Pyramids, Cascades, and the Taxation of Business Inputs

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About ITEP

The Institute on Taxation and Economic Policy (ITEP)

- Non-profit, non-partisan research organization
- Federal, state, and local tax policy issues
- We conduct rigorous analyses of tax and economic proposals and provide data-driven recommendations to shape equitable and sustainable tax systems.



Topics for Today

1. What is pyramiding?

2. What isn't pyramiding?

3. Problems with pyramiding.

4. Why is pyramiding so common?
   (Are the upsides of eliminating it really so great?)

5. Approaches to lessening pyramiding:
   Rate cuts vs. new exemptions

What is Pyramiding / Cascading?

- "**Pyramiding** results when a sales tax is imposed **multiple times on the same value** of business input purchases at multiple stages in the production and distribution process leading up to a final sale to consumers."
  - *Phillips, Andrew and Muath Ibaid, "The impact of imposing sales taxes on business inputs," Ernst & Young LLP. Emphasis added.*

- "If businesses pay sales taxes when they purchase their inputs and **then again** when they sell their outputs, a problem of **cascading** develops."
  - *Slemrod, Joel and Jon Bakija, "Taxing Ourselves," MIT Press. Emphasis added.*

What isn't Pyramiding / Cascading?

Taxing an input to a

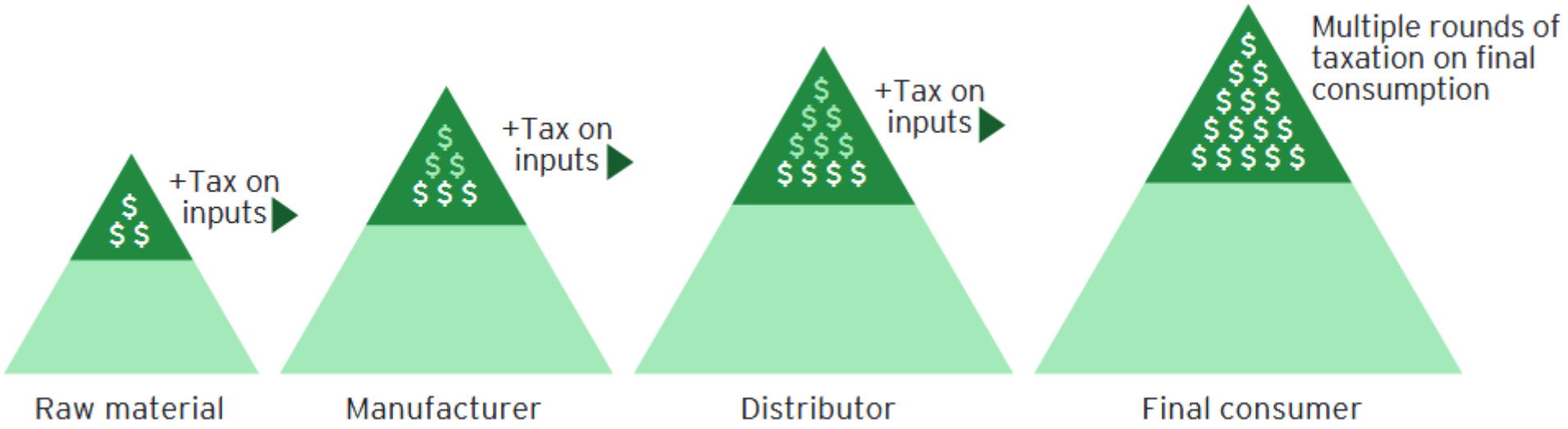
good or service where…

- The final sale is exempt
- The final product is exported
  - (At least, it's not pyramiding from a New Mexico only perspective.)



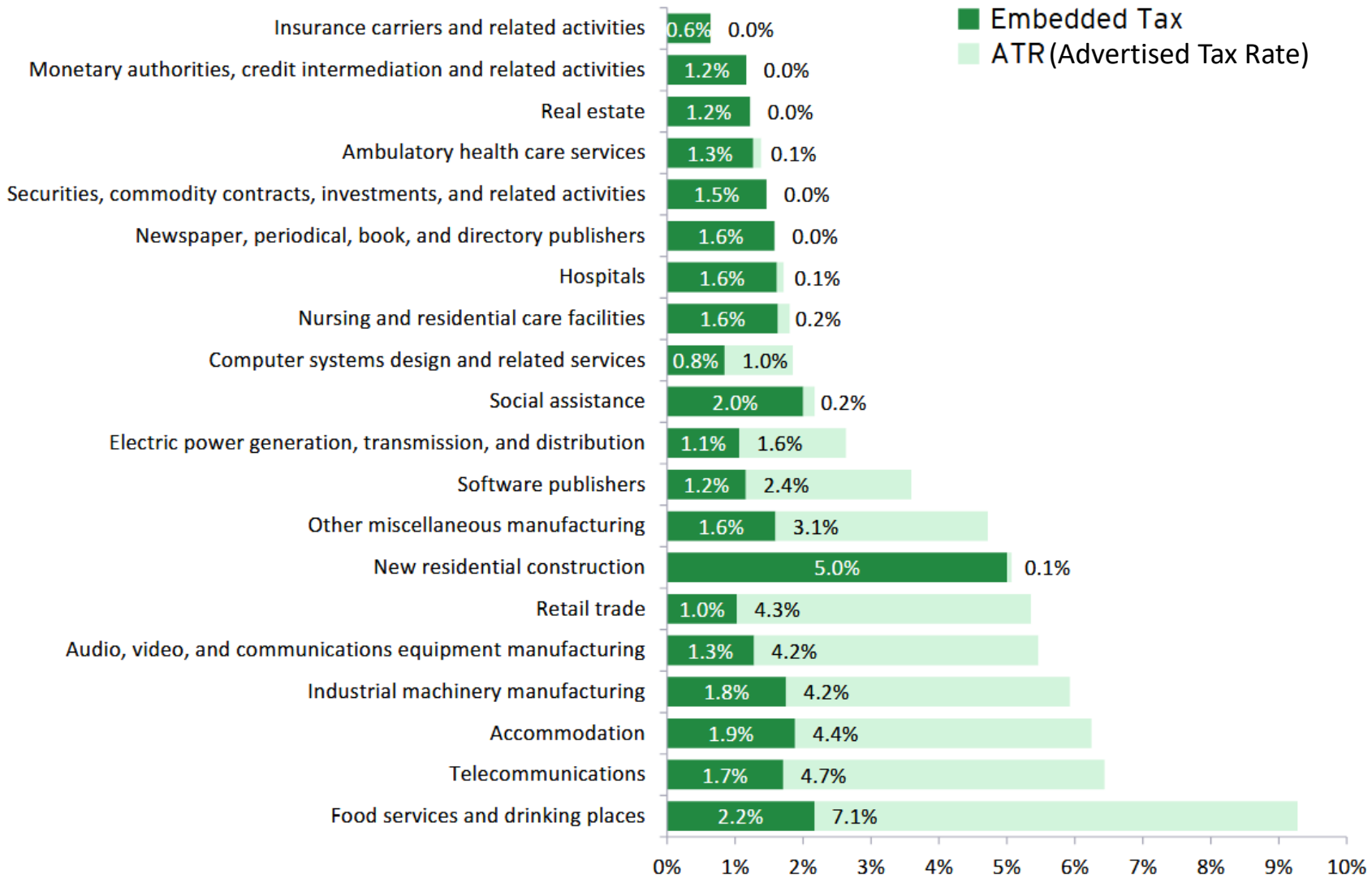


Illustrations of Pyramiding Sometimes Exaggerate Its Effects



(In this illustration, pyramiding triples the advertised tax rate and taxes ultimately comprise around 1/4th of the tax-inclusive purchase price.)

Reality (nationally) looks more like:



Source: Phillips, Andrew and Muath Ibaid, "The impact of imposing sales taxes on business inputs," Ernst & Young LLP.

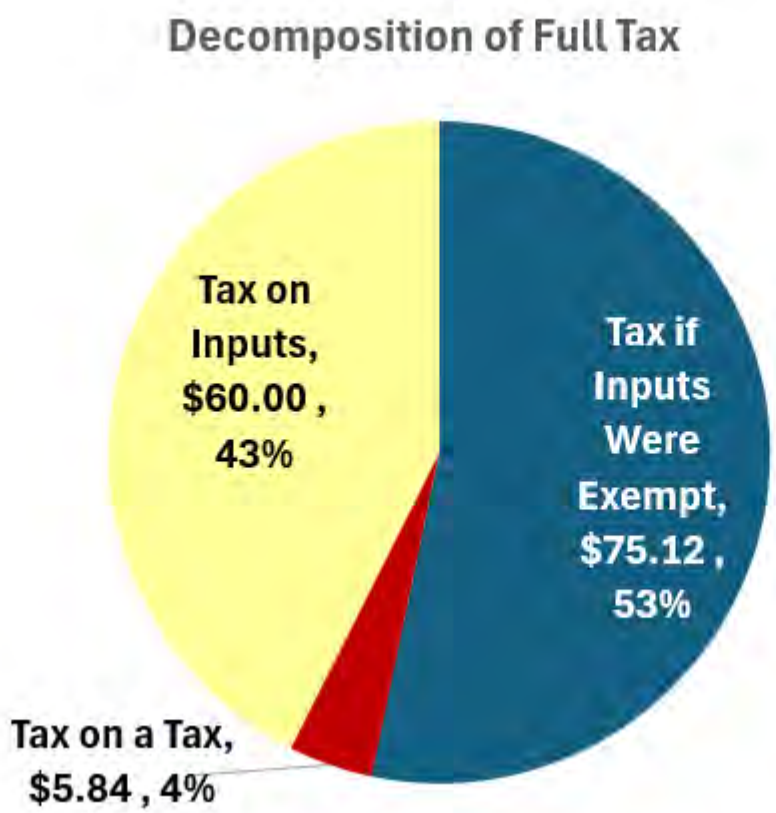
What Pyramiding (Mostly) Isn't: A Tax on a Tax

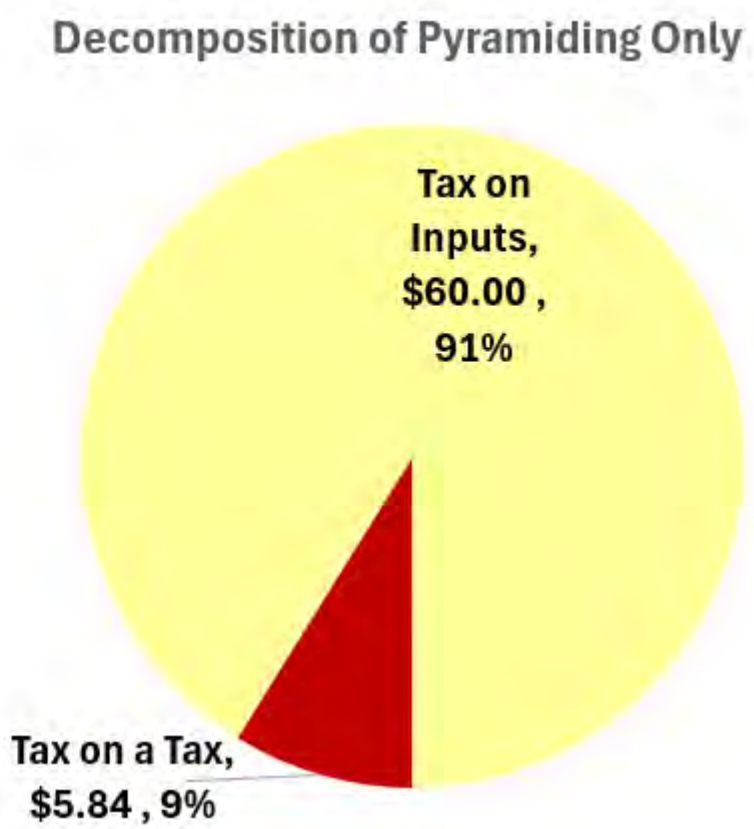
Say there's a product that sells for $1,000 and is subject to an 8% advertised tax rate plus substantial taxes on business inputs (this high degree of pyramiding is not typical of most industries):

- **Stage 1** of production:
  - $150 of inputs * 8% rate = $12 embedded tax
- **Stage 2** of production:
  - ($600 of inputs + $12 Stage-1 tax) * 8% rate = $48.96 embedded tax
- **Final sale:**
  - ($939.04 price before embedded taxes + $12 Stage-1 tax + $48.96 Stage-2 tax) * 8% rate = $80 visible tax

Three Ways of Looking at this Hypothetical, High-Pyramiding Scenario







Common Arguments Against Taxing Business Inputs

1. Contrary to principles of sales tax in some respects
2. Non-neutral across firms (e.g., encourages vertical integration)
3. Non-neutral across sectors
4. Competitiveness of firms selling in national/international markets
5. Opaque, regressive tax
6. Added complexity in some scenarios
7. Tax on a tax

Question: Why does no state even come close to fully exempting business purchases from sales tax?

Lowest State (Indiana)

32%

Business share

Source: EY

Nationwide Average

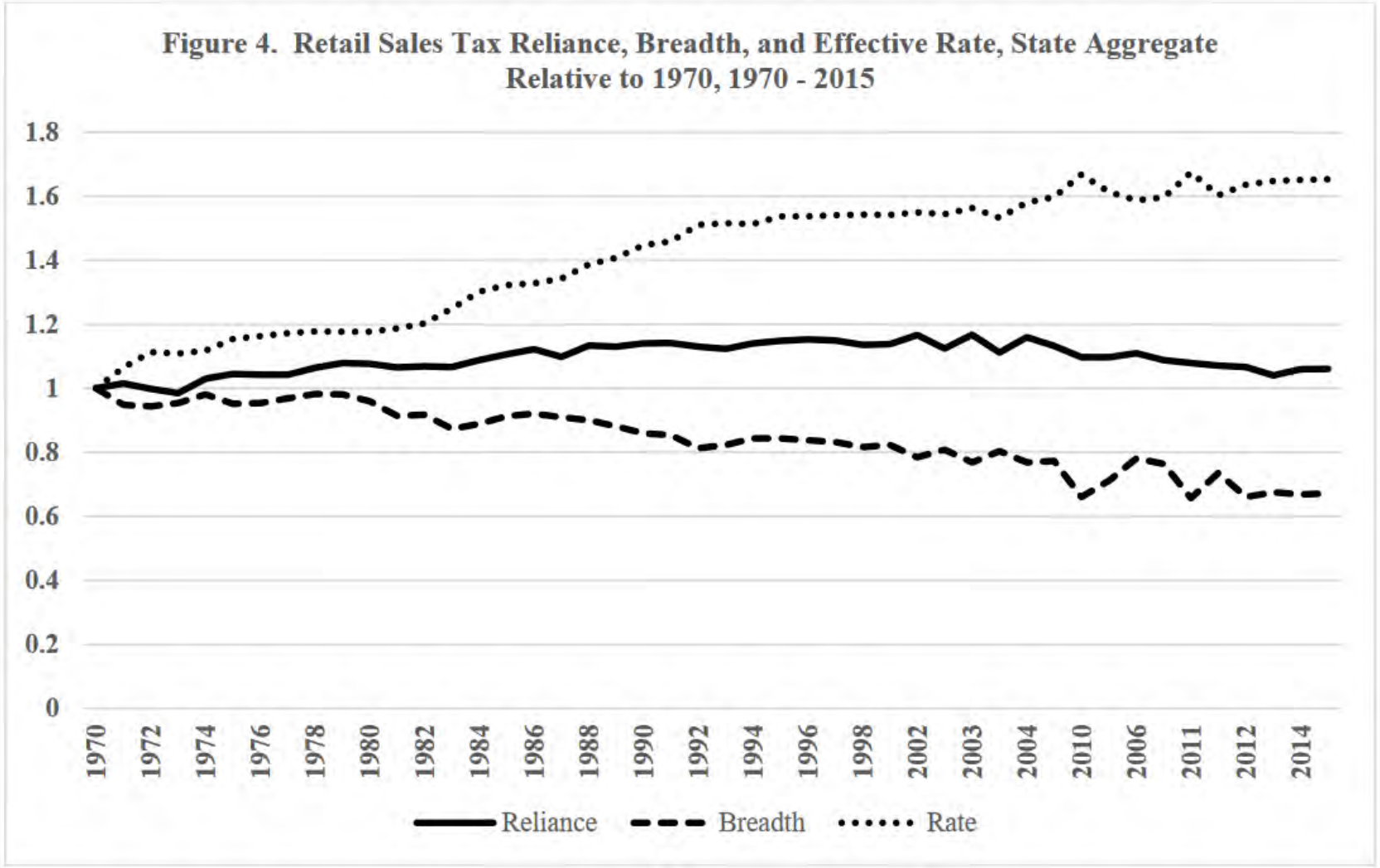
42%

Business share

Source: EY

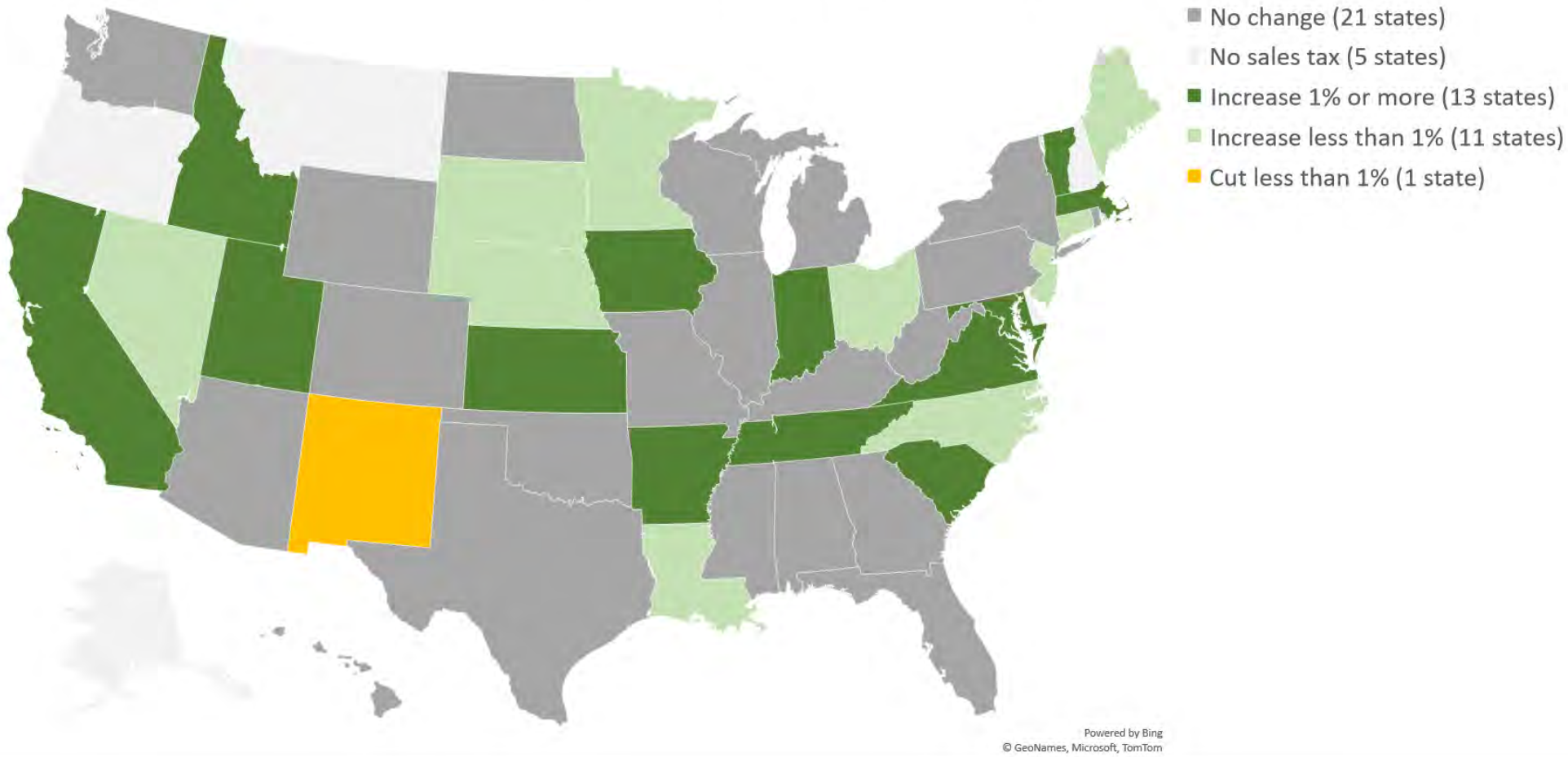
Answer: Because doing so involves significant tradeoffs.

	Arguments for Exempting Inputs					Arguments for Taxing Inputs				Situation Dependent		
	Advantages Vertical Integration	Neutrality Toward Input Choices	Advantage to Biz Operating in Natl / Intl Market	Tax on a Tax	Transparency	Revenue	Tax Rate	Evasion Potential	Exportability	Simplicity	Volatility	Adherence to Principle of Taxing Final Consumption
Taxing Business Inputs	Yes	Less	No	Yes, though typically minor	Less	Higher	Lower	Lower	Higher	Varies	Varies	Varies
Partial Exemption of Business Inputs	Varies	Less	Varies	Somewhat	Moderate	Moderate	Moderate	Moderate	Moderate	Complex	Varies	Varies
Full Exemption of Business Inputs	No	More	Yes	No	More	Lower	Higher	Higher	Lower	Varies	Varies	Varies



Source: Mikesell, John L. and Sharon N. Kioko, "The Retail Sales Tax in a New Economy," Municipal Finance Conference, July 2018.

Change in State-Level General Sales Tax Rate Between 2000 and 2024



Comparing Two Approaches to Cascading Rate Cuts vs. New Exemptions

	Pro- Exemption		Pro- Rate Cut				Other Considerations				
	Share Going to Business	Ability to Tailor Toward High-Pyramiding Industries	Impact on Local Revenue	Headline / Advertised Rate	Number of Businesses Losing	Simple to Implement and Enforce	Simpler for Business	Number of Businesses Benefiting	Improved Neutrality Toward Input Choices	Impact on Volatility	Adherence to Principle of Taxing Final Consumption
Tax Rate Cut	60%	No	None	Lower	None	Simple	No change	~All	Varies	None	No change
New Exemptions	<100%	Yes	Negative	Higher (with local)	Some	Varies	Varies	Targeted	Varies	Varies	Varies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