Value Added Tax policy and the case for uniformity: empirical evidence from Mexico

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- Lively academic and policy debate about the appropriate VAT rate structure, for equity, efficiency and administrative reasons.
  - One efficiency reason not discussed much is the differential opportunities for tax evasion and home production across commodities.
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  - Need to increase tax take further: non-oil tax revenues ~10% in 2012, among lowest in OECD
  - VAT only accounts for 20% of revenues - although all commodity taxes account for 55%
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    - Proposed: Introduce a uniform 2% rate to all commodities and compensate via overtly alleviation programmes (including cash transfers such as Oportunidades) - considered regressive
    - Approved: Increase headline rate from 15% to 16%, keep non-uniform structure - considered to make the reform less regressive
  - 2014:
    - Approved: Increase VAT base by removing some few exemptions/zero-rates to certain commodities (chewing gum, international transport services, pet food); remove border rate differentiation
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- Looks at efficiency implication of Mexico’s VAT non-uniform structure
  - Use a QUAIDS demand system built-in in MEXTAX
  - Quantify efficiency gains of introducing a revenue-neutral VAT uniform system
  - Discuss qualitatively assumptions underlying standard QUAIDS model: in particular, formal/Informal consumption in certain sectors could affect the optimal VAT structure
Assessing the distributional effects of the 2010 reforms

- MEXTAX - static household model
  - Income tax, indirect taxes, soc sec contrib. & cash transfers

Data
- ENIGH 2008 (household income and expenditure)

Formal/underground transactions: observe over 10 types of vendors
- Formal if: 1 Street market; 2 Mobile Stall; 3 Hawker

Assume incidence of tax is on purchases from formal vendors
- Does not capture tax evasion by formal vendors, underestimates tax evasion
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Gains from the replacement of the CCP with a VAT increase
Absolute cash gains from alternative ways of spending the revenue foregone due to the 2010 amendments

![Graph showing gains from alternative reforms across different income levels.
Legend:
- Tax reform amendments
- Flat rate transfer
- Flat rate transfer to Oportunidades and pension recipients
- Increase Oportunidades and pension rates]
Efficiency implications of Mexico’s VAT structure

- Two broad arguments for the efficiency of broader/more uniform rates of VAT

  - Administrative and enforcement efficiency

  - Economic efficiency - under a set of assumptions uniform rate of VAT minimises efficiency of revenue raising

  "Weak separability of leisure and consumption" [Corlett and Hague 1953, Atkinson and Stiglitz 1976]

  "Equal substitutability with non-taxed forms of procurement such as home production and informal transactions across commodities" [Sandmo 1990, Piggott and Whalley 1998, Kleven et al 2000]

  "Tastes being uncorrelated with underlying earnings capabilities" [Saez 2002]

  "Unlikely to completely hold, but the idea that non-uniform VAT rates are distortionary is well established"

  "Informal policy proposals in developed [Mirrlees et al 2011] and developing [Ebrill et al 2001] countries"
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• Unlikely to completely hold, but the idea that non-uniform VAT rates are distortionary is well established
  • informs policy proposals in developed [Mirrlees et al 2011] and developing [Ebrill et al 2001] countries
Assess quantitatively the efficiency gains of moving towards uniformity

- The MEXTAX QUAIDS model
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  - 12 categories - comprises all commodities and grouped according to functionality and tax treatment.
    - Behavioural response comes from substitution between these categories
    - Assume no within-category substitution if relative prices within the category change - consistent with how prices changes are modelled in static (non-behavioural) version of MEXTAX
Price variation and elasticities

• Use geographic and time variation in prices at the city/region-month level (Bank of Mexico)

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- Elasticities of substitution and income elasticities make sense:
  - Food on which VAT is not levied (e.g. tortilla) is most inelastic and a necessity
  - Food & drinks & meals out on which VAT is levied (coke can) is more elastic and a luxury
### Effect of VAT rate structure on expenditure patterns

<table>
<thead>
<tr>
<th>Expenditure category</th>
<th>Share of good in total expenditure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2008 VAT rate structure</td>
</tr>
<tr>
<td>1) Food on which no VAT is levied</td>
<td>26.9%</td>
</tr>
<tr>
<td>2) Food on which VAT is levied and meals out</td>
<td>12.9%</td>
</tr>
<tr>
<td>3) Alcoholic Drinks and Tobacco (VAT and duties levied)</td>
<td>0.6%</td>
</tr>
<tr>
<td>4) Clothing and footwear (VAT levied)</td>
<td>7.2%</td>
</tr>
<tr>
<td>5) Household goods, services and communications (VAT levied, duties sometimes levied)</td>
<td>21.6%</td>
</tr>
<tr>
<td>6) Household goods, services and communications (no VAT levied)</td>
<td>1.6%</td>
</tr>
<tr>
<td>7) Transport and vehicle fuels (VAT levied, duties sometimes levied but not modelled)</td>
<td>7.3%</td>
</tr>
<tr>
<td>8) Public Transport and other transport on which no VAT levied</td>
<td>6.3%</td>
</tr>
<tr>
<td>9) Health and Education goods (no VAT levied)</td>
<td>3.2%</td>
</tr>
<tr>
<td>10) Health and personal goods and services (VAT levied)</td>
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</tr>
<tr>
<td>11) Leisure and hotel services (VAT sometimes levied)</td>
<td>4.1%</td>
</tr>
<tr>
<td>12) Other services</td>
<td>0.6%</td>
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**Notes:** Reported shares are shares of aggregate household expenditure.  
**Source:** ENIGH 2008 and authors' calculations using Bank of Mexico price indices and MEXTAX
Gains/losses across the income distribution under a revenue neutral uniform VAT [use compesating variation]
Informality/tax evasion and optimal VAT rate structure

- Assume weak separability between leisure and consumption

Focus on commodities procured from the informal market on which tax is not paid

If substitutability between formal and informal varies across commodities (e.g. due to technology)

Argument to tax less heavily those commodities for which taxable expenditure is more elastic wrt to VAT rate

Relevant for Mexico - there is variation in share of 'informal' expenditure in monetary expenditure across commodities

E.g. higher in food (20%) and clothing (24%)
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• 10bn total expenditure: 3.75 in informal food, 3.75 in formal food and 2.5 telecoms

Raise 1bn in VAT revenues, 10% of total expenditure or 16% of taxable expenditure (same 16% rate)

Raise 1bn in VAT revenues, but now 10% on food formal and 20% on telecoms

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Summary of results...

- **Distributional results**
  - Amendments to 2010 reforms made reforms more progressive as share of income or expenditure; but not in absolute terms (cash terms).
  - Amendments weakly targeted to poorer households: simpler universal cash transfers or expanding existing instruments would have been more progressive than amendments.

- **Efficiency results**
  - Under standard assumptions: deviation from uniformity have a notable effect on spending patterns but very small effect on aggregate welfare (0.1% of total expenditure).
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  • Zero-rates to foods is often supported on distributional grounds
    • in the case of Mexico raise more revenue from VAT by broadening tax base and redistribute using better instruments
  • However, applying lower rates to food may be supported by efficiency considerations if more prone to substitution between formal and informal provision relative to other sectors
Next steps

- Model evasion and revisit efficiency implications of VAT rate structure
  - Estimate elasticity of substitution between the formal and informal goods to say how efficiency gains from revenue-neutral uniform reform may change given this
  - Two main empirical challenges - variation in formal/informal prices exogenous, definition of informal in ENIGH is a rough proxy