Raising tax revenues without harming equity and employment

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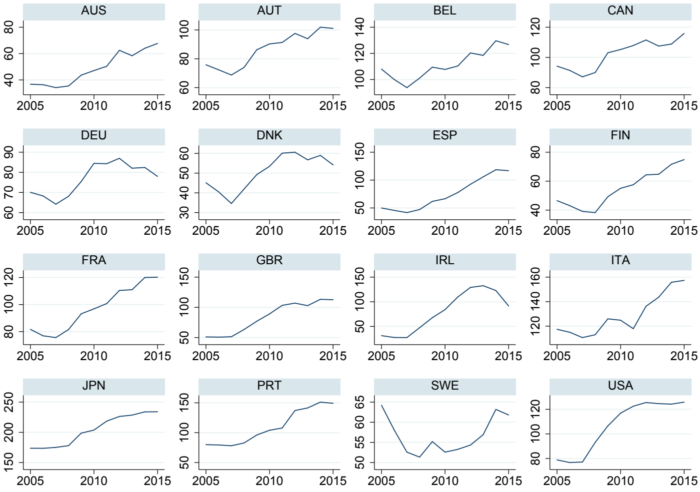
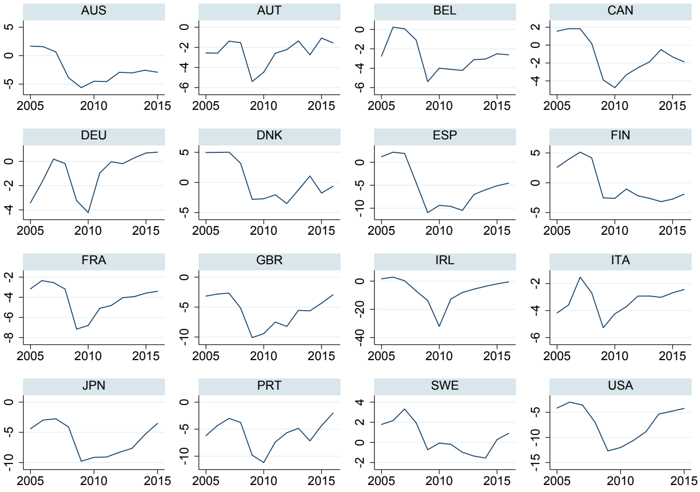
Debt-to-GDP ratios rose in aftermath of crisis



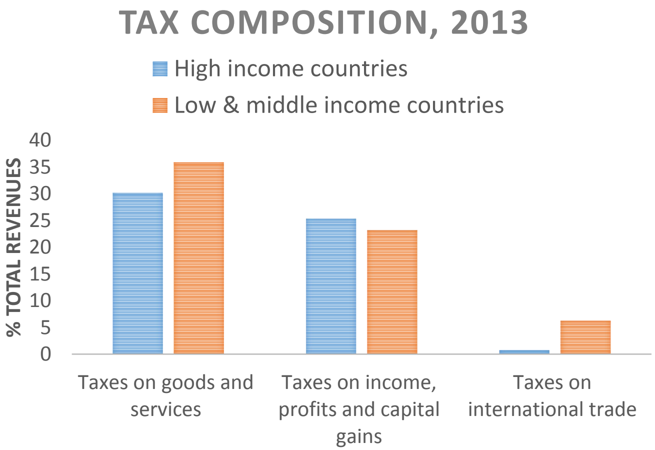
Source: 2016 OECD Economic Outlook

Governments started consolidating deficit-to-GDP



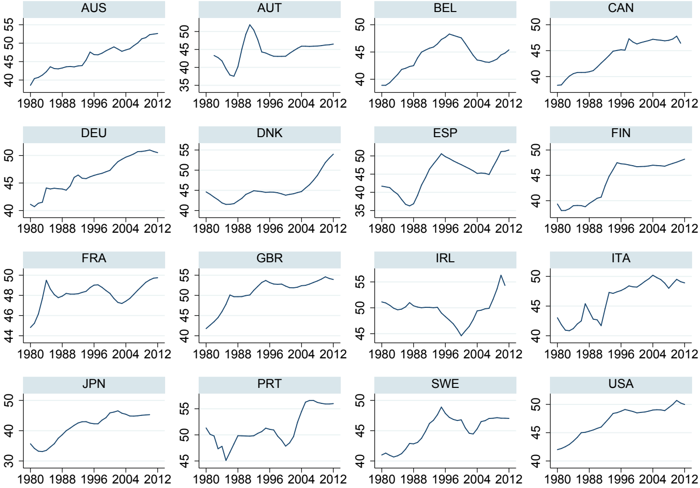
Source: 2016 OECD Economic Outlook

Taxation: advanced VS developing countries



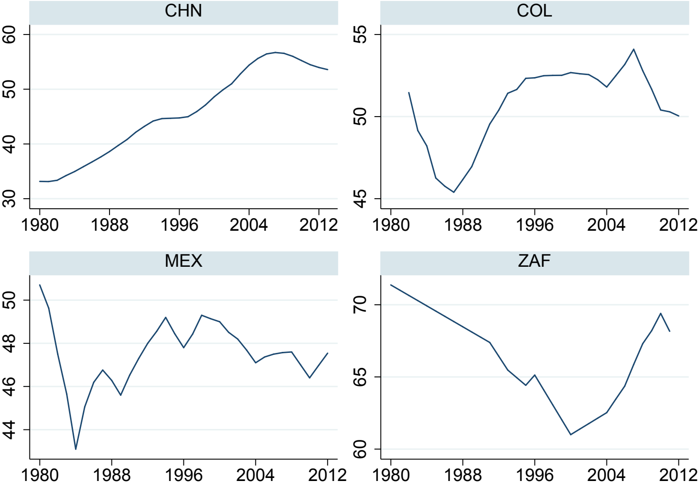
Source: World Bank, World Development Indicators

Consolidation may exacerbate income disparities in AEs



Source: Market Gini index-Standardized Wealth and Inequality Database

Inequality is rising also in some emerging countries



Source: Standardized Wealth and Inequality Database

Effects of consolidation on inequality

1. Direct effect through **income redistribution**
   - Lower govt. transfers penalises poorer agents $\Rightarrow$ Inequality $\uparrow$
   - Higher top marginal income tax penalises richer agent $\Rightarrow$ Inequality $\downarrow$
2. Indirect effect through **distortions of labor supply decisions**
   - Substitution effect: higher income taxes discourage labour participation
   - Income effect: higher taxes reduce purchasing power and encourage labour participation
3. **General equilibrium effects** through response of the economy during recessions
   - Tendency of employers to hoard high-skilled workers (Bastagli *et al.*, 2012) $\Rightarrow$ Inequality $\uparrow$
   - Capital owners may lose income in countries with rigid labour markets $\Rightarrow$ Inequality $\downarrow$

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Research questions

In this context, our analysis is two-fold:

1. What effects do tax-based consolidations have on employment, growth and income inequality?
2. Does it matter which tax instruments are being used?

Related literature

Effect of **overall fiscal consolidations** on income inequality

Ball *et al.* (2013) & Woo *et al.* (2013) & Agnello and Sousa (2014)

- spending-based consolidations increase inequality
- tax-based consolidations increase/do not affect/decrease inequality
- do not go beyond tax vs spending-based distinction
- do not explore transmission channels

Effect of budget-neutral changes in **composition of taxes** on:

1. Inequality: Martinez-Vasquez *et al.* (2012)
   - do not address endogeneity between tax revenues and GDP
   - pool together high, middle and low-income countries
2. GDP and inequality: Muinello-Gallo and Roca-Sagales (2013)
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Our contribution

- We focus only on **exogenous tax shocks**
  - We start form the IMF "narrative" consolidation dataset compiled by Devries *et al.* (2011) and updated by Alesina *et al.* (2015)
  - Identification of consolidation years with the only "objective of reducing the budget" in 16 OECD countries during 1978-2013.
  - No output stabilization, nor labor conditions or inequality considerations.

- We analyse **tax composition effects**
  - The IMF dataset does not provide info on tax composition $\Rightarrow$ we match IMF consolidation years with OECD Revenue Statistics

- Explore composition effects of tax-based consolidations on income inequality, while accounting for potential general equilibrium dynamics through economic activity and the labour market $\Rightarrow$ **explain transmission channels** PVAR

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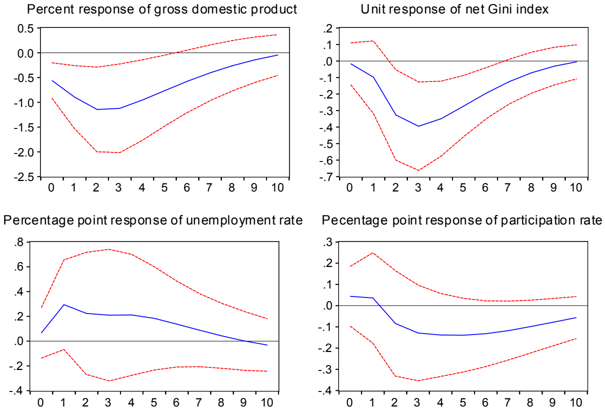
Rest of the presentation

1. Overal effect of tax-based consolidation: 1% GDP change in **total** total tax revenues

2. Composition effects:
   - Effect of 1% GDP change in **direct** tax revenues (not significant)
     - Personal income tax
     - Corporate tax and SSC (smaller effect)
   - Effect of 1% GDP change in **indirect** tax revenues
     - General taxes: VAT and sales
     - Taxes on specific goods and services

Overall, there is a trade-off between equity and growth

Figure: IRF to a 1% of GDP total tax shock robustness



Note: Blue line represents non-cumulated responses to a 1% of GDP change in total tax revenues, red lines represent 90% confidence intervals.

Among direct taxes, PIT have the most significant effects

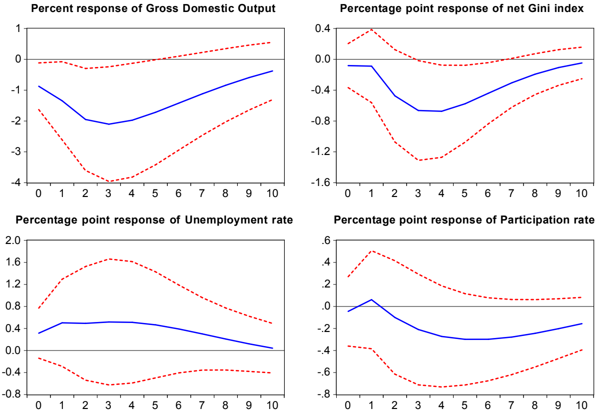
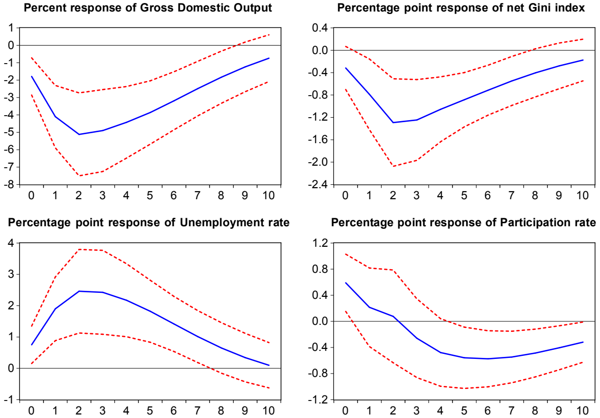


Figure: IRF to a 1% of GDP personal income tax (PIT) shock

Indirect taxes are more successful in reducing inequality

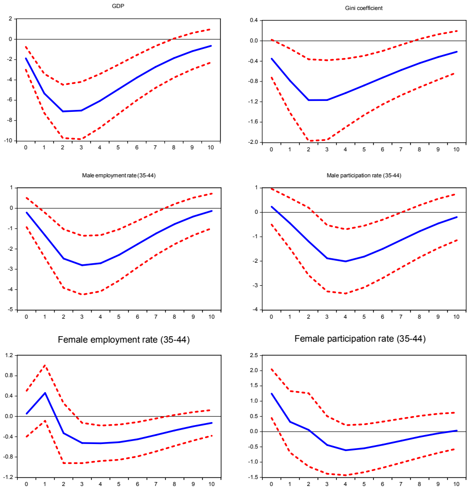
Figure: IRF to a 1% of GDP indirect tax shock robustness



◇ Why? Short-run **increase** in labour force participation

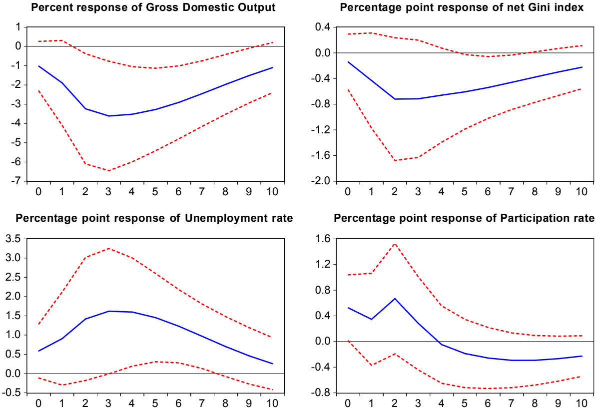
The labour supply channel is stronger for women

Figure: IRF to a 1% of GDP indirect tax shock by gender and age



GT are the most effective sub-component

Figure: IRF to a 1% of GDP general tax (GT) shock



◇ Income effect dominates substitution effect ⇒ participation ↑ ⇒ inequality ↓

Conclusions for the 16 OECD countries

- Tax-based consolidations reduce inequality, but at cost of lower output and employment (although not significant) $\Rightarrow$ **Trade-off**
- **Design of consolidation matters**:
  - Among direct taxes, only personal taxes reduce inequality
  - Indirect taxes (and especially GT) create incentives for (poorer) agents to increase labour supply $\Rightarrow$ low income inequality
  - Indirect taxes brings middle-aged women in the labor force $\Rightarrow$ less gender inequality

Are our conclusions valid also for developing countries?

Limitations:

- **Direct taxes (PIT)**
  - Lobbying by economic groups limits the effectiveness of income taxes in reducing inequality
  - High level of informality contributes to the problem of insufficient income tax revenues
- **Indirect taxes (GT)**
  - The labour supply channel may still work, but it could encourage participation in the informal labour market rather than in the formal one

Thank you very much!

Methodology back

Panel Vector Auto-regressive (PVAR):

$$A_0 Z_{i,t} = A_1 Z_{i,t-1} + A_2 Z_{i,t-2} + \alpha_i + \delta_t + \tau_{it} + \epsilon_{i,t} \quad (1)$$

where $Z_{i,t}$ contains (in this order):

- (1) tax shock
- (2) real per capita GDP (in logs)
- (3) GINI coefficient (in % points)
- (4) unemployment rate (in % points)
- (5) labor force participation rate (in % points)

We include: country fixed effects (α_i), country-specific linear trends (τ_{it}), year fixed effects (δ_t), and two lags.

Identification through **Cholesky decomposition** $\Rightarrow$ ordering below shock does not matter

Robustness checks on baseline specification back

1. Type of consolidation (spending-based, unanticipated tax-based, tax-based with positive realization)
2. Alternative tax data (IMF "narrative" data, OECD cylically adjusted revenues)
3. Alternative inequality measure (WID Top income shares)
4. Reverse causality issues
5. Local projections method
6. Deterministic components (common linear trend, first differences)
7. Sample selection (no financial crisis, EU-only, no banking crises, no outliers)
8. Country sample stability (dropping one country at a time)
9. Control variables

Robustness check on tax composition back

- Possible criticism is inclusion of 1 shock at a time

  ⇒ Address it by estimating two new specifications:
  - with direct (ordered 1st) and indirect (ordered 2nd) tax shocks
  - with indirect (ordered 1st) and direct (ordered 2nd) tax shocks
  - and then for each VAR estimate IRFs to both tax shocks
- Country sample stability
- Top income shares