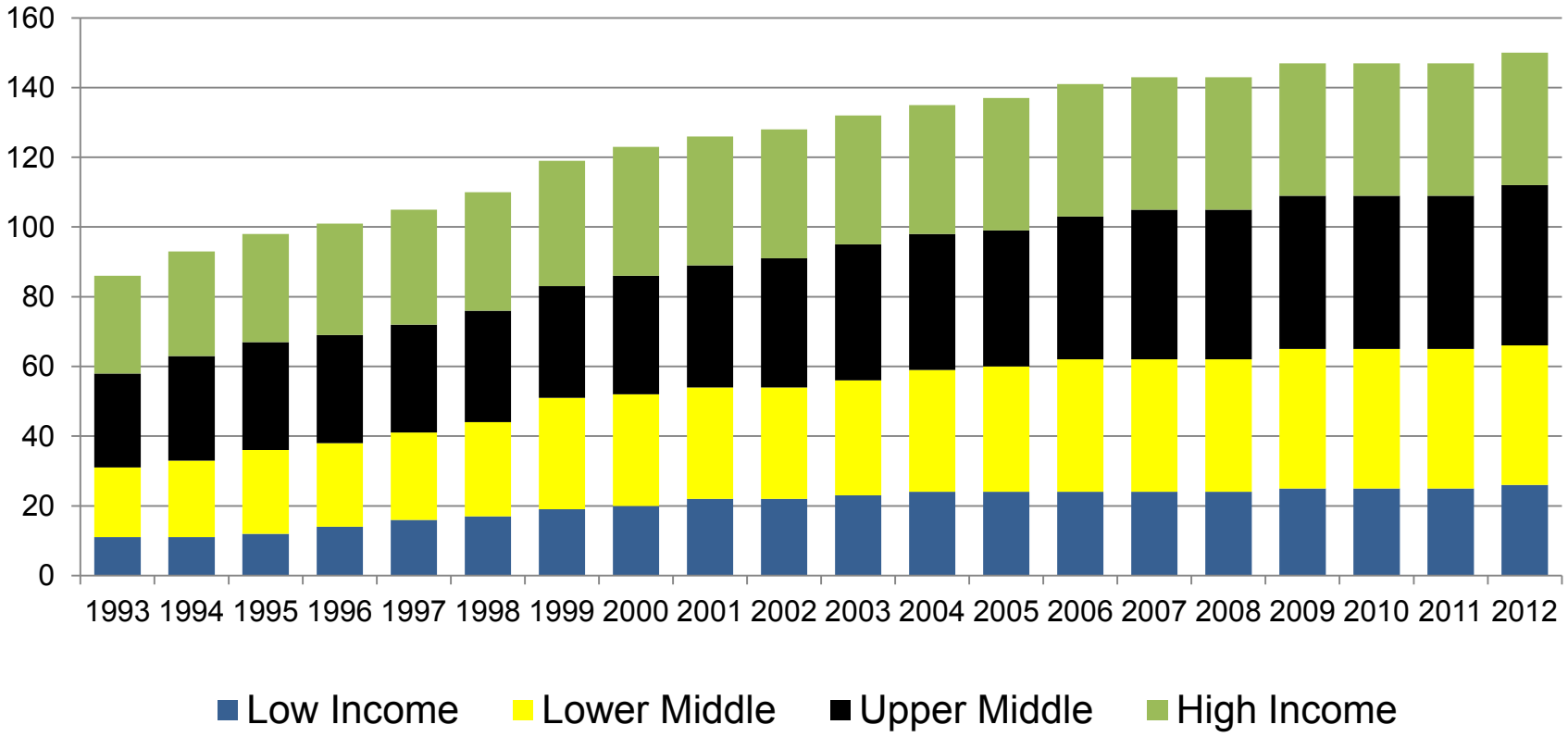
- Fiscal consolidation needs have led to increased focus on VAT:
  - In EU, only one member state increased standard rate 2006-2008; in next two years, 13 (of 27) did
  - Japan

Outline

- Understanding trends in VAT revenues
- Understanding C-efficiency
- Concluding

Data:

- Universe of countries with a VAT

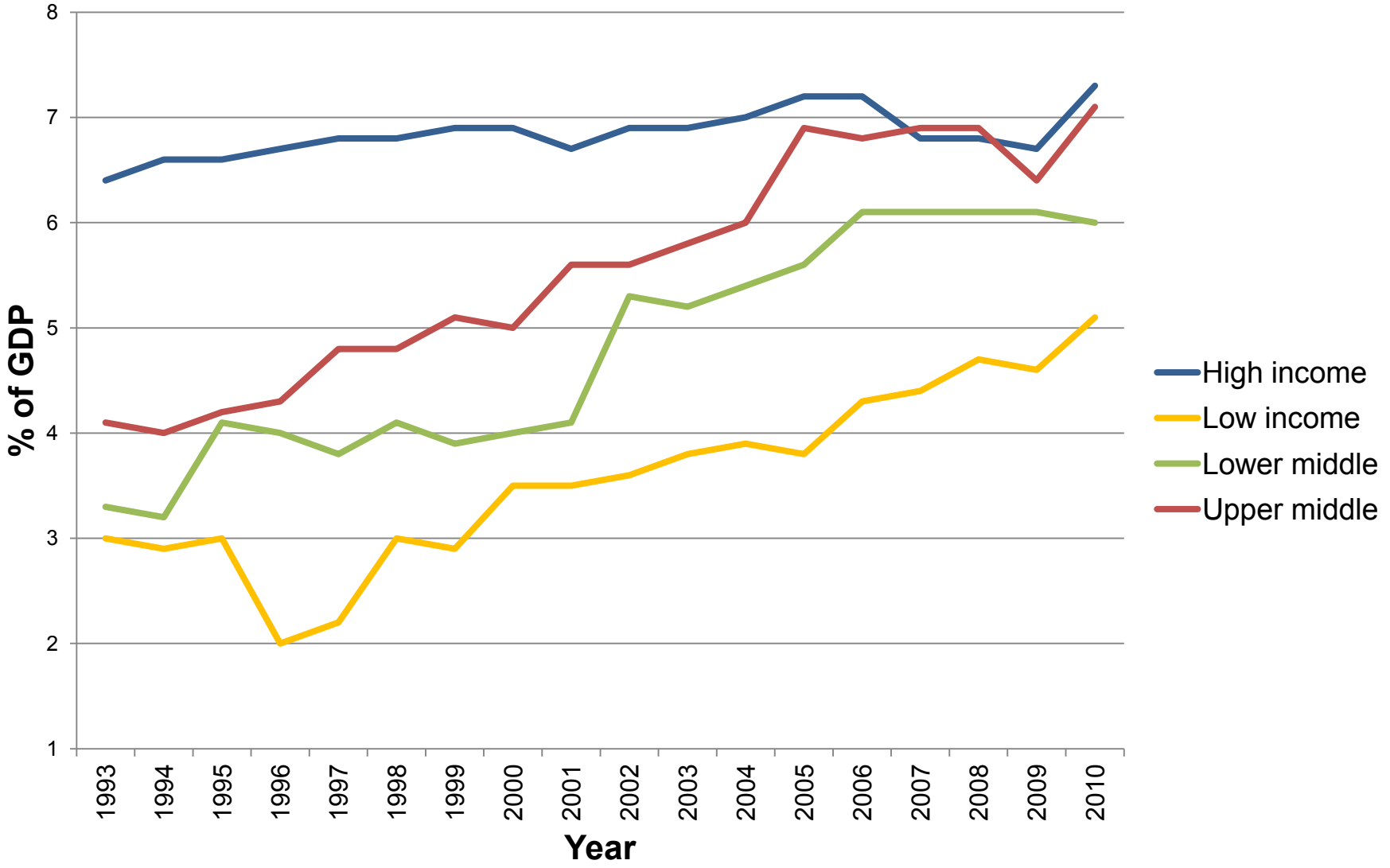


- Income groups: By WB category at end period
- Regional groups: By IMF area department

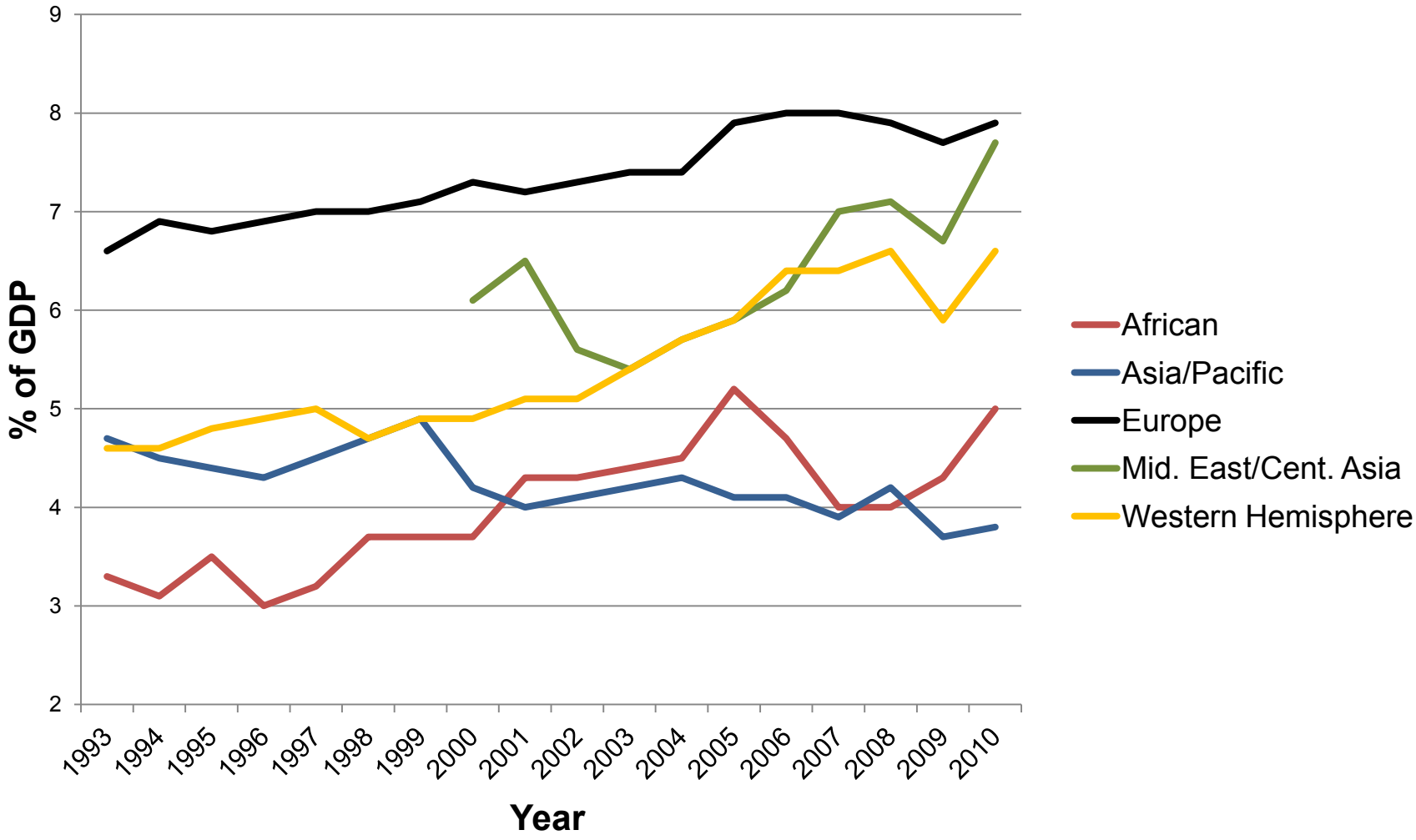
UNDERSTANDING TRENDS IN VAT REVENUE

Start with most basic indicator of VAT performance—the revenue it raises:

VAT revenue by income group (in % GDP)



VAT Revenue by Region in (% GDP)

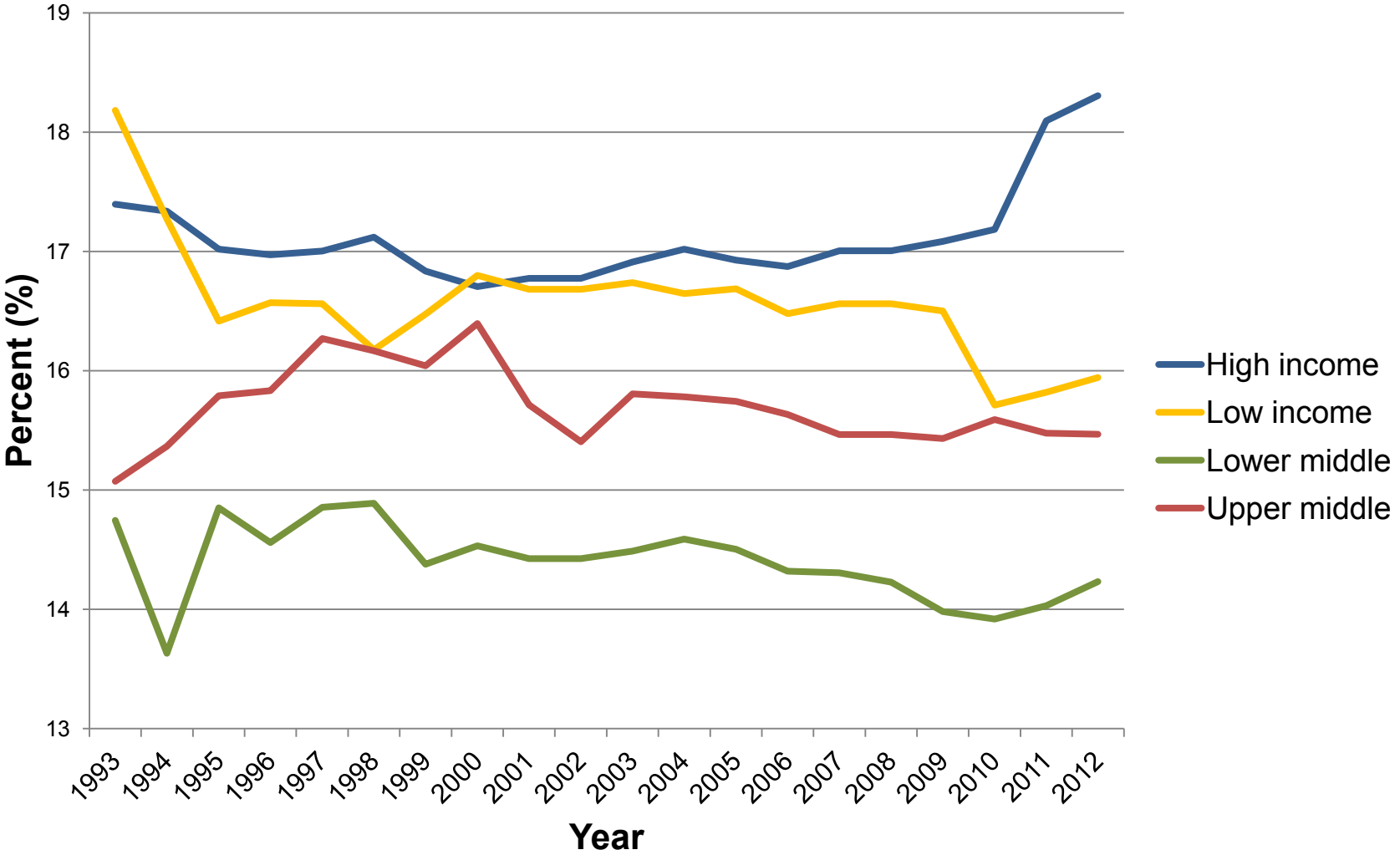


- What was driving this?

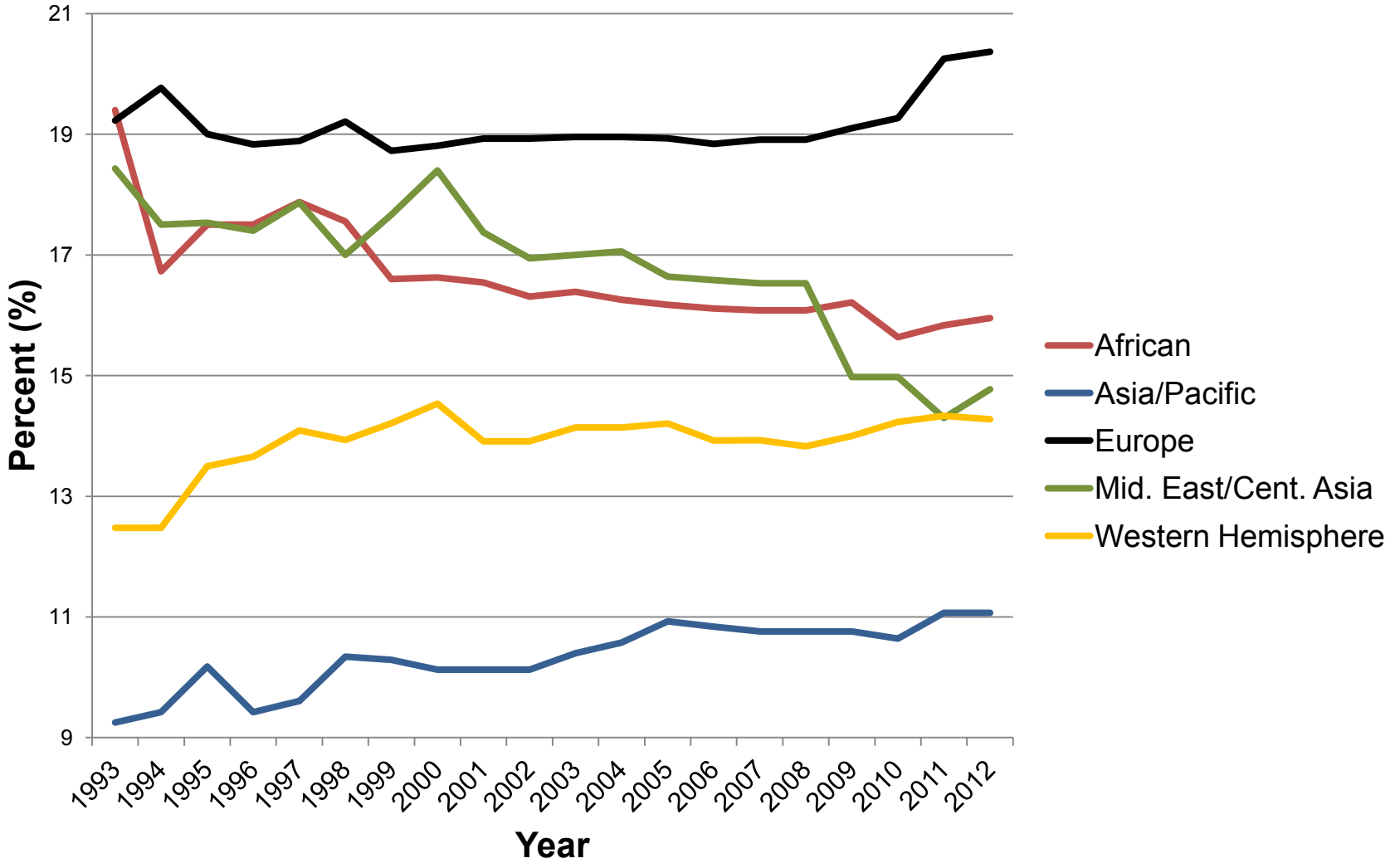
  Most obvious candidate: An increase in standard rates of VAT?

  But….

Average standard VAT rate by Income Group



…and by region



To dig deeper, decompose VAT revenue as

$$\frac{V}{Y} = \tau_s E^c \left(\frac{C}{Y} \right)$$

where V is VAT revenue, Y is GDP, τ_S is the standard VAT rate, C is consumption, and

$$E^C \equiv \frac{V}{\tau_s C}$$

is 'C-efficiency' (Ebrill et al (2001); OECD (2008) calls it the 'VAT revenue ratio')

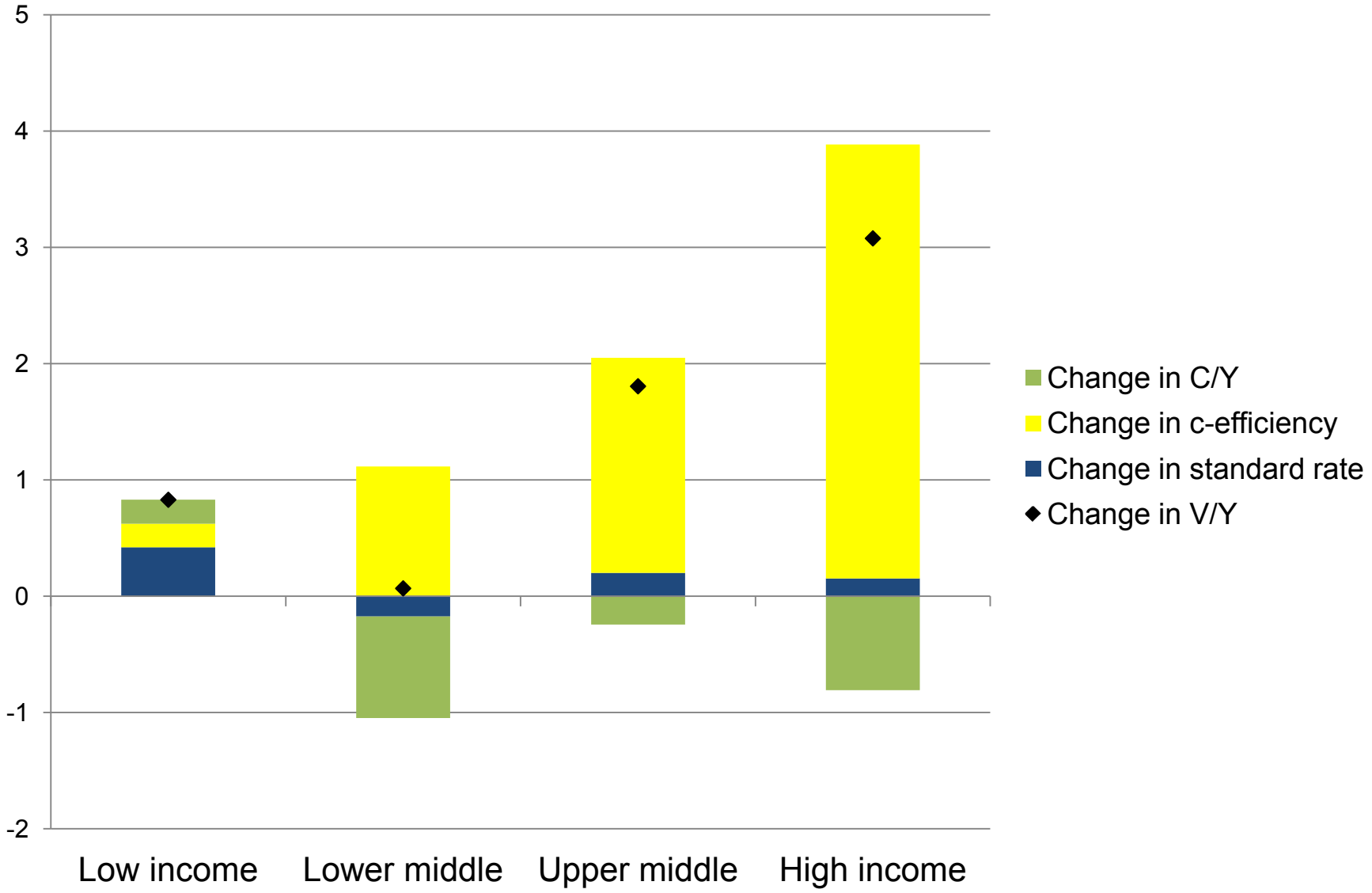
—discussed more later

- So proportional change in VAT revenue is approximately sum of proportional changes in
  - Standard rate
  - C-efficiency
  - Average propensity to consume

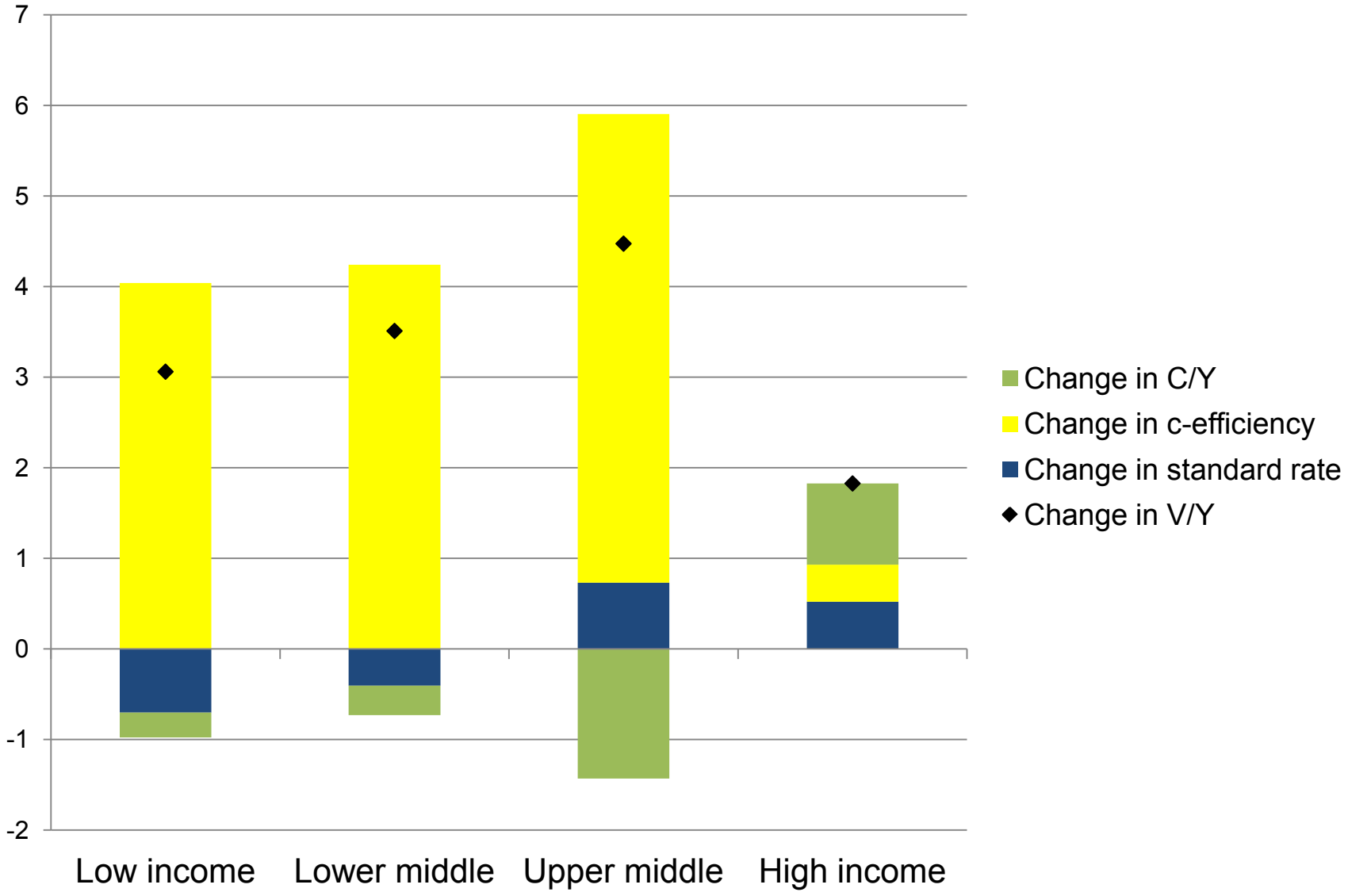
- These are not independent:
  - E.g. Higher standard rate associated with:
    - lower consumption (Alm and Elm-Gananiy, 2013)
    - Lower C-efficiency (in this data set)

- Nonetheless, can be informative….

Decomposing changes in VAT Revenue, 1993-2002

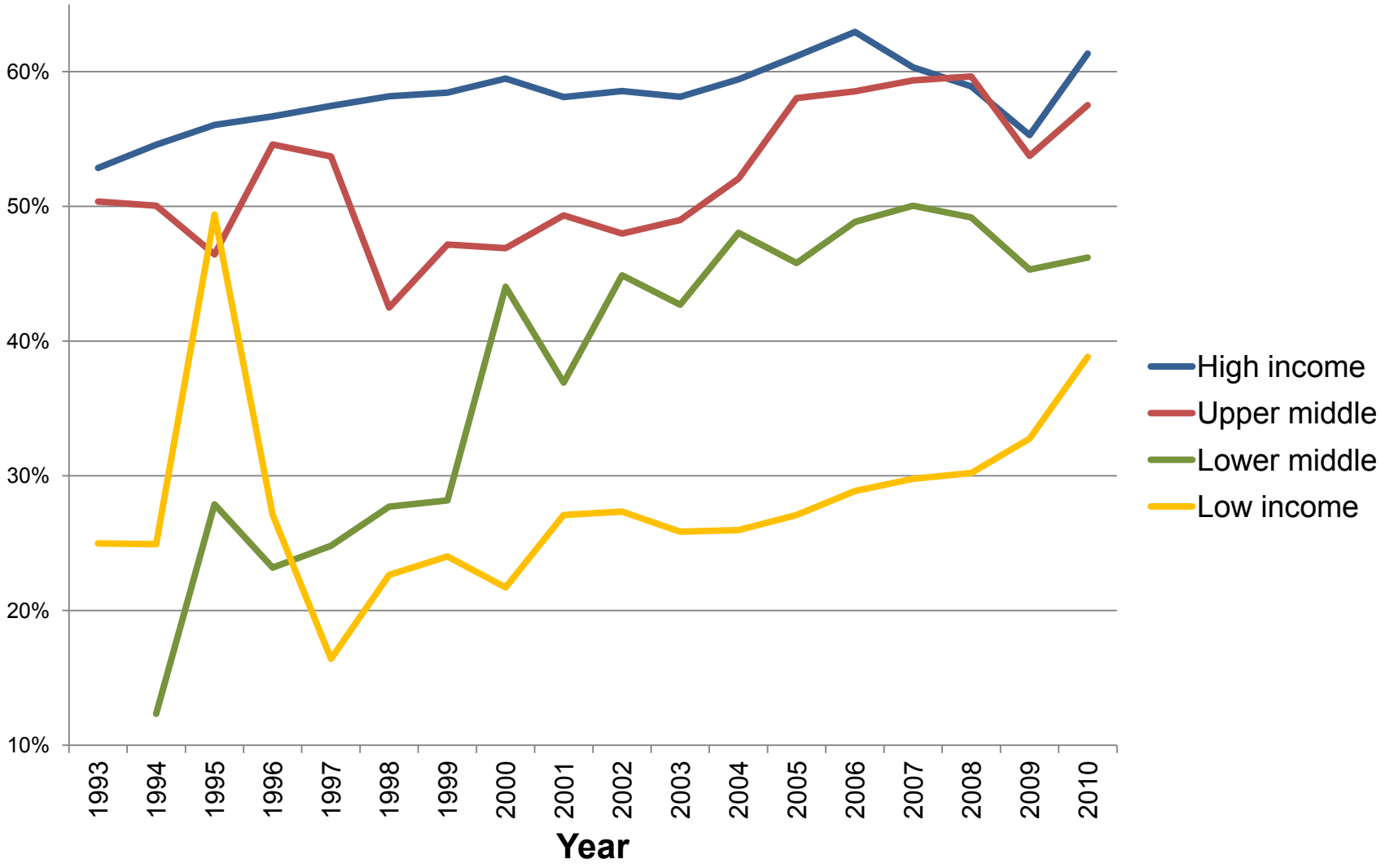


Decomposing Changes in VAT Revenue, 2003-2010



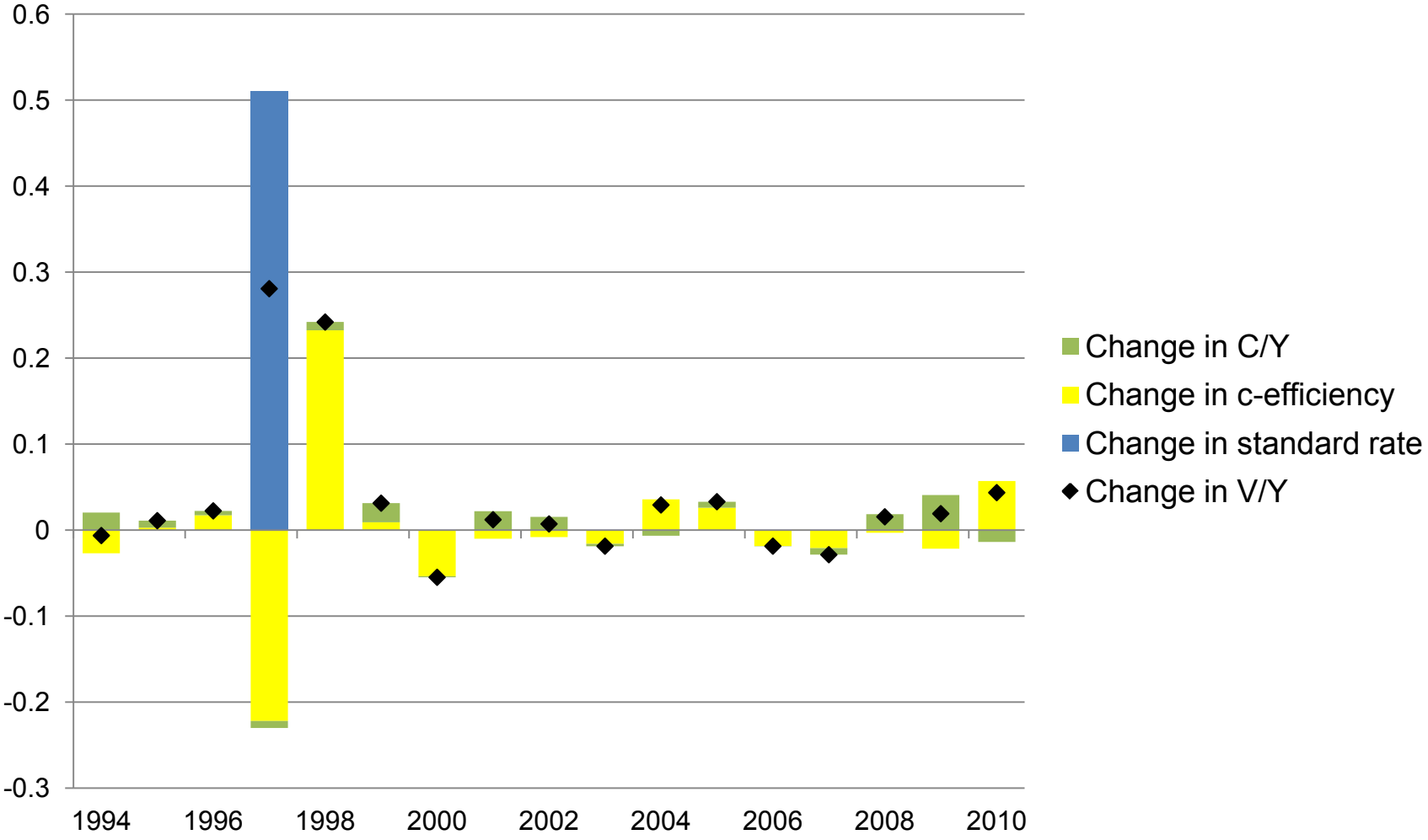
So C-efficiency plays a—maybe ‘the’—key role in explaining VAT revenue performance

C-efficiency by Income Group

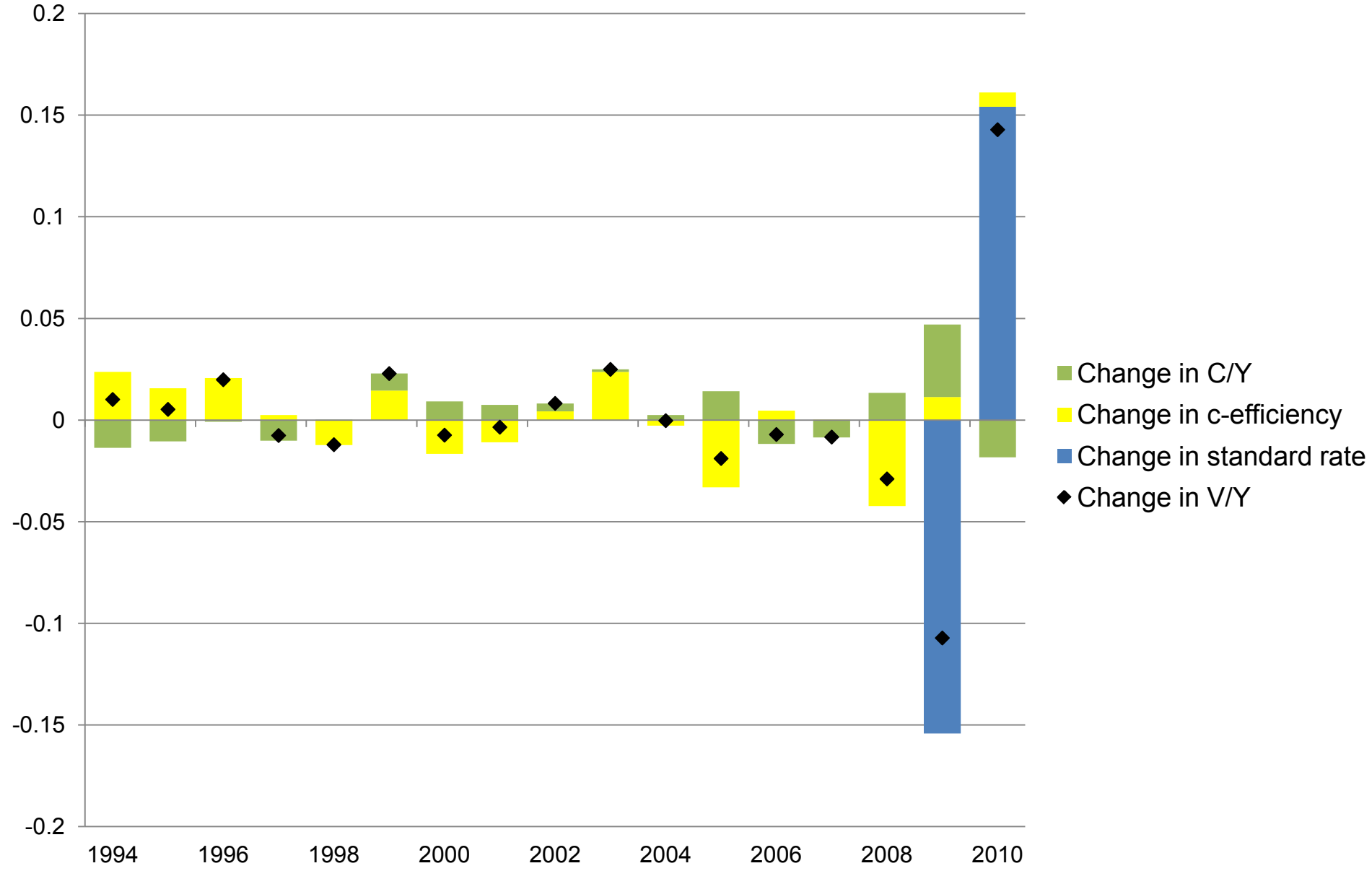


Can do same by country

Japan:



United Kingdom



But what drives C-efficiency?

UNDERSTANDING C-EFFICIENCY

Widely used as a summary indicator

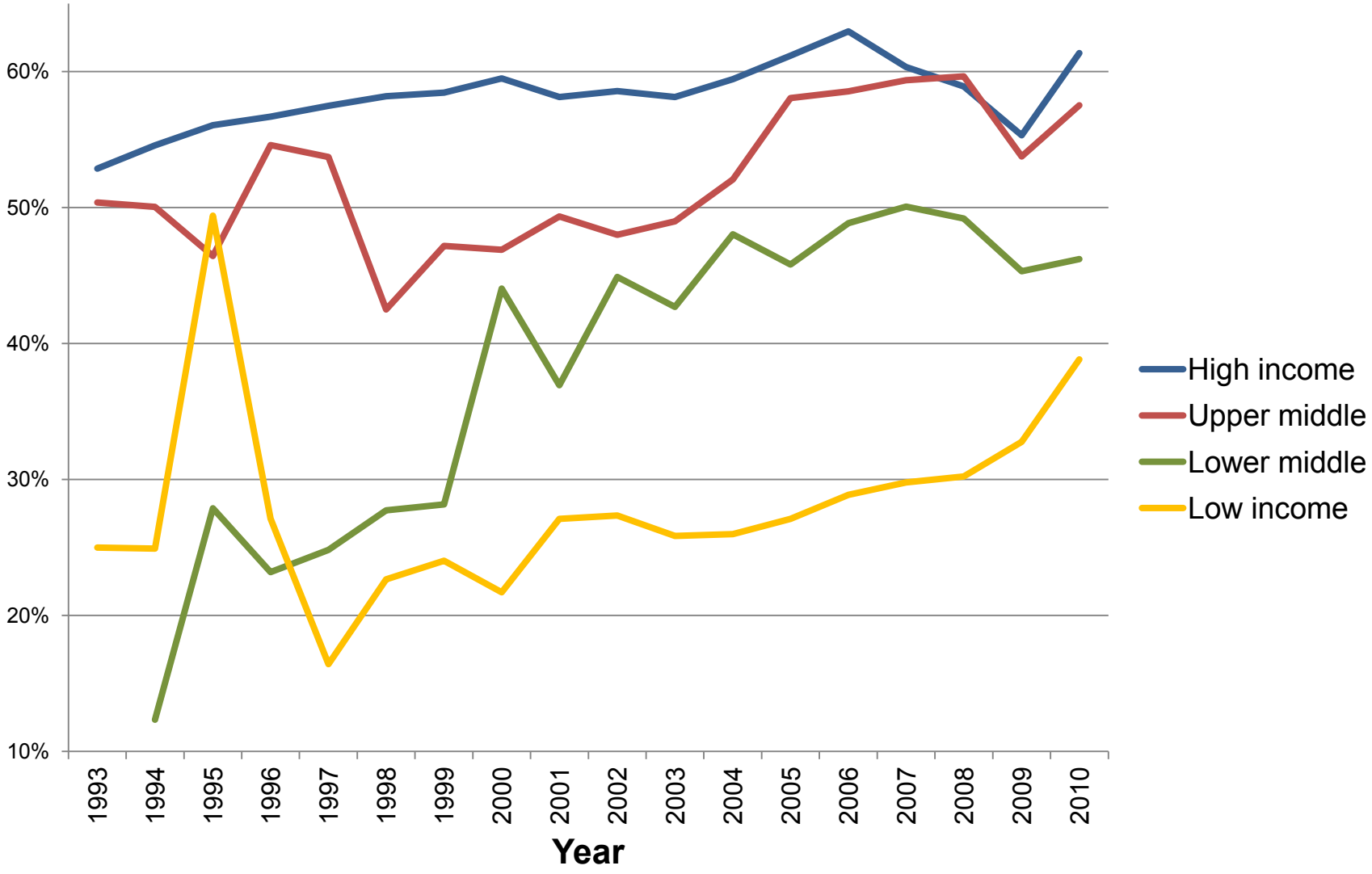
- Modest data requirements
- Easily communicated implications

  Suppose e.g. $E^C =$ 60% , and τ_S =10%. Then, ignoring behavioral effects:

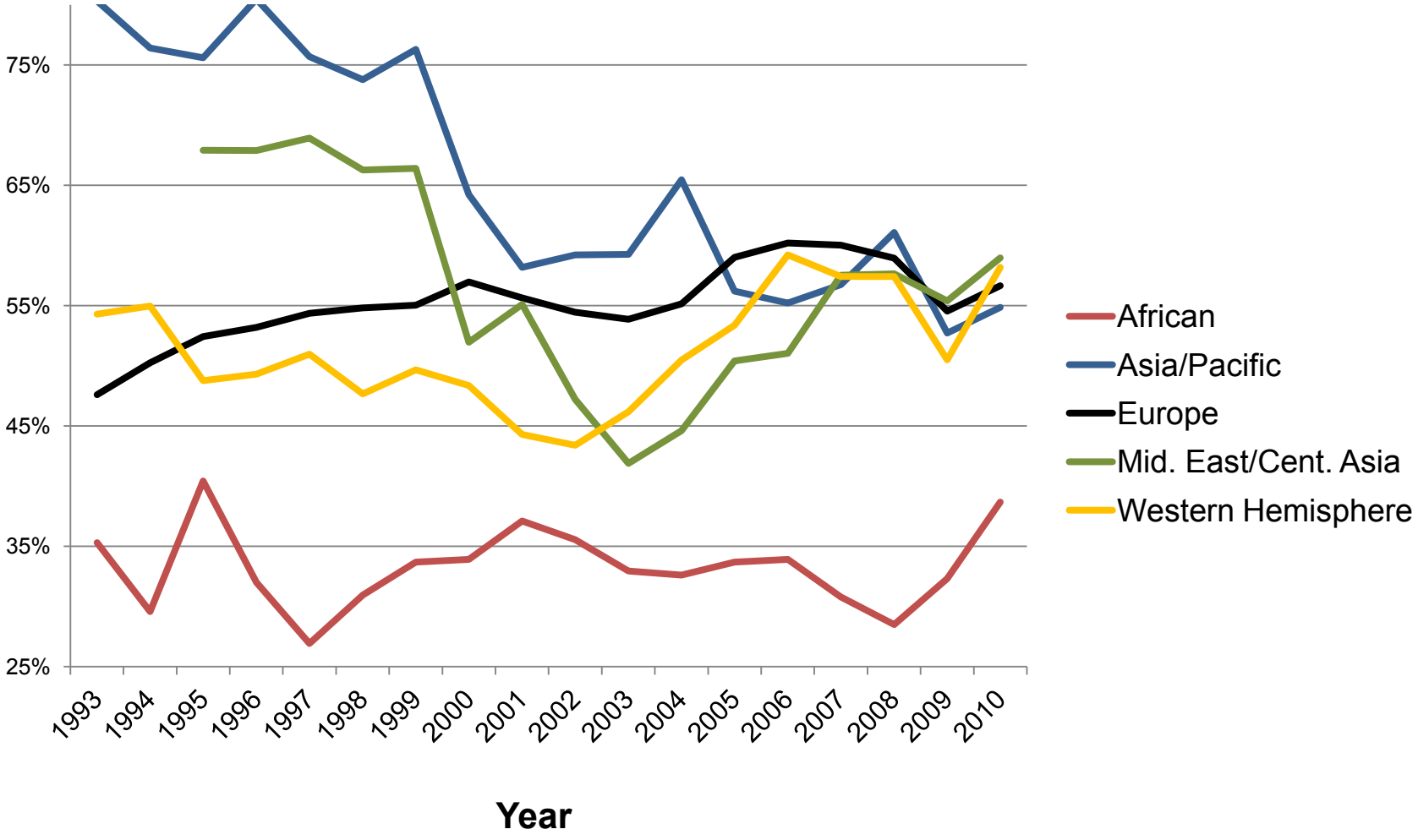
  – Extending standard rate to all C would increase revenue by two-thirds

  – Same revenue could be raised by 6% VAT on all C

C-efficiency by income group



C-efficiency by region



Conceptual issues

There is no deep welfare basis for C-efficiency

- Reforms that worsen the VAT can increase C-efficiency
  - E.g. Failure to refund exporters
  - Exemptions in mid-production chain

With perfect implementation and no exemptions:

- C-inefficiency is sum of welfare loss and cut in deadweight loss in applying τ_S to all C

- What if uniformity optimal?
  - Higher C-efficiency can still mean lower welfare
  - C-inefficiency would though measure deadweight loss from changes if redefined denominator to be revenue from single rate VAT yielding same welfare

Measurement issues

Usually easy to find numbers to calculate

$$E^C = \frac{V}{\tau_S C}$$

But care needed with both top (V) and bottom (C)

In numerator (V):

- VAT revenue collected from non-residents may be significant
  - One reason why C-efficiency tends to be high in small islands?
- VAT on some services remitted where supplier located
  - Notably financial services within EU (Luxembourg?)

In denominator (C):

- Should the reference base reflect normal/best/ideal practice?
  - E.g. for housing, 'ideal' might be taxation of residential rental values (including implicit), 'best' may be taxation of first sales
  - Mandatory exemptions in EU are 'normal' practice, but not 'best' to be found and arguably not 'ideal

- The biggest issue: Public consumption

  Much public production not at anything like market prices

  a. Pure public goods
  b. Subsidized provision of private goods

  'Final consumption of government' generally includes both valued at cost of production

  Would like to remove a, but often can't

Decomposing C-efficiency

- Denoting by V^* the revenue that would be raised if implementation of current system were perfect, write

$$\frac{V}{\tau_S C} = \left(\frac{V^*}{\tau_S C}\right)\left(\frac{V}{V^*}\right) = (1-P)(1-\Gamma)$$

where P is a 'policy gap' and Γ a 'compliance gap'

(Note asymmetry: policy gap assumes perfect compliance; compliance gap takes policy to be what it is)

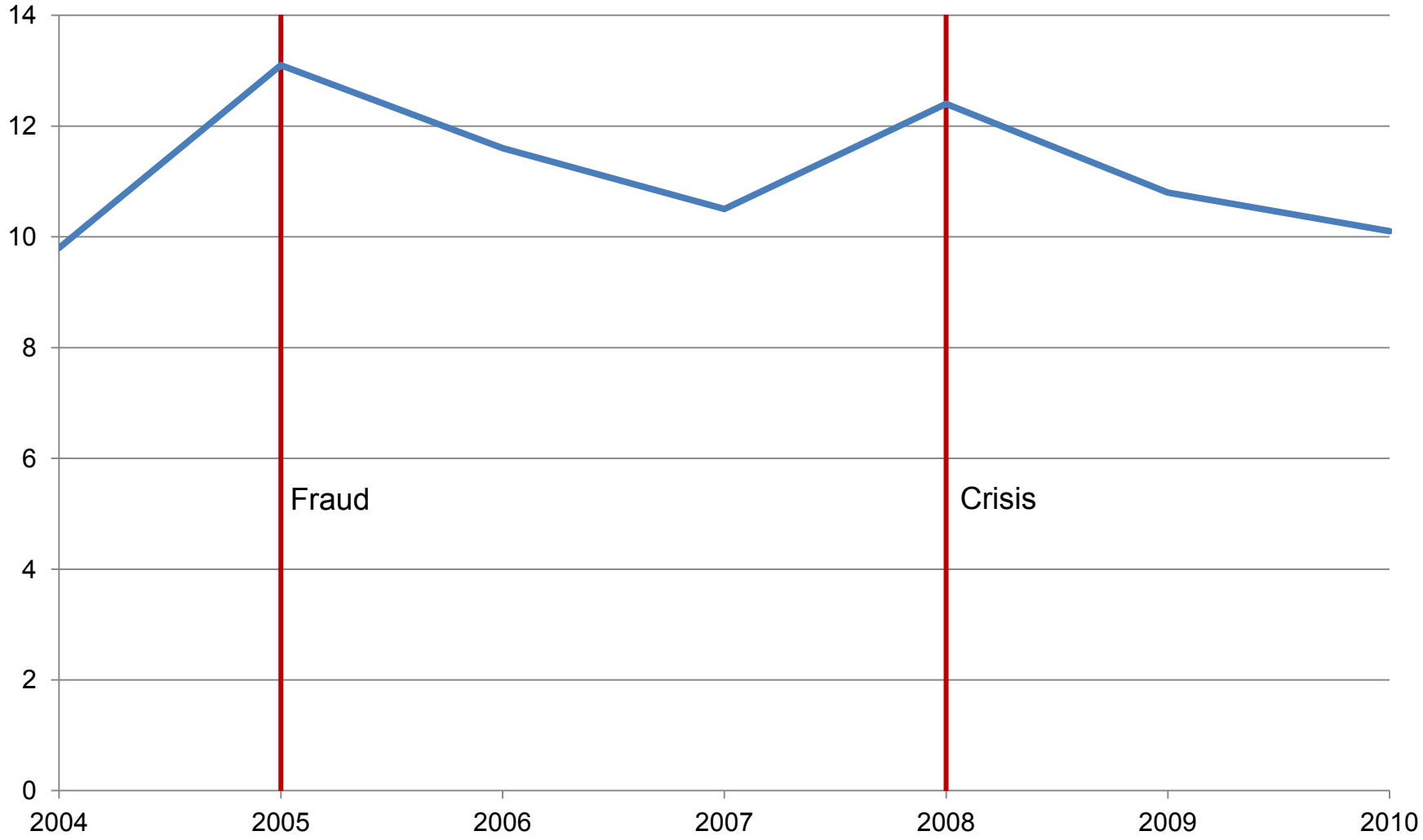
- Several ways to estimate:
  - ‘Top-down’–use national accounts aggregates, largely consumption-data based
  - ‘Bottom-up’—gross up operational information
  - ‘Sectoral’—use sources-uses tables, mimicking VAT
- Differing merits, including in capacity of pointing to remedial actions
- Choice largely driven by data availability

Compliance gap

- Difference between VAT theoretically due and that actually collected, as % of former

- An increasing focus in many countries
  - UK has produced 'VAT gaps' for several years
  - Australia has started
  - Reckon (2009) for EU—now being updated
  - RA-GAP project at IMF

UK VAT compliance gap



- More issues arise than might expect! E.g.:
  - May seem better to define VAT receipts in cash terms rather than accrual of known liabilities, since we care about cash collected…

    …but some collections will be from previous years

  - Include avoidance in the gap?
    - UK does, on grounds it is a revenue risk
- Not appropriate as single performance measure

Policy gap

Can further decompose as

$$(1-P)=(1-r)(1-x)$$

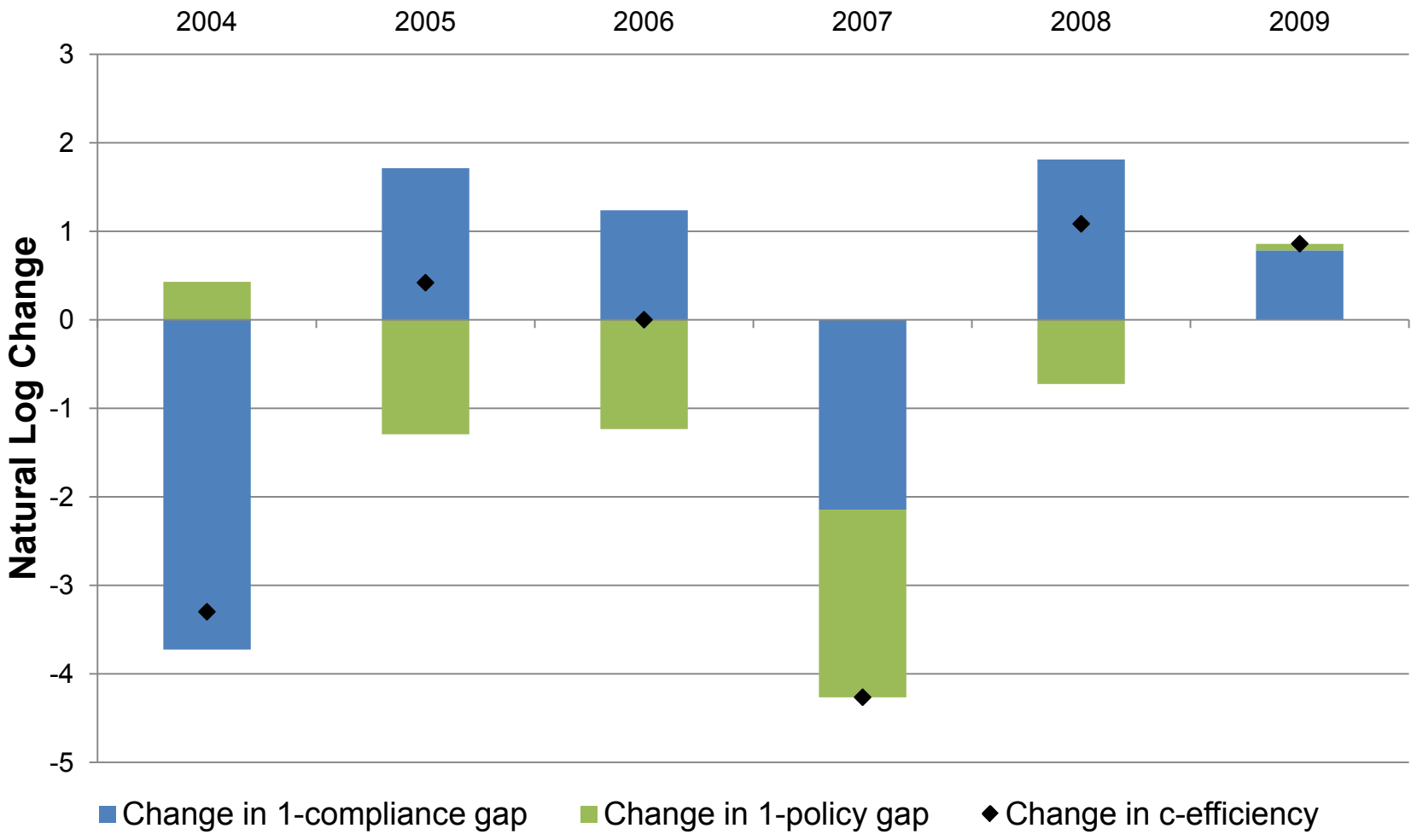
where

- r is a 'rate differentiation gap': extent to which market consumption not taxed at a single rate
  - Extraneous estimates available
- x is an 'exemption gap' reflecting:
  a. Cascading effect of taxes on intermediates (≤ 0)
  b. Cost of public goods
  c. Cost of subsidized private consumption

Illustrations

For UK, can produce a time series by combining time series of compliance gaps above with that of C-efficiency—calculating policy gap as a residual:

Decomposing Changes in C-efficiency



Even more speculatively, for EU members:

Combine:

- Reckon (2009) estimates of tax gaps for 2006
- OECD (2012) C-efficiency numbers for 2006

…from which infer policy gap, and then

- Estimates of rate gap from studies of weighted average VAT rates in (2000 and 2011)

…from which infer exemption gap

Decomposing C-efficiency in the EU

Country	C-efficiency (E^C)	Compliance gap (Γ)	Policy gap (P)	Decomposing the policy gap:	
				Rate differentiation (r)	Exemptions (x)
Austria	59	14	31	18 (23)	17 (11)
Belgium	52	11	42	22 (30)	25 (17)
Denmark	64	4	33	0 (10)	33 (26)
Finland	61	5	36	12 (33)	27 (17)
France	51	7	45	26 (30)	26 (22)
Germany	57	10	37	12 (18)	28 (22)
Greece	47	30	33	30 (26)	4 (9)
Ireland	66	2	33	24 (38)	12 (-0.09)
Italy	43	22	45	26 (30)	26 (21)
Luxembourg	87	1	12	30 (34)	-26 (-32)
Netherlands	60	3	38	24 (31)	19 (11)
Portugal	53	4	45	25 (36)	27 (14)
Spain	57	2	29	33 (31)	-6 (-3)
Sweden	56	3	42	19 (22)	29 (26)
United Kingdom	48	17	42	21 (31)	27 (17)

CONCLUDING

These tools have many limitations

- No behavioral content
  - E.g. things that change the policy gap will generally also change the compliance gap
- Need to be supplemented by study deeper determinants VAT performance
  - Has been some work on drivers of C-efficiency
  - And on working (or not) of ‘VAT chains’

- No standard errors
- Cross-country comparisons especially risky

But they are informative—the only surprise is that they are not already routine