Approaches to Tax Competition

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Out With the Old, In With the New?

Tax Competition Is Dead!

"When the Americans initiate such a proposal [global minimum tax rate of 21%] and get backing from big countries like Germany and France, it would be surprising if a deal isn't reached. Tax competition is becoming something of the past." Dutch deputy finance minister Vijlbrief, (*Fiscal Times*, April 20, 2021.)

Long Live Tax Competition!

An international tax agreement "must 'accommodate Ireland's 12.5% rate,' ... making the case that if there is to be a global minimum rate, it should be well below the 21% proposed by the Biden administration. 'I believe that small countries, and Ireland is one of them, need to be able to use tax policy as a legitimate lever to compensate for the real, material and persistent advantage enjoyed by larger countries'. " Irish Finance Minister Paschal Donohoe, Reuters, April 21, 2021.

Will the tail(s) wag the dog?

My Goals; Some Disclaimers.

Some here are thoroughly familiar with – have been major contributors to – this large subject. Many may have examined the topic from specific perspectives – local, state/provincial, national/international. Others may just be getting acquainted with it.

Aficionados may be disappointed, but it seems best to start by discussing the subject matter informally and broadly (and, no doubt, somewhat idiosyncratically).

It's impossible to say everything that's important and interesting in 30 minutes, but subsequent discussion will fill in some of the gaps.

Literature: see Agrawal, Hoyt, and Wilson, *JEL* (forthcoming).

Many omissions: intergovernmental fiscal/regulatory relations, debt/financial policies, developing countries, constitutional design . . . All arise naturally in context of "open economy public finance".

Tax Competition: Some Pitfalls and Misconceptions.

There may be some misapprehension about the nature of competition among governments. I begin with a few bald assertions, and try to return to them later as time permits.

"Race to the Bottom"?

A misnomer, like "Holy Roman Empire".

(a) "Race" = dynamics, usually missing from economic analyses. Almost all theoretical models are static/atemporal, aka models of steady states.

(b) "Bottom" = 0 taxes? Perhaps like the legendary invisible hand, taxes that yield zero revenues are nowhere to be seen.

(c) "Bottom" = negative taxes? There is no obvious lower bound on "taxes": What is the minimum of $t \in \Re$?

(d) "Bottom" = "bad outcome"? Yes, this is very possible. Taxes and spending (either or both) may be inefficiently high, inefficiently low, or (the Goldilocks solution) "just right". *This* is an important question, worthy of careful analysis.

– Justice Brandeis (b. Louisville, KY) seems to have originated the expression, or one close to it, in a 1933 opinion that argues for the *preservation* of state-level taxing powers and latitude in their exercise. (See Appendix I for quotations.)

Tax, Fiscal, Regulatory, Institutional Competition.

"Tax competition" is not (or need not, or should not?) be about any *one* particular tax rate, tax base, or type of tax.

– A jurisdiction cannot feasibly raise, lower, restrict, redefine ... any *one* particular instrument in isolation. A *feasible* policy change necessarily implies change in *at least two* instruments (taxes and expenditures, two taxes, two types of expenditures, one tax now and one later – i.e., debt policy).

– I don't say this, the accountants say this. Appendix II spells out various forms of GBCs.

The simplest (atemporal, one type of spending, one type of revenue) might be:

$$E = R = tB.$$

It is *infeasible* to change R or a single tax rate t alone.

Reprise: Is a "race to the bottom" about taxes that are "too low", or about spending that is "too low"? Are they the same, or different: "welfare magnet" competition?

Regulations and Institutions.

Governments can (must) choose regulations and administrative policies as well as fiscal variables. Courts also have their say in policy.

What is a “local property tax”? (Classified property taxes; TIFs; Prop 13.) What is “income”?

Tax expenditures: allowed, disallowed, expanded, or canceled? (Expenditure/revenue boundary is indistinct, perhaps even meaningless.)

“Non-fiscal” regulations: Environmental, growth controls, labor, . . .

Institutions: BBRs (localities, states, EU countries), referendum approvals for debt, state restrictions on local taxes/spending, national restrictions on state taxes/spending, international restrictions on national taxes/spending.

So, what is fiscal/regulatory/institutional “competition”? Is it simply FD? Is it (sometimes) good, (sometimes) bad? It depends!

Tax Competition: Some Essentials.

1. Multiple governments.
2. They interact somehow, producing the *policy equilibrium* of a *system*.

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Key Tasks: Positive and Normative

Positive:
Government policies are *endogenous*, not *exogenous*. We ask:

How do governments act?
Normative:
Welfare effects (aka policy evaluation):
– for one jurisdiction, yes, but even more important
– for the entire *system* of jurisdictions.

Like partial and general equilibrium analysis of the welfare effects of taxes:
– a given tax change in one market may “perfect” the efficiency of the tax system
– or upset it.

Analogy: A Competitive Private-Goods Economy.

Start with agents: households and firms.

Ascertain the objectives, instruments, and constraints of all agents.

Classically (with many variations):
objectives = utility and profit maximization;
instruments = consumption bundles, inputs/outputs;
constraints = HBCs and production functions.

Predict choices.

Define and characterize equilibrium (partial or general). (If there is a "race", it's to $P = MC$.)

Evaluate equilibrium. (Welfare economics.)

By analogy: What is the FC (and regulatory/institutional) version of this approach?

Modeling Fiscal Competition.

"Agents": Jurisdictions. (Local school districts, states/provinces, nations.)

Objectives:
May be *imposed a priori*: e.g., revenue maximization;
or (better):
derived (justified) from objectives of *other* agents (households, firms, politicians, bureaucracies, courts, ...)

Similar to profit maximization for firms: behavior ultimately springs from individuals. Like separation theorem for firms in competitive economy: voting, lobbying, campaigning, etc. for governments. (Regulations/institutions.)

Endogenous vs. Exogenous Policies

Analysis of FC differs from "traditional" PF because policies are *endogenous* ...
but *builds upon* models of the effects of *exogenous* policies on households, firms, etc.

Example 1: Voting on wage vs. capital taxes in jurisdiction *i*. (Tax substitution.)

Stage 1: Voters (homogeneous/representative or heterogeneous) contemplate policy alternatives *and their consequences* (traditional PF) ...

... and vote for policies/representatives which make them better off.
Stage 2: Jurisdiction *i* produces a policy choice (predicted/endogenous policy outcome).

Analysis of Stage 2 requires analysis of Stage 1, i.e. of the effects of policies on welfare of voters in *i*.

Two More Examples.

Example 2: Firms or industries lobby government *i* for tax holidays/infrastructure projects. (Tax base definition, infrastructure policy.)

Stage 1: WTP by lobby depends on impact on profits (traditional PF).

Stage 2: Policies do/do not adjust due to lobbying (predicted/endogenous policy outcome).

Analysis of Stage 2 requires analysis of Stage 1, i.e. of the effects of policies on payoffs to firms in *i*.

Example 3: Voters in a school district *i* approve/disapprove tax increase for schools. (Tax/expenditure increase.)

Stage 1: Each voter does a personal B/C analysis, then votes.

Stage 2: Policies do/do not adjust due to referendum (predicted/endogenous policy outcome).

Analysis of Stage 2 requires analysis of Stage 1, i.e. of the effects of increased spending/taxes on welfare of voters in *i*.

Fiscal Competition: Open vs. Closed Economies.

Governments make independent policy choices, subject to constraints, within some institutional/regulatory context.

"Competition" = at least two – perhaps hundreds of thousands – of "open" governments in some larger system.

For concreteness, and because it is important, I will focus on competition for productive resources (aka "capital" and "labor/households" – which may be vectors).

Other kinds of competition are possible: e.g., local "domestic" policies that affect trade in intermediate/final products (cannot take time here).

Competition/openness means that economic agents (firms/households) can enter/exit jurisdictions.

Example 1: Is labor or capital (or both) completely/partially immobile?
Example 2: Are firms fixed, or can they relocate?
Example 3: Can households go to other school districts, or not?

What Is "Openness", and Why Does It Matter?

If resource X is at least partially mobile, its payoff from local policy choices depends on external market conditions – perhaps *entirely*.

Illustration 1: Capital mobility/taxation.

If r is not affected by t_i, jurisdiction i is *atomistic* or *small*, so far as the external capital market is concerned.

With two possible exceptions (US, China?) (maybe 3: EU?), none of the many hundreds of thousands of governments in the world have non-negligible impact on r.

NB: "Small" does not mean that mobility is costless.

Then again, maybe there is no such thing as "capital", or a "world capital market", but, instead, many isolated markets: "What happens in i, stays in i".

Remark: If no mobility, then no inefficiencies from spatial resource misallocation.

Defining "Openness", Part II.

Other markets:

L, *homogeneous* "labor" or just "people", as in $Y = F(K, L)$, external market return = W,

or $L = (L_s) \in \Re^n_+$, *heterogeneous*:

L_s, "labor (or people) of type s – unskilled, skilled, entrepreneurs, public finance economists, physicists, tennis players, retirees, healthy people, the infirm, . . .

– L_s may be completely mobile for some s, so that return = W_s.

– L_s may be completely *immobile* for some s, so that return in jurisdiction i= W_{is}, independent of every other i.

Land/natural resources in i: *Really* immobile.
– Good to remember, though, that boundaries can and do change, as jurisdictions dissolve, reform, consolidate, annex, cede

Again: Why Does Mobility Matter?

Predictive:

"Stage 1" effects of policies on workers, profits, house prices, land values differ when one or more resources are mobile. (E.g., capital tax/subsidy incidence with immobile workers; tax/subsidy on workers with immobile retirees; capital/labor tax/subsidy with immobile land; public goods; infrastructure; etc.)

"Stage 2" outcomes depend on payoffs from policies (Stage 1) $\rightarrow$ *equilibrium policies* depend on openness.

Normative:

Closed economy: Local policies have no impact on ROW.

Open economy: Resource flows to/from ROW affect ROW – *even for small jurisdictions*. (GE effects cannot be ignored.)

Equilibrium local policies may or may not be "socially efficient": Should or should not be restricted, encouraged, coordinated, etc.

An Ultra-Simple Example, with Variations, I.

One classic specification (omitting minor details):

(i) A closed system (the US) of atomistic localities (US school districts);

(ii) each uses a simple source-based tax on *freely-mobile capital* (local property tax) ($\bar{K}$ fixed in supply to entire system);

(ii) to finance a single local public good (K-12 education) . . .

(iv) to its *completely immobile*, homogeneous residents . . .

(v) whose preferred policies are faithfully implemented (politics is perfect).

Conclusions:

Equilibrium is *inefficient*: Spending and taxes are *"too low"* in Samuelson sense (no race (**static, or steady-state**), no bottom: $E, R, t > 0$).

Heterogeneous localities may choose different tax rates $\rightarrow$ capital allocation is distorted $\rightarrow$ standard deadweight welfare loss of taxation: Some tax rates *too high*, some *too low*.

An Ultra-simple Example, with Variations: II

First variation: Add just one instrument, a head tax T.

Conclusion: The (**static, or steady-state**) equilibrium is *efficient*: Spending is *first-best* optimal; the equilibrium tax structure is $t = 0, T = E$ (no race, and $E, R, t > 0$).

Lesson (familiar one): The set of instruments is crucial for efficiency. Here, one tax completely displaces another (superfluous instrument). Competition for mobile capital drives tax structure and expenditures to first-best.

Second variation: No head tax. Local property tax with ideal zoning.

Equilibrium is *equivalent* to head-tax case. Still first-best efficient.

Lesson (also familiar): different combinations of instruments may be equivalent. Here, a *regulatory instrument* added to fiscal instruments makes all the difference.

A Second Ultra-simple Example.

Suppose that households are freely mobile. Localities use a local property tax, with zoning, along with a tax on some other immobile resource (land, the elderly, . . .), to finance K-12 schools.

Suppose that schooling is congestible: more households $\rightarrow$ more children $\rightarrow$ more teachers, schools $\rightarrow$ cost of schools of given quality is *increasing* in local population size: $E = C(z, n)$.

Conclusions:

Equilibrium is *efficient*. Localities may use *both* tax instruments plus the regulatory instrument: property tax plus zoning to price congestion/access to schools (entry fees), plus tax on immobile resource to balance budget.

Special case: Education as a *quasi-private public good* ($C(z, n) = nz$). No need to tax/subsidize immobile resource (redundant instrument). Property tax + zoning sufficient for 1st-best.

Implicit pricing of congestion is an *essential* instrument.

Lessons for Redistribution.

"Social expenditures" are close to quasi-private.

What is "efficient pricing" of congestion effects for redistribution?

No redistribution at all.

Equity/fairness issues are always important in policy analysis/debates.

But will not specifically discuss further here. (A theme of my *NTJ* discussion.)

Large Jurisdictions: Strategic Policy Setting

Suppose few – e.g., two – governments, freely mobile tax base, fixed in aggregate (say $\bar{K}$, or $\bar{L}$).

Choice of t_i affects B_i *AND* B_j.

GBCs:
$E_i = t_i B_i(t_i, t_j)$

Best choice of t_i depends on t_j: strategic interactions, reaction functions.

– Analogous to duopoly/duopsony, oligopoly/oligopsony ("duopolity"/"oligopolity") vs. "pure" competition.

Suppose i chooses t_i (no, E_i!) to maximize indirect utility in i s.t. GBC.

Nash NCE in (t_i, t_j) (no, E_i, E_j!) may exist (homework: prove existence with nonlinear production functions and $N = 27$), may possibly be unique, almost certainly won't be efficient.

These two Nash NCE are NOT the same. (Like Cournot/Bertrand.) Equilibrium with E_i's as strategic variables $\rightarrow$ lower equilibrium tax rates/spending than with t_i's.

Economic Considerations in Modeling Strategic Policy Setting

Are there compelling or at least persuasive economic justifications for choosing one model rather than another?

Capital markets are gigantic. Few if any governments are "large" relative to it $\rightarrow$ atomistic or pure competition, not strategic.

Labor markets – esp. for narrowly-defined labor types – may be more localized: E.g., commuters within a single metro area. These localities may be "large" relative to their neighbors.

In spatial commodity tax settings (linear Hotelling type + variations), each locality has at most two neighbors $\rightarrow$ strategic interactions, not pure competition.

Basic Empirical Question: How Mobile Are Productive Resources?

Marshall, intro econ textbooks for past century: “Short run”: the *stock* of “appliances” is fixed (by definition); the *stock* of labor is variable. “Long run” $\equiv$ capital variability.

Much open-economy public finance literature is “anti-Marshallian”: “Capital is mobile, labor is immobile.” Why?

Is Labor Mobile? Where, When, and How Fast?

We hear:

"Within the US, people may be mobile, but not internationally".

Internal vs. International Migration: Former exceeds latter, usually.

Gross migration $>$ *net* migration, always and everywhere (usually by factor of 5-10).

These facts are also true of capital, as we should expect:

Big cities (large K) almost always have a lot of people (large L)!

A priori, we should not separate mobilty of K and L.

Quick Obervations on International Mobility of L.

FWIW, evolution of population head counts in US is increasingly determined by international migration. (Appendix III.)

Foreign born account for approx. 14% of population, soon to exceed highest level since 1850 (1890 = 15%).

In EU, migration MUCH more important than in US. ("Fertility bust, migration boom".) Migration has exceeded natural increase (now negative) since 1995.

Over periods $<$ 2 years, international migration may not be "too important". (Probably also true of international capital flows.)

Over periods of 2-4 years (aka "a lifetime in politics"), perhaps.

Over longer periods, decisive. Demographics are critical for both L and K, and for both R and E: ignore at one's peril!

Capital and Labor Flows: Stock Adjustments

"Stylized" assumptions about labor/capital mobility can be useful but also misleading.

Isn't mobility a "matter of degree"? What does this mean?

One approach: investment and migration are *flows* that operate on *stocks* of K and L.

Why aren't all adjustments instantaneous? *Adjustments are costly.*

Illustration:

$$Y = F(K, L)$$

where F is *strictly concave* due to immobile resources.

Cases: Special and General.

Special cases:

Leontief F: K and L relocate together. A tax/subsidy for either affects both *equally*: a composite factor that adjusts quickly or slowly over time.

Linear isoquants: Adjustments in K and L completely independent. A tax/subsidy for either has *no effect* on the other.

Economically natural cases: K and L are imperfect substitutes (like Cobb-Douglas, CES with $0 < \sigma < \infty$).

Implications of "Imperfect Mobility": Complementary Inputs.

Hypothetical policy: Tax/subsidize mobile resource K (one-time permanent change), subsidize/tax immobile resource to satisfy GBC.

None of a tax/subsidy on either labor or capital is born by *other* mobile resource in the "short run" (instantaneously). ("Closed economy" case.)

Entire burden falls on immobile resources as time $\to \infty$ (the "long run"); *None* on either mobile resource. ("Perfect mobility" outcome.)

Transition: tax (subsidy) on K depresses (raises) local return to K; L flows out; K goes out if σ small or comes in if σ large.

Predictions? “Open” Questions.

“Stage 2” analysis: Who cares about these policies? A tax on K hurts K, helps immobile resource, may hurt (σ small) or help (σ large) during transition.

In long run, L and K “don’t care”; immobile factors are harmed.

How do agents discount future returns?

Capital and labor may be “friends” or “foes” in PV terms, depending on σ and other parameters.

How does “voice” vary with mobility (“exit”)?

Time consistency?

Conclusion: Big Questions Remain!

How to design/amend institutions in order to elicit “good” outcomes?

Efficiency and equity must both be considered.

Is decentralized fiscal policy good or bad? What, if anything, should be done?

Decentralize more? Centralize more? At local level in US? Local level in Germany/France/Italy/UK/Belgium/Canada? National/international level? Where? Why? How? What?

Going out on a limb here: Probably it’s best not to centralize completely (abolish localities, states/provinces, nations) and turn everything over to the UN.

Nor to decentralize completely: Abolish UN, nations, subnational governments, down to the individual level.

One size won’t fit all: How to decide?

To Recap:

Doesn't a lot depend on how well governments (political processes) function? Are they great? Really bad?

What instruments can/do/should governments utilize?

Factor mobility is one important way that policies in one jurisdiction can affect ROW. Not the only way, of course: Trade, spillovers, etc.

"Competition" is not *ipso facto* strategic, for governments any more than for firms. On the contrary!

Strategic interactions esp. important in "spatial" contexts.

Over what *time horizons* does competition operate?

One US administration? The period since we've gotten good data? The entire history of a nation?

There is ample room here for many contributions by many researchers, working on many specific issues!

THANK YOU!

Appendix I: Quotations from Brandeis.

"The removal by the leading industrial states of the limitations upon the size and powers of business corporations appears to have been due not to their conviction that maintenance of the restrictions was undesirable in itself, but to the conviction that it was futile to insist upon them, because local restriction would be circumvented by foreign incorporation. Indeed, local restriction seemed worse than futile. Lesser states, eager for the revenue derived from the traffic in charters, had removed safeguards from their own incorporation laws.

"Companies were early formed to provide charters for corporations in states where the cost was lowest and the laws least restrictive. The states joined in advertising their wares. *The race was one not of diligence, but of laxity.* [Emphasis added.] Incorporation under such laws was possible, and the great industrial states yielded in order not to lose wholly the prospect of the revenue and the control incident to domestic incorporation."

Brandeis, Part II.

Can states impose unequal or discriminatory taxes on businesses? *Yes, certainly:*

"This case requires decision only of the narrower question whether the state may freely apply discrimination in license fees against corporate chain stores. . . . The corporate mechanism is obviously a vital element in the conduct of business. *The encouragement or discouragement of competition is an end for which the power of taxation may be exerted. And discrimination in the rate of taxation is an effective means to that end.* [Emphasis added.] . . .

"The elimination of chain stores, deemed harmful or menacing [,]. . . may be achieved by [prohibiting them]. Or, instead of absolutely prohibiting the corporate chain store, the state might conclude that it should first try the more temperate remedy of curbing the chain by imposing the handicap of discriminatory license fees."

Brandeis, Part III.

"The state's power to apply discriminatory taxation as a means of preventing domination of intrastate commerce by capitalistic corporations is not conditioned upon the existence of economic need. It flows from the broader right of Americans to preserve, and to establish from time to time, such institutions, social and economic, as seem to them desirable, and likewise to end those which they deem undesirable."

Here, Brandeis makes clear that *states are guaranteed a high degree of fiscal and regulatory autonomy.* He *does not* argue for policy uniformity among the states, or for centralization of policy.

Appendix II: GBCs.

For any jurisdiction i, a PV GBC must hold, like:

$$PV(E_i) = PV(R_i) + PV(NG_i)$$

where:
$PV(\cdot)$ = present value;
$E_i = (E_0, E_1, \ldots, E_t \ldots)$ = time path of expenditures;
$R_i = (R_0, R_1, \ldots, R_t \ldots)$ = time path of (tax and non-tax own-source) revenues;
$NG_i = (NG_0, NG_1, \ldots, NG_t \ldots)$ = time path of net transfers/grants/subsidies (received from/paid to) other jurisdictions.

Each variable, in each period, contains many fiscal variables: expenditures on each of many programs; many specific tax bases and tax rate schedules; many types of intergovernmental transfer programs.

Appendix II: GBCs, Part II.

Whether acting atomistically or strategically, each jurisdiction i must choose the specific fiscal variables (and also regulatory policies) that determine the vectors (E_i, R_i, NG_i), *subject to* the PV GBC.

In the simplest case, as mentioned above, the GBC might be atemporal, with one type of spending and one tax rate applied to one tax base:

$$E_i = R_i = t_i B_i.$$

If the government is atomistic, choosing E s.t. GBC is equivalent (modulo invertibility of the revenue function) to choosing t_i s.t. GBC.

Thus, "expenditure competition" is, in this case, equivalent to "tax rate" or "tax revenue" competition.

If the government acts strategically (i.e., is "large"), these are NOT equivalent.

Appendix III: Demographic Trends

Is *international* labor mobility "important"?

No, if it is effectively prohibited. (E.g., migration from DPRK to ROK.)

Not on time scales of 0-24 months, usually. 2-4 years (aka, "a lifetime in politics"): ambiguous.

Otherwise:

In the US: Yes.

In Europe: Yes, but probably more so.

Demographic Trends: US

A few observations about immigration in US.

Immigration is presently about 75% of natural increase.

Immigration $>$ natural increase by 2030 (central projection); immigrants/natural increase = 2.8 by 2050.

Foreign-born (1st generation) presently about 14% of US population, 17% of labor force; “projected” (i.e., forecast) to rise to about 17% of population by 2060 (highest since 1850; previous high, 14.8% in 1890).

2nd-generation = about 12% of US population (compare to 14% 1st-gen). Hence 1st + 2nd = about 25%.

About 25% of children live with one or two foreign-born parents.

Demographic Trends: US, II

By age group, at present:

Native % $>$ foreign-born ages 0-24; native $<<$ foreign-born, ages 25-54; native $<$ foreign-born ages 55-64; about equal, 65 and older.

FB are presently a historically high share of US population, and this share will increase.

Old-age dependency ratio will rise in coming decades, with well-known fiscal implications.

Conclusion:

International labor mobility has been increasingly important for US labor force, population size, revenues, expenditures, GDP, etc. for the past several decades.

It will be even more important in coming decades, barring reversals of major trends.

Demographic Trends: Europe

Fertility rates have crashed to well below replacement: 1.54 births/woman, 2019.

NOT a recent phenomenon.

Immigration has been increasing. Also not a recent phenomenon.

Natural increase for EU-27 ~ 0, 1995-2010; < 0 since 2015.

Net migration $>$ natural increase since 1990; $>>$ since about 1995.

Conclusion:

International labor mobility has been increasingly important for EU labor force, population size, revenues, expenditures, GDP, etc. for the past several decades.

It will be even more important in coming decades, barring reversals of major trends.