

Design and Financing of Social Programs in the Presence of Informality

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Motivation

- ▶ Separate treatment of individual taxes from each other and from spending policy design leads to inefficient outcomes
 - ▶ distributional considerations in VAT and income taxes ineffective
 - ▶ enhances informality
- ▶ Social program design may also enhance incentives for informality, besides being fiscally unsustainable
- ▶ Would joint consideration of tax policy and administration together with social policy enhance incentives to participate in the formal sector? Enhance revenues and growth prospects?
- ▶ Considerations on method, as well as policy design in multi-level countries:
 - ▶ problem of general application and policy importance
 - ▶ starting from Mexico, through to Argentina, South and East Asia, possible southern Europe and Middle East
- ▶ Discuss models; applications to countries; and plan for empirical work

Work on Mexico by Santiago Levy (2008, 2011); see also World Bank 2011

- ▶ Main proposition
 - ▶ Basic benefit
 - ▶ Move from payroll taxation to VAT
- ▶ A more general formulation might ask:
 - ▶ Is reliance on VAT alone sufficient for incentive effects and revenues?
 - ▶ What are the effects on incentives/interactions between instruments, especially between the VAT and income taxes?
 - ▶ How to address extant high levels of inequality?
 - ▶ How to address feasibility—political economy constraints in a multi-level administration? Incentives for local governments to provide for social programs efficiently at the behest of the center?
- ▶ Intergovernmental aspects of critical importance in the Asian context, and also in other Latin American countries (including also Mexico).

Social programs: rationalization of entitlements

- ▶ Restructuring of benefits to ensure proper coverage and financing: levels as important as eligibility criteria
 - ▶ Retirement, disability (health care) and unemployment
 - ▶ Contribution-based insurance
 - ▶ High formal sector contributions create distortions and informality
 - ▶ Reforms needed in Europe (Greece, Spain)
 - ▶ Adjustments carried out recently in Mexico
- ▶ Role of the “basic benefit” in providing an adequate social safety net
 - ▶ Oportunidades as effective proxy, with minimal interventions
 - ▶ Prevent “capture” or “clientelism” associated with complex eligibility criteria (BISP in Pakistan?)
 - ▶ How does it work in Chiapas?
 - ▶ Levels matter: in Mexico: health care at level of Seguro popular or IMSS?

Financing considerations

- ▶ Exemptions and special regimes (e.g., for VAT and income taxes) often used to meet distributional considerations
 - ▶ Generally ineffective in meeting distributional objectives
 - ▶ Open up significant rent-seeking opportunities
 - ▶ End up losing revenues; more importantly information (with holes in the VAT)
- ▶ Financing for social programs effectively relegated to
 - ▶ Distorting payroll taxation
 - ▶ Deficit financing (Pakistan)
- ▶ Can interactions between social and tax policy design, and between taxes and tax administration, help in unlocking tax reforms and improving incentives to hire people in the formal sector?

Scope for “fixing” the VAT: information enhancement for better administration

- ▶ Elimination of special regimes, exemptions and multiple rates
 - ▶ Design matters
 - ▶ Possibilities for improved and simplified administration
 - ▶ Simplicity and full coverage
- ▶ Generate “information” that could be used for enhanced probability of detection not only of VAT but income tax
- ▶ But there are gainers and losers, due to relative price changes
 - ▶ Compensation with “basic benefit”?
 - ▶ Inequality issues addressed through income tax
- ▶ States: need for own-source revenues at margin to align incentives; and adjustment in system of intergovernmental transfers for “hold harmless” criteria?

Political economy and incentives

- ▶ Use social policy/transfer design to compensate “losers”
 - ▶ Households
 - ▶ Levels of government (China 1994 reform; Mexico for IETU)
 - ▶ Unlocking the the tax reform agenda (Brazil and Pakistan)
- ▶ Get efficiency and revenue-enhancing tax reforms
- ▶ Full information on transactions (above the line) and liabilities on standardized basis
 - ▶ Hard to do
 - ▶ Incomplete agenda in several EU countries, Mexico, China, Pakistan and India
- ▶ Ability of lower levels (states in Mexico) to block tax reforms
 - ▶ Issues of gainers and losers and the structure of power in senate and congress
 - ▶ Political economy assessment is critical in multi-level countries

Modelling Considerations

- ▶ Choices for firms: informal, formal, or combinations?
 - ▶ Minimize disincentives for formality from payroll and corporate income taxes, given the probability of detection
 - ▶ Probability of detection highest with simple VAT, minimal exemptions
- ▶ Choices for workers: formal sector decisions a function of benefits received
- ▶ Choices for governments:
 - ▶ Balance between tax instruments: VAT and income taxes; relying least on payroll tax; and design of social protection and social policies
- ▶ If multilevel governments: use transfers to compensate losing jurisdictions; but minimize incentives to divert funds

A reform package: Payroll taxes; VAT; Income taxes; basic benefits and transfers

- ▶ Incentives for firms to evade, given probability of detection
- ▶ VAT with minimal exemptions/domestic zero rating provides full information on value added
 - ▶ Increases the probability of detection
 - ▶ And incentive for formal sector participation
 - ▶ Result breaks down with exemptions and holes in the tax net
 - ▶ Single rate simplifies administration
- ▶ Most efficient mechanism to raise revenues, with minimal distortions—growth inducing
- ▶ Enhanced revenues through improved income tax collections (CIT and PIT)
- ▶ Arms length integrated tax administration using information generated by VAT for the CIT
- ▶ Take care of distributional impact through basic benefits
- ▶ Take care of intergovernmental/political economy issues through the intergovernmental transfer system

Outline

Motivation

Model

- Workers

- Firms

- Reported Sales

- Formal and Informal Workers

Government Instruments

- Taxes

- Benefits

- Administration and Enforcement

- Joint design of Tax and Benefit System

Empirics and Next Steps

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Worker Types and Wages

- ▶ Two skill types, High and Low
- ▶ Mass 1 of High skill workers are all formal (for simplicity), receive wage w_H
- ▶ Mass $N > 1$ low skill workers may be
 - ▶ formal workers (wage w_F)
 - ▶ informal workers (wage w_I)
 - ▶ or take outside option ($w = 0$)

Benefits

- ▶ Universal benefit b_U available to all households. e.g. universal pension (*Renta Dignidad*) in Bolivia
- ▶ Formal sector benefit b_F available only to formal sector workers. e.g. healthcare through social security (IMSS) in Mexico
- ▶ Targeted benefit b_L intended for low income households. Imperfectly targeted, reaches low ability households with probability γ , leaks to high ability household with probability $1 - \gamma$. e.g. *Benazir Income Support Program* in Pakistan
- ▶ Benefit to outside households b_O . For households not employed in formal sector. e.g. NREGA in India

Incomes

	Formal Status	
	Formal	Informal
High Ability	$C_H = w_H + b_U + b_F + (1 - \gamma)b_L$	
Low Ability	$C_{FL} = w_F + b_U + b_F + \gamma b_L$	$C_{IL} = w_I + b_U + b_O + \gamma b_L$

Table: Consumption Levels of Three Sorts of Households

Occupational Choice

- ▶ Low ability households face fixed cost of working in private sector $\varepsilon_i \sim K(\varepsilon)$.
- ▶ Also have idiosyncratic attachment to the formal sector giving additional utility $\mu_i \sim J(\mu)$
- ▶ Choose whether to seek (in)formal work first, without knowing μ_i
- ▶ If seek (in)formal work, choose formal sector if $\mu_i > C_I - C_F = w_I - w_F + b_O - b_F = \tilde{\mu}$
 - ▶ expected utility
$$E[U] = J(\tilde{\mu}) C_{IL} + [1 - J(\tilde{\mu})] (C_{FL} + E[\mu | \mu > \tilde{\mu}])$$
- ▶ \rightarrow seek work if $\varepsilon_i < E[U] - b_O = \tilde{\varepsilon}$
- ▶ Total number of workers
 - ▶ $N_O = N[1 - K(\tilde{\varepsilon})]$
 - ▶ $N_I = NK(\tilde{\varepsilon}) J(\tilde{\mu})$
 - ▶ $N_F = NK(\tilde{\varepsilon}) [1 - J(\tilde{\mu})]$

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Firms' Production

- ▶ Firms combine the two types of labour to produce final output

$$Y(L_E, H) = L_E^{\alpha_L} H^{\alpha_H}$$

- ▶ $L_E = \theta L_F + (1 - \theta) L_I$ with $1 > \theta > 1/2$ is “effective” low skill labour

Firms' Evasion

- ▶ Evade by underreporting sales/incomes. Reporting sales of $p\hat{Y}$ means that expected fine is

$$E[F_Y] = \lambda_Y F_Y p (Y - \hat{Y})$$

where F_Y is the fine per unreported dollar of sales and

$$\lambda_Y = \min \left\{ \eta \frac{Y - \hat{Y}}{Y}, 1 \right\}$$

is the probability of detection

- ▶ Evade by employing informal workers. Expected fine is

$$E[F_L] = \lambda_L F_L L_I$$

where F_L is the fine per informal worker and

$$\lambda_L = \frac{L_I}{L_I + L_F}$$

is the probability of detection

Firms and Taxes

- ▶ Payroll tax of τ_p on formal wage bill $w_F L_F + w_H H$
- ▶ VAT of τ_v on (reported) sales $p \hat{Y}$
- ▶ Corporate Income tax of τ_c on reported profits
 $\hat{\Pi} = (1 - \tau_v) p \hat{Y} - (1 + \tau_p) [w_H H + w_F L_F]$
- ▶ Actual profits are

$$\Pi = (1 - \tau_c) \hat{\Pi} + p(Y - \hat{Y}) - w_I L_I - E[F_L] - E[F_Y]$$

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Reported Sales

- ▶ Reporting rate of sales is

$$\frac{\hat{Y}}{Y} = 1 - \frac{1}{2\eta F_Y} [1 - (1 - \tau_c)(1 - \tau_v)]$$

- ▶ CIT reduces reporting of sales, and interacts with VAT:
 - ▶ VAT with exemptions does not produce full information and also reduced incentives to report, interacting with CIT to increase informality
 - ▶ VAT design that generates full information reduces the incentives to unreport sales—hence also positively impacting CIT collections

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Low Skill Labour Market

- Demand $f^D = L_F^D / (L_F^D + L_I^D)$:

$$F_L (1 - f^D) \left[\frac{1 - f^D}{\theta} + \frac{1 + f^D}{1 - \theta} \right] = \frac{1}{\theta} (1 - \tau_c) (1 + \tau_p) w_F - \frac{1}{1 - \theta} w_I$$

- Supply

$$f^S = \frac{L_F^S}{NK(\tilde{\varepsilon})} = 1 - J(w_I - w_F + b_O - b_F)$$

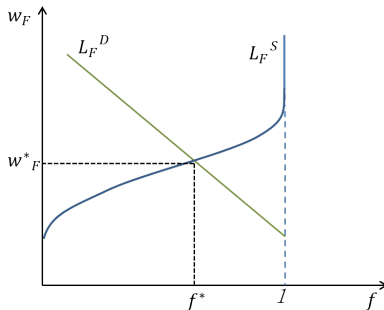


Figure: Low Skill Labour Market

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Effects of Taxes: Payroll Tax

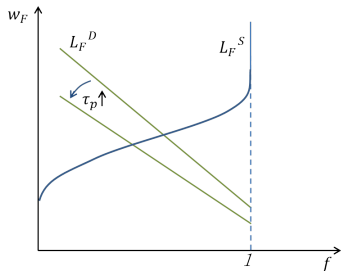


Figure: Effect of Payroll Tax

► Labour Market

- Formal wages down relative to informal wages
- Formality down
- participation: $\tilde{\mu} \uparrow$ so $\tilde{\varepsilon} \downarrow$ so participation down

► Firms

- formality down \rightarrow productivity & output down
- participation down \rightarrow output down
- ratio of reported sales unaffected

Effects of Taxes: Corporate Income Tax

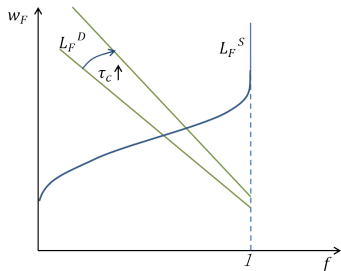


Figure: Effect of Corporate Income Tax

► Labour Market

- Formal workers a deductible expense
- Formal wages up relative to informal wages
- Formality up
- participation: $\tilde{\mu} \downarrow$ so $\tilde{\varepsilon} \uparrow$ so participation up

► Firms

- formality up \rightarrow productivity & output up
- participation up \rightarrow output up
- proportion of sales reported down

Effects of Taxes: VAT

- ▶ In baseline 1-sector model, VAT=sales tax=consumption tax and affects only misreporting of sales (negatively)
- ▶ In a multi-sector model:
 - ▶ Holes in VAT (exemptions) → lose informational/enforcement advantage of VAT as well as production efficiency
 - ▶ Presumptive taxation → backward-shifting
 - ▶ With full information on chain (e.g., single rate and no exemptions): VAT can have the effect of reducing misreporting

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Effects of Benefits: Formal Benefit

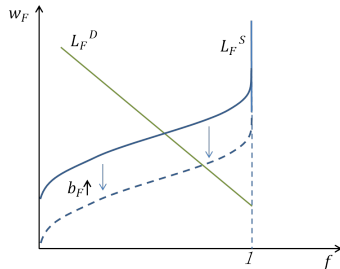


Figure: Effect of Formal Benefit

- ▶ Labour Market
 - ▶ Formal wages down relative to informal wages
 - ▶ Formality up
 - ▶ participation: $\tilde{\mu} \downarrow$ so $\tilde{\varepsilon} \uparrow$ so participation up
- ▶ Firms
 - ▶ formality up \rightarrow productivity & output up
 - ▶ participation up \rightarrow output up
 - ▶ proportion of sales reported unaffected

Effects of Benefits: Outside Benefit

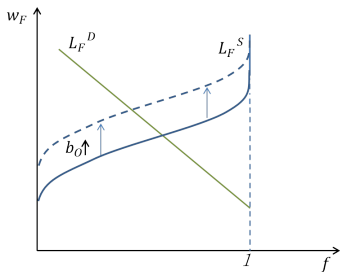


Figure: Effect of Outside Benefit

- ▶ Labour Market
 - ▶ Formal wages up relative to informal wages
 - ▶ Formality down
 - ▶ participation: $\tilde{\mu} \uparrow$ so $\tilde{\varepsilon} \downarrow$ so participation down
 - ▶ participation: direct effect of reducing $\tilde{\varepsilon}$ so participation down
- ▶ Firms
 - ▶ formality down \rightarrow productivity & output down
 - ▶ participation down \rightarrow output down
 - ▶ proportion of sales reported unaffected

Benefits: Universal and Targeted Benefits

- ▶ Universal benefit b_U is a lump sum transfer, so does not affect decisions, and hence efficiency
- ▶ Targeted benefit b_L an imperfect means to achieve redistributive goals because $\gamma < 1$

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Tax Administration and Enforcement: η

- ▶ Higher η reduces underreporting of sales
- ▶ Crucial factor affecting η : Information
 - ▶ Well designed VAT generates information that serves as a signal of sales → can be used to enforce CIT also
 - ▶ Payroll tax can generate information on employees (costs) → can be used to enforce CIT and VAT
 - ▶ Sharing of information within tax administration across taxes
 - ▶ Sharing of information between social security system (on formal workforce) and tax administration

Administration of benefits

- ▶ $\gamma < 1$ so targeting is imperfect.
- ▶ Factors affecting γ :
 - ▶ Complicated means tests prone to error/manipulation: BISP
 - ▶ rent-seeking by
 - ▶ local politicians in federal governments if benefit financed through federal transfers (Niehaus & Sukhtankar, 2011 on NREGA)
 - ▶ administrators taking bribes
- ▶ Information from payroll tax and CIT (for which information from well designed VAT is needed) useful for administering/enforcing formal benefit b_F and outside benefit (leakage) b_O

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Government

- ▶ Revenues are

$$R = \tau_c \left\{ p \hat{Y} - (1 + \tau_p) [w_H H + w_F L_F] \right\} + \tau_v p \hat{Y} + \tau_p [w_H H + w_F L_F]$$

- ▶ Expenditures are

$$\begin{aligned} E = & (N + 1) b_U + [\gamma N + 1 - \gamma] b_L \\ & + b_F \{1 + NK(\tilde{\varepsilon}) [1 - J(w_{IL} - w_{FL} - b_F)]\} \\ & + b_O N \{1 - K(\tilde{\varepsilon}) [1 - J(\tilde{\mu})]\} \end{aligned}$$

- ▶ Government budget constraint (ignoring debt)

$$B = E - R \leq 0$$

Welfare

- ▶ Welfare is

$$W = g_{IL}N_I U_{IL} + g_{FL}N_F U_{FL} + g_{OL}N_O U_{OL} + g_H U_H + g_{\Pi} \Pi$$

- ▶ Instruments

- ▶ 3 taxes τ_C, τ_V, τ_P
- ▶ 4 benefits b_U, b_L, b_F, b_O
- ▶ 2 implementation parameters γ, η

- ▶ For any of these $\rho \in \{\tau_C, \tau_P, \tau_V, b_U, b_L, b_O, b_F, \gamma, \eta\}$

$$\begin{aligned} \frac{\partial \tilde{W}}{\partial \rho} = & g_{IL} \left[\frac{\partial N_I}{\partial \rho} U_{IL} + N_I \frac{\partial U_{IL}}{\partial \rho} \right] + g_{FL} \left[\frac{\partial N_F}{\partial \rho} U_{FL} + N_F \frac{\partial U_{FL}}{\partial \rho} \right] \\ & + g_{OL} \left[\frac{\partial N_O}{\partial \rho} U_{OL} + N_O \frac{\partial U_{OL}}{\partial \rho} \right] + g_H \frac{\partial U_H}{\partial \rho} + g_{\Pi} \frac{\partial \Pi}{\partial \rho} - \mu \frac{\partial B}{\partial \rho} \end{aligned}$$

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Policy assessment

- ▶ Model suggests examining effects of policy instruments on
 - ▶ Firm behaviour
 - ▶ Tax payment of various taxes
 - ▶ Labour force composition (skill composition and formal/informal)
 - ▶ input use / strength of production chains
 - ▶ Household behaviour
 - ▶ participation in private sector
 - ▶ informal/formal work
 - ▶ consumption (relative price effects)
 - ▶ Administration and enforcement
 - ▶ Information management
 - ▶ multilevel governments: tax/spending assignments

Data Assessment

- ▶ Need data on tax collections at firm level; worker level labour market data; and household level income and expenditures
- ▶ Model guides estimation/calibration of key behavioural elasticities to guide policy design on how best to manage tradeoffs
 - ▶ Taxes/benefits have positive and negative effects, determine magnitudes of these effects
 - ▶ interactions between taxes and between taxes and benefits key
 - ▶ tax rates as well as tax exemptions and “holes”
 - ▶ relative price effects and distributional impacts of policy choices
 - ▶ effective administration and enforcement reduces efficiency cost of implementing policy