



THE LONDON SCHOOL
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POLITICAL SCIENCE ■



Grantham
Research Institute
on Climate Change
and the Environment

Spatial dynamics and Multilevel Finance

Evidence from China and Mexico.

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Based on LSE/CUT Program *on Financing Sustainable Transitions in China and Mexico*. A summary of the China program and recommendations for the 14FYP see Ahmad, E and J. Van Rijn (2020). And for a discussion of the measures included in the 14FYP see E. Ahmad, *Journal of Infrastructure, Policy and Development*, 2021. For a summary of the Mexico program see Ahmad, E., K. Ahmed and H. Viscarra, 2021; see also report with the ILO: Ahmad, E., J-L Añorve and H. Viscarra, on *Productivity Enhancement and Sustainable Employment in Mexico*, November 2021.

Objective of the sustainable recovery and reform agenda

- A strategy for recovery from the pandemic as well as just transition to address environmental challenges entails, inter alia,
 - Employment generation in clean, compact and connected cities, and creating high tech zones
 - Mitigation of environmental damage and incidence of disease in metro areas
 - Addressing inequality across households and regions, and
 - Managing fiscal and financial risks, in addition to those from the pandemic and climate change
- Focusing primarily on major metro areas (Mexico City, Guangzhou or Jakarta) is self defeating
 - Cannot take more migrants (CDMX and Jakarta are literally sinking) and informal slums spread into neighboring jurisdictions
 - Cross jurisdictional externalities are difficult to handle, especially with rigid jurisdictional boundaries and responsibilities
- Strategy should focus on a just transition, including energy use and transportation, together with urban reforms, and multilevel finance drivers
 - Tax, transfer and governance measures for essential investments and basic services, including health care and education.

Why China and Mexico? Similarities and Differences in Policy Framework from the 1990s

- Both multilevel countries **with significant trade and policy distortions and low tax/GDP ratios in early 1990s** (around 10% of GDP)
 - Although *China is a unitary state*, provinces/local governments enjoyed significant effective autonomy, and upward revenue sharing financed the Center
 - *Mexico is a federation*, but had enjoyed virtual single party rule for close to 70 years at all levels of government
- **Approach to multilevel reforms: investment and taxation**
 - *Mexico followed the “normative” approach* “finance follows function,” with a market orientation to investment finance, and CCTs for the poorest; with *maquiladoras* in the North to attract FDI
 - *China chose a “positive” approach*, focusing on tax reforms to anchor structural reforms, but introduced a **modern national tax system** (around the VAT) and copied **the SEZ model to “ring fence” FDI** along the coast, given poor connectivity infrastructure
- **Similarities in the application of instruments over time**

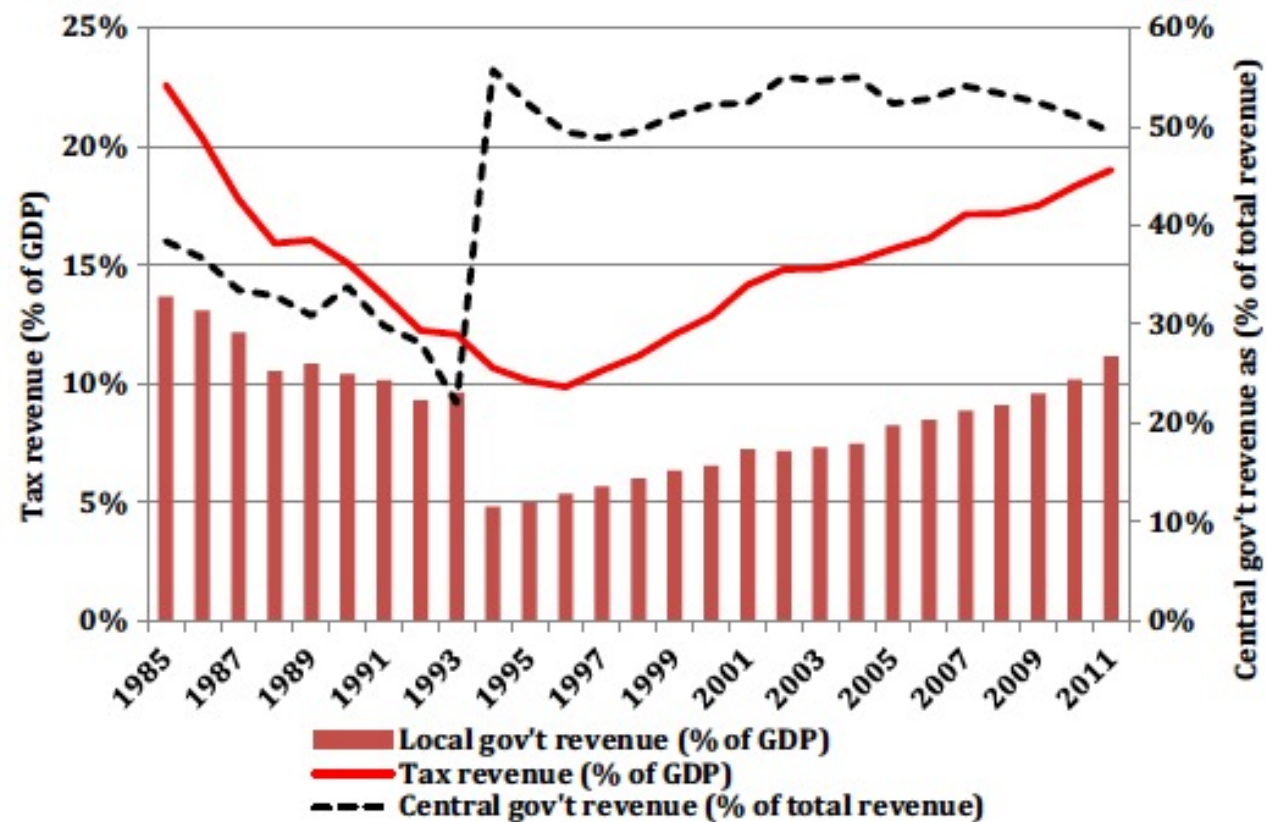
Successes and challenges in China

Over expansion of coastal urban “hubs” now hugely problematic from climate change, income distribution and health care perspectives

Tax reforms as driver of structural change

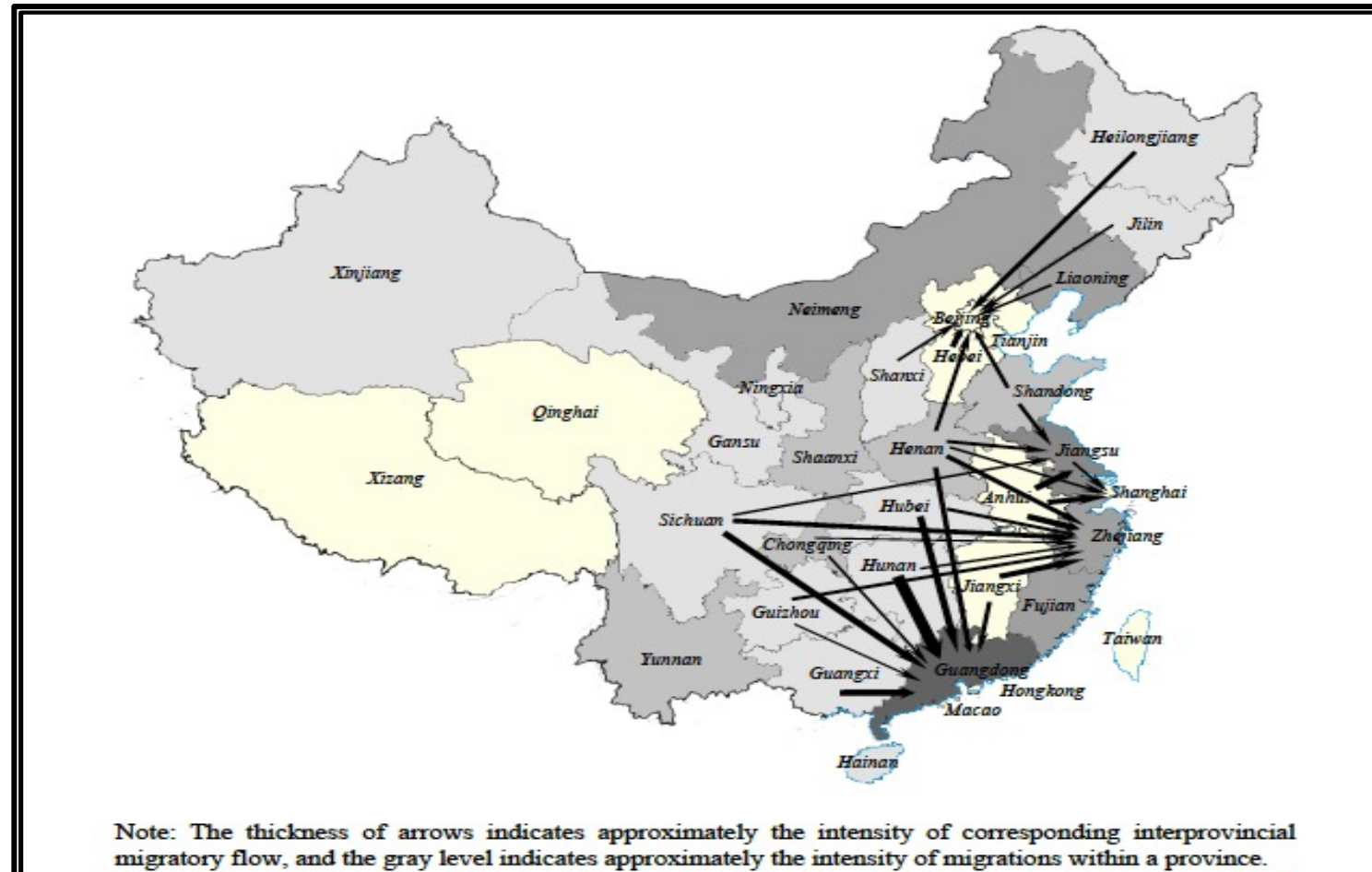
- **Deng Xiao Ping's Fiscal responsibility system entailed reducing the effective tax (100% on profits of SOEs) to encourage private investment and growth**
 - **Tax/GDP ratio dropped sharply** from 25% in 1980 to 10% by 1992
 - And central share from 50% to 25%, as local governments prioritized their own spending before sharing revenues upward
 - By 1992/3 central government ability to conduct macroeconomic policy, redistribution or investment severely curtailed
- **1993/4 “positive” reforms focus on taxes to create and finance growth centers for FDI driven exports**
 - creating a central tax administration (STA) from scratch
 - Functional basis administration and “Golden tax project” to match invoices
 - a new VAT, shared with provinces, for a level playing field and additional revenues
 - Tax reforms augmented by equalization transfers changed upward revenue-sharing to a more common downward sharing model
- **Political economy of multilevel reforms ensured that no province loses : stop-loss provision**
 - VAT on goods to be shared with provinces on origin basis
 - Lump sum guaranteed transfer to ensure no province lost (stop-loss provision, used in Mexico's 2007 reform)
 - Revenue-share from VAT and income taxes benefitted rich provinces
 - Equalization system, provided an inducement for the poor provinces
 - **Revenue returned: created space for investment for coastal “hubs”, critical for sustained growth over the next two decades**
- **Effects:**
 - Maintenance of full employment opportunities with opening up of the labour market
 - Major reduction in poverty (over 750m; as 500 m migrated to cities mainly in the coastal hubs)

China: 1993/4 VAT reforms—increase in tax/GDP and central share as basis for rapid growth, investment in coastal “hubs”



Source: Ahmad, Rydger and Stern, China Development Forum 2013.

Continuing migrations to coast make “dual circulation”/rebalancing even more important

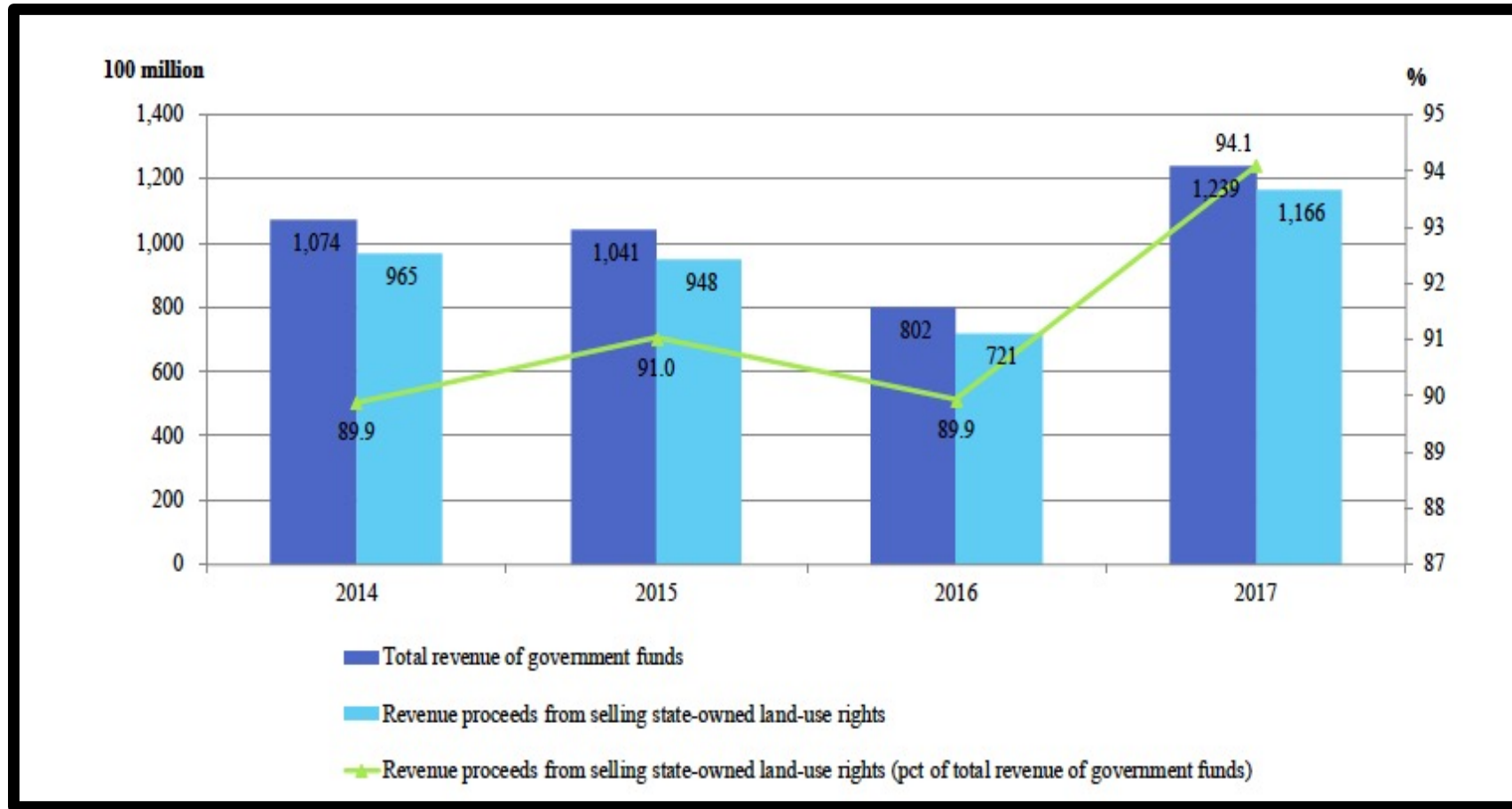


- 10% + growth for over two decades
- Over 750 m taken out of poverty
- But increasing congestion and pollution in coastal cities
- Build-up of risks with local financing model

Revenue centralization created problems for financing local infrastructure

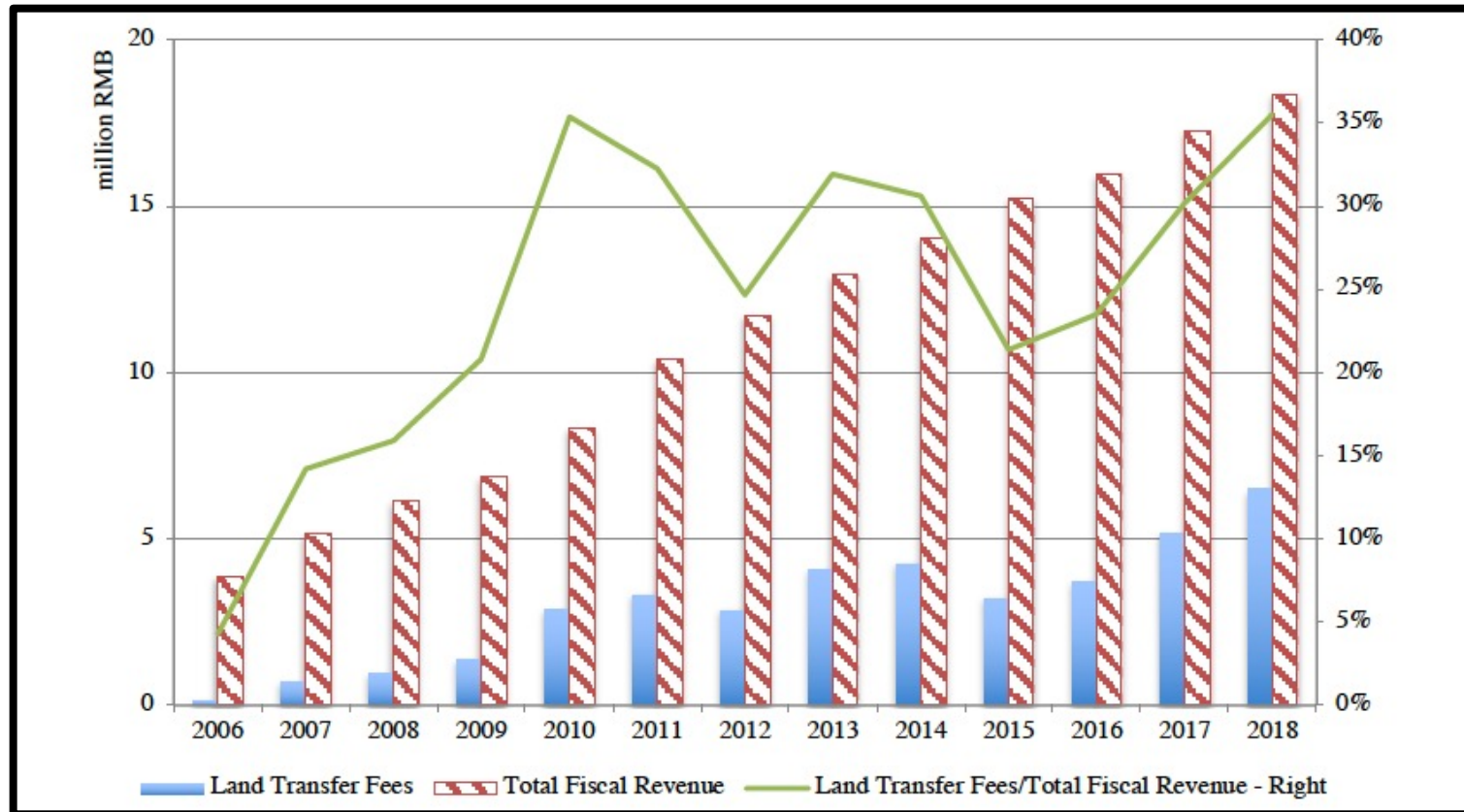
- Overall **tax/GDP ratio increased from 10% to almost 20%** in five years allowing the central government more room for investment and redistribution, but
- **Local governments lost “own-source” revenues over which they had control**, although compensated by revenue sharing and transfer mechanisms and there were no “own-source” revenues, **local governments not allowed to borrow directly**
- Urban Development Investment Corporations and Local Government Financing Vehicles (LGFVs) **leveraged land sales** on behalf of the local governments (component of Land Value Capture), and could borrow
 - Private firms then built much of the infrastructure needed in the SEZs (and local governments more generally)
 - Form of “implicit golden rule”, although it was difficult to ring-fence off-budget funds, or track implicit liabilities
 - 2015 formal introduction of local government bond system, but lack of own-source revenues creates sustainability problems
- **Consequences: good infrastructure in coastal metropolises**, including Guangzhou and Shenzhen
- **But**
 - growing **urban sprawl, congestion and pollution**, increasing costs of connectivity infrastructure (e.g., Guangzhou); **rent-seeking opportunities** (Wang, Wu and Ye, 2018)
 - **Buildup of implicit liabilities in LGFVs not easy to identify** (work by Ahmad and Xiaorong Zhang on local government balance sheets)
 - **Local government bond system**, step in the right direction but not anchored in own-source revenues—land sales and shared revenues restrict its usefulness
 - **Leverage by private firms** (Evergrande, and others), created problems for banks and bond-holders; increasing inequality—further away from the goals of 14FYP (common prosperity)

So, increasing reliance on land sales in coastal “hubs”



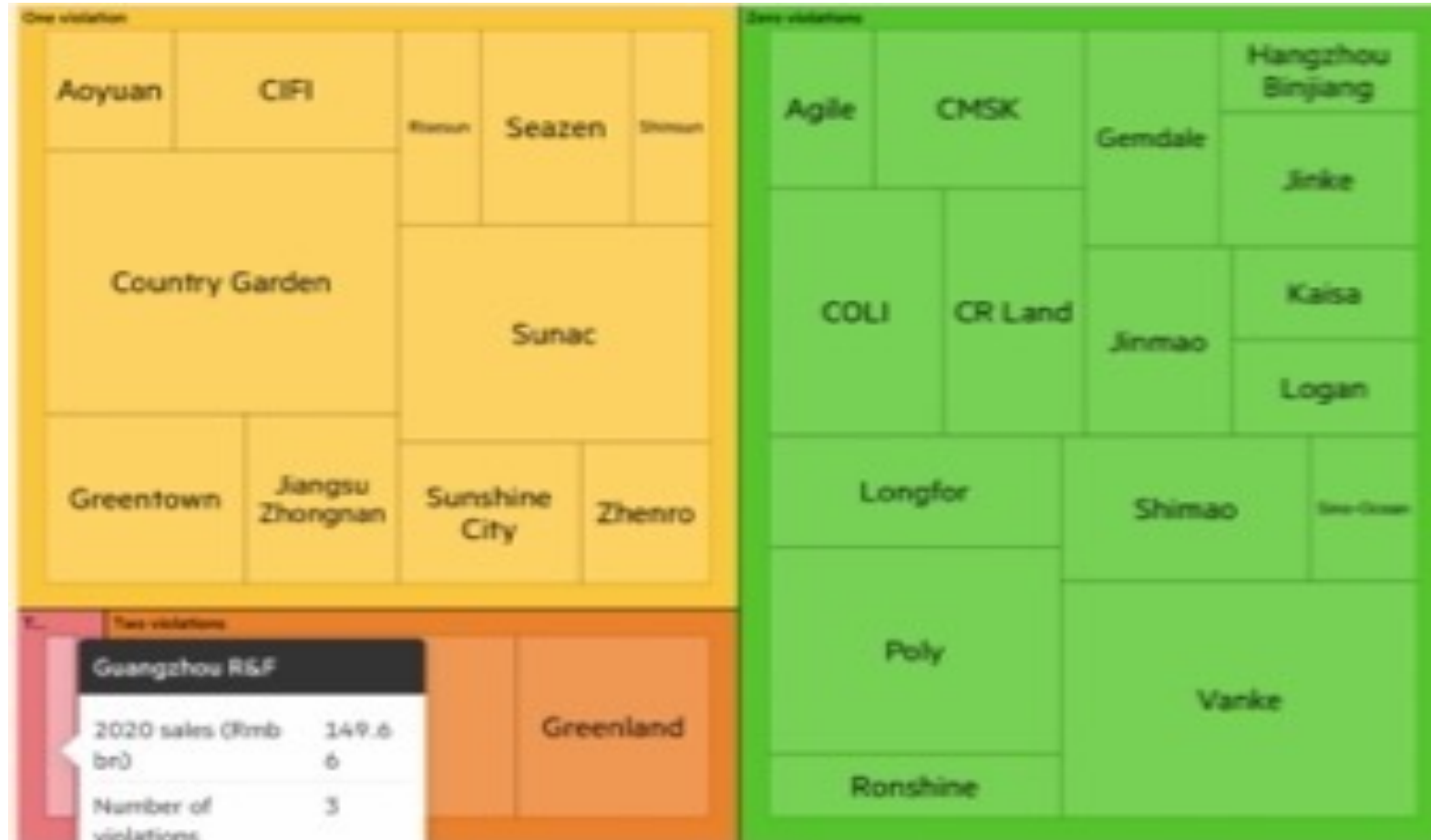
Source: Ahmad, E and Van Rijn, ADB 2020

Increasing contribution of land finance for local fiscal revenue nationwide



Source: Rogoff and Yang (2020) based on Ministry of Finance data.

Increasing risk and leverage by developers— in relation to “three red-lines”



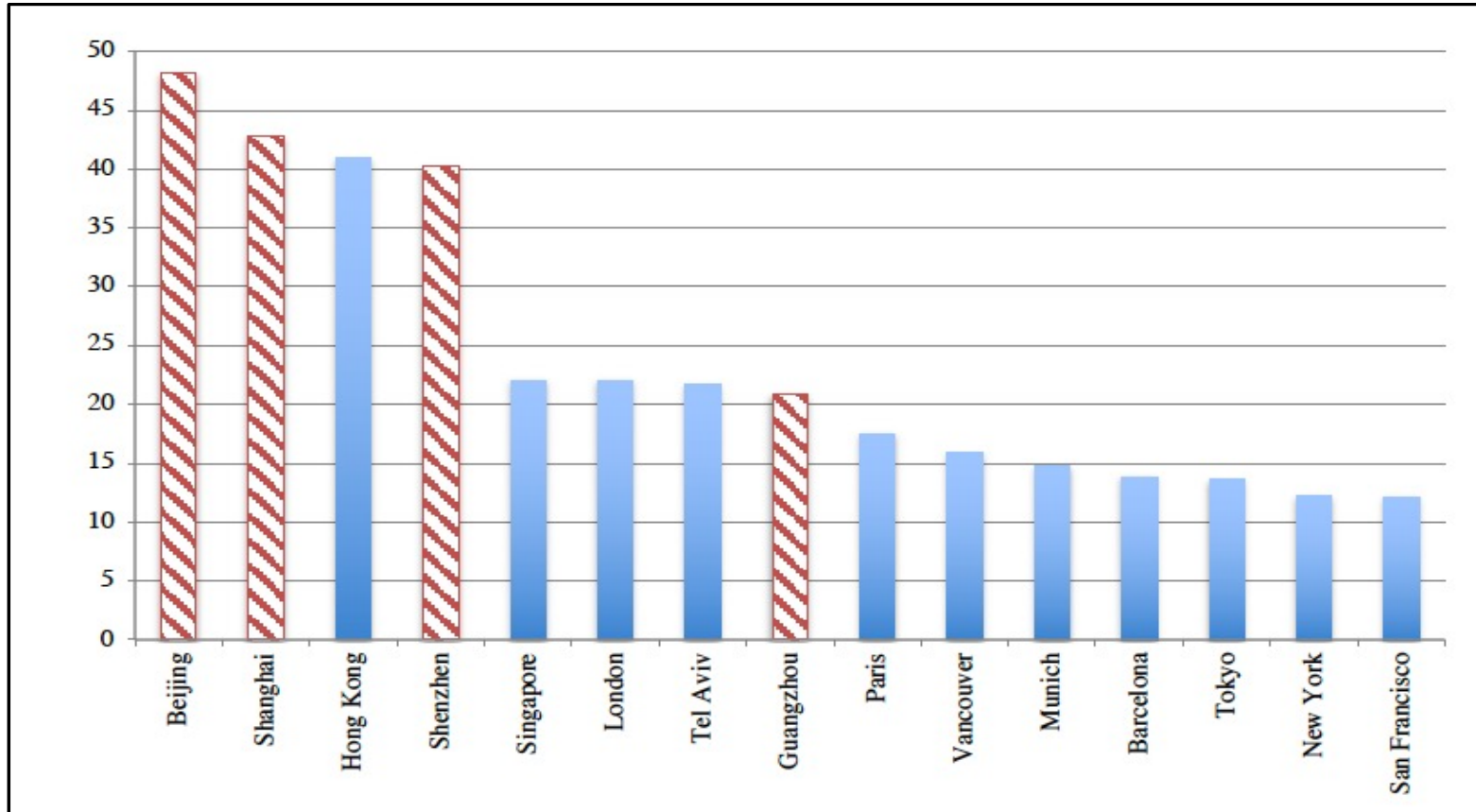
Case of Evergrande in relation to “three red lines” (October 2021)

	Liabilites	Assets	Ratio	Red line requirement
RMBm	1,966,534	2,377,575	83%	less than 70%
\$m	294,980	356,636		
	Net Debt	Equity	Ratio	
RMBm	485,003	411,041	118%	less than 100%
\$m	72,750	61,656		
	Cash	ST Debt	Ratio	
RMBm	86,772	240,049	36%	more than 100%
\$m	13,016	36,007		

Moving country even further away from income redistribution goals (“common prosperity”)

- **Increasing inequality within Guangdong** (Xiao, 2018)
 - Gini for Guangdong is greater than China as a whole—signifying increasing disparities within Province
 - Increasing official debt for local governments—telescoping down to the lowest levels
 - Full magnitude of liabilities difficult to establish without complete balance sheet information consistent with GFSM 2014 Framework adopted by Central Government (Ahmad and Zhang Xiaorong, 2018, 2021)
- **Increasing interpersonal inequalities:**
 - Ineffective coverage of the income tax, absence of proper recurrent property tax
 - Evergrande CEO Hui, while company was racking up \$300bn in liabilities had a personal fortune of \$36 bn in 2019 (Forbes), and \$ 5.3bn in dividends (2017-20)

Home price to rent ratios, among the highest in the world—but local governments do not benefit



Source: Rogoff and Yang, 2020.

Increase in leverage and implosion of LVC model requires *urgent attention to local tax revenues* for more sustainable financing

- 14th Five Year Plan **endorses development of local own-source revenues to anchor sustainable growth**, now urgent given the implosion of the land sales/value capture model
- **US-type property tax experiments in Shanghai and Chongqing failed** to raise revenues
- Ahmad,E., M. Niu, L. Wang and M. Wang, (2020) proposal (*Beneficial Property Tax to Finance Sustainable Transitions in Chinese cities*, LSE Program on Sustainable Transitions in China)
 - **develop “Marshallian” beneficial property tax system**, based on location, size, and cost of service delivery
 - Simulations for six cities to **raise 2% of GDP to replace land sales, and anchor basic services** and greater accountability
 - also **reduce inequality**, and
 - provide a **basis for sustainable access to private finance**, including municipal bonds and PPPs

Simulations of the beneficial property tax (2% of GDP) for six metropolitan areas in China

Distributional impacts Atkinson index A_j , and Gini Coefficient G_j

City	Property tax 2% GDP (Y bn)	Current Education Spending (Y bn)	Property Tax (Y)/ m^2	Initial A_1	Tax Only A_2	Tax/ Benefit Education A_3	Initial G_1	Tax Only G_2	Tax/Benefit Education G_3
Guangzhou	39.2	32.12	121.4	.60	.76	.75	.39	.40	.39
Shanghai	54.9	84.10	90.81	.71	.51	.50	.40	.41	.40
Shenyang	10.9	11.51	52.68	.63	.49	.47	.33	.34	.33
Wuhan	23.8	23.11	85.11	.52	.47	.46	.33	.35	.33
Xian	12.5	11.96	48.8	.47	.57	.49	.35	.36	.34
Fuzhou	12.4	15.31	54.6	.51	.89	.55	.36	.37	.36

Note: Gini coefficient (G) and Atkinson index (A) are two different measures of interpersonal inequality. Atkinson index is more sensitive to lower-income groups.

Source: Ahmad et al. (2020)

Chinese Agenda for Reform

- “Dual circulation and rebalancing” to address distributional and environmental issues
- Addressing fiscal risks and liabilities (doubling over the past decade and among the highest in the world around 300% GDP, *Geneva Report 2022*) and
- Deleveraging the property sector without abandoning growth
- Development of new “high tech zones” will require a fresh look at jurisdictional boundaries, assignments and tax responsibilities

Meanwhile in Mexico—slower growth,
but also increasing concentration in
metropolitan hubs

Mexico City (CDMX) is sinking and cannot take more migrants—already
pushed into informal slums in the State of Mexico

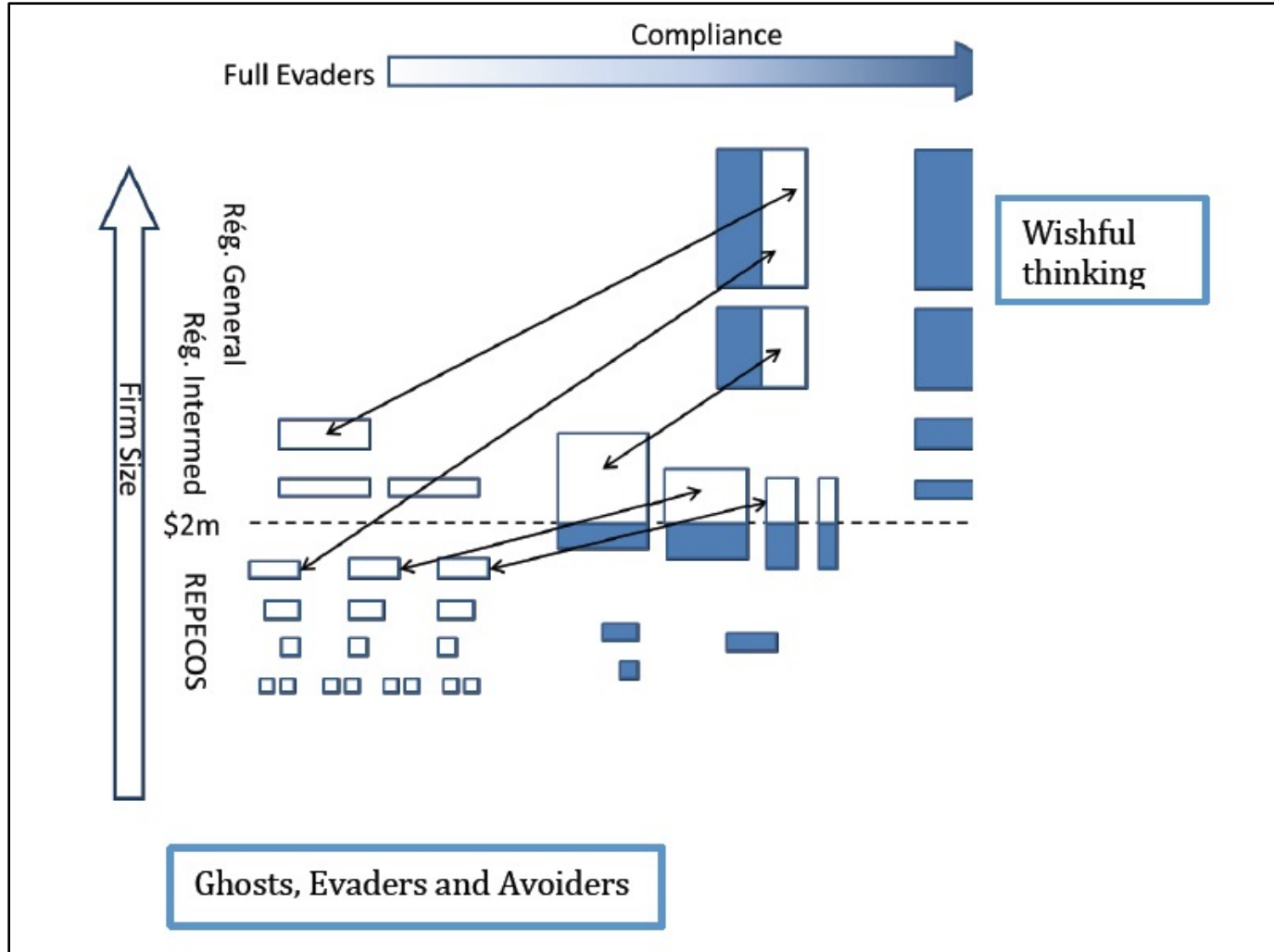
Political economy of fiscal, trade and urban reforms in Mexico since the 1990s

- **Structural transformation of congested and polluted Mexico City with shift of manufacturing to maquiladora zone and central Mexico** (national infrastructure and private investments, FDI), and more recent tax changes
- **Infrastructure financed by project related bonds without state or federal guarantees nonetheless resulted in a sub-national debt crisis in the 1990s**
 - Major road building program linked to NAFTA, affected by the tequila crisis, and sharp increases in non-performing loans of the state banks (as in Spain in 2008) and contributed to the banking crisis
- **Conditional cash transfer (CCT), *Progresa/Oportunidades***, much celebrated by IFIs, created a poverty trap in Chiapas, with take-up increasing (to 72% of the population by 2014 from 45% in the 1990s), while poverty also increased to around 75% by 2015
- **Tax preferences and exemptions (VAT, CIT) for investment and distributional considerations** only resulted in a non-oil tax/GDP ratio of around 10% in the early 2000s, without much positive impact, and generated significant rent-seeking opportunities
- **Repeated attempts to reform major taxes in isolation failed**
 - e.g., 2010 attempt to fix the VAT together with use of conditional cash transfers CCT (*Progresa/ Oportunidades*) did not address state interests in Congress, and did not provide support for most of the largely urban households that would have been affected
- Political economy of tax reforms in 2013/14 **used a coordinated set of tax measures that offset gainers and losers** including conversion of the implicit petroleum subsidy into a positive carbon tax passed without the use of CCTs
 - **Main safety net was the universal basic pension “65 y mas” (65 and above)**, *Oportunidades* was converted into an employment support and training mechanism *Prospera* in 2014, abolished by Obrador administration in 2019

VAT created level playing field, subject to connectivity investments

- **Focus on the full VAT base to generate information on the value chain and reduce possibilities of rent-seeking,**
 - including on excises, payroll and the income taxes
 - Exemptions maintained for non-processed foods for political economy purposes building on Seade, Coady et al 1998 (SHCP and World Bank), and Urzúa (2005, “Ahmad-Stern model revisited”)
- Reforms **raised the tax/GDP ratio by 4 percentage points** to 14.5% within three years
- **Created a level-playing field, with huge influx of FDI outside the SEZs**
 - Does not matter whether the investment is outside the SEZ maquiladora zone, as long as immediate refunds are provided on export
 - Encourages the development of **domestic linkages in central states** with major employment implications
 - Facilitates the **restructuring of over extended metro areas**, such as Mexico City to a more service orientation with **manufacturing and employment moving to State of Mexico, Queretaro and other Central States**
- **But problems for Mexico ahead with shift to new value chains for electric vehicles, especially in the US**

Stopping incentives to cheat in Mexico



Source: Ahmad, E., 2021, "National and subnational tax reform to address informality, in *The Global Informal Workforce: Priorities for Inclusive Growth*, IMF.

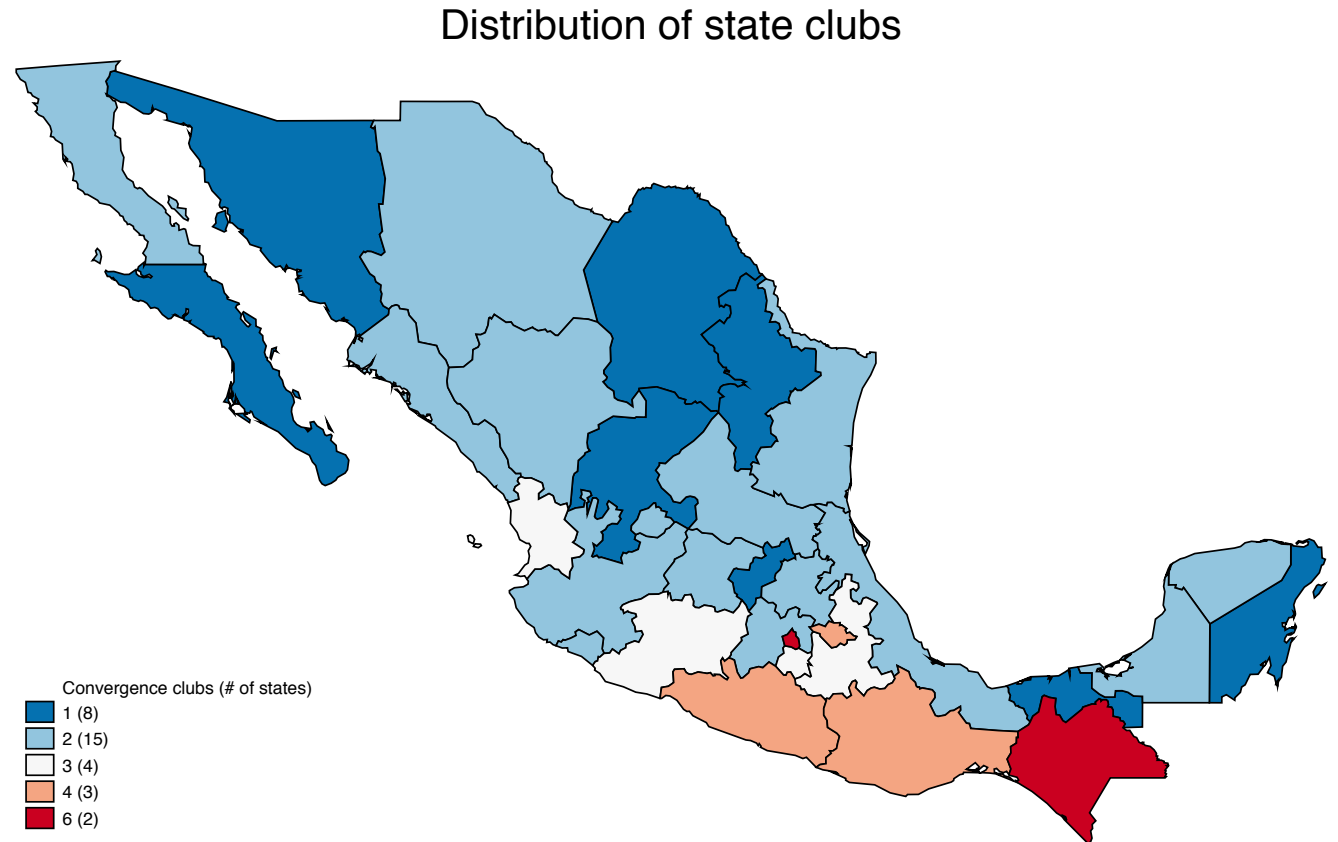
2013 reforms turned the whole of Mexico into a Free Trade Zone....although Ford cancelled the Cruze plant in January 2017 under US pressure....further disruption likely due to pandemic



Shift to EVs in the US will affect Mexican supply chains and northern and central states. ***A decarbonization strategy is needed urgently.***

But created inequalities, with convergence in the center but South falling behind

- Robust growth in the North and around Mexico City, with negative growth in the poorest southern states
- Ahmad and Viscarra (2021) apply Phillips and Sul (2007) convergence tests
- Mexican states do not converge in the long run:
 - 4 clubs, roughly following the Northern, Central and Southern states.
- But Chiapas and Mexico City (CDMX) represent extreme inequality:
 - CDMX remains the richest part of the country by far
 - And Chiapas is the poorest, with an increasing share of the poor.



Source Ahmad and Viscarra, LSE Program on Financing Sustainable Transition in Mexico, (2021)

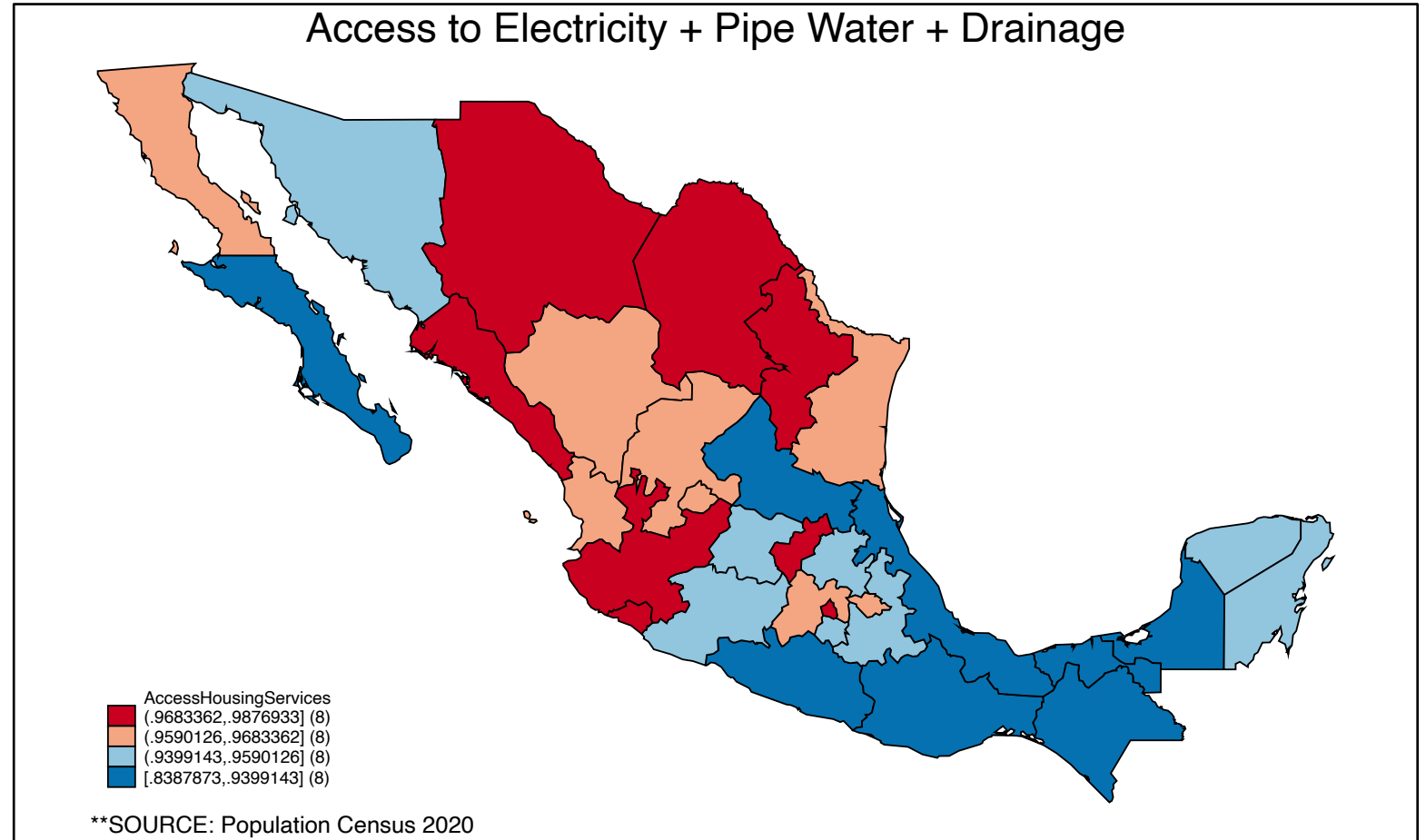
Emergence of disparity “Clusters in Mexico”

Clubs	GDP/capita 2015 (nominal thousands)	GDP/capita 2003-2015 (nominal thousands)	Avg growth	States
1	150,1	138,5	1,9%	Baja California Sur; Coahuila de Zaragoza; Querétaro; Quintana Roo; Sonora and Zacatecas
2	136,7	148,9	1,0%	Aguas calientes; Baja California; Chihuahua; Colima; Durango; Guanajuato; Jalisco; San Luis Potosí, Sinaloa, Tamaulipas, Veracruz y Yucatán
3	74,7	70,9	1,2%	Hidalgo; Michoacán de Ocampo; Morelos; México; and Nayarit
4	55,8	53,7	0,7%	Guerrero, Oaxaca y Tlaxcala
Divergent States				
CDMX	256,3	229,6	2.2%	
Chiapas	42,5	45,4	- 1.0%	

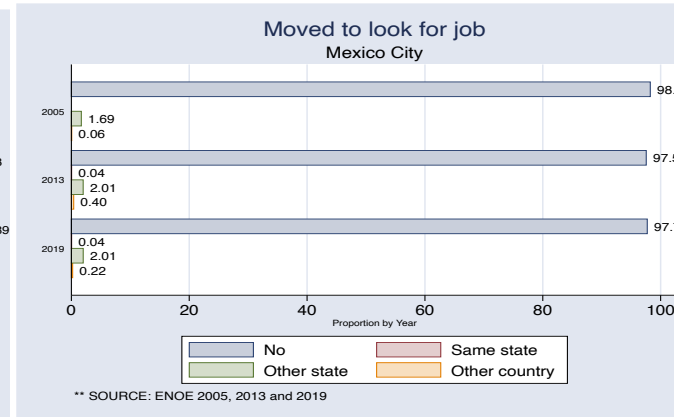
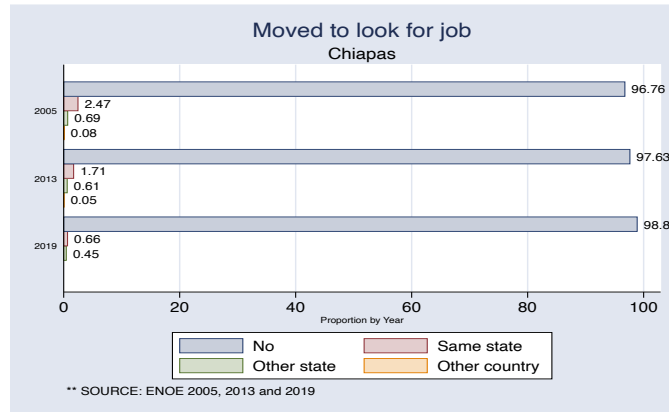
Urban transformations—role of investments and tax policy: Mexico City and Chiapas

- Despite its ecological fragility, Mexico City (CDMX) has been a magnet for migrants and was the center for manufacturing (almost half of the total in Mexico in 1980)
 - Huge expansion of the metropolitan area, with major environmental impact—pollution and congestion
 - Manufacturing began to move out after the establishment of the maquiladora zone in the North
- Following the 2013 reforms:
 - Incentives to use REPECOS/SMEs as mechanisms to avoid taxation were reduced
 - Also continuing development of cities in the center of the country—helped reduce pressure on CDMX, by attracting fresh migrants
 - Workers leaving CDMX, from the informal sector, went to Quintana Roo given the expansion of tourism ;
 - Surprise was reverse migration of workers back to Chiapas—contrary to the dual economy hypothesis, possible explanations:
 - Reliance on extended family support together with the conversion of *Oportunidades* from a CCT to *Prospera*, a transfer to “microenterprises”
 - Huge increase in micro-enterprises as a consequence in Chiapas—but declining incomes in low value-added activities relative to wages in CDMX
- **Inequality can only be addressed by the creation of sustainable employment opportunities in lagging states**

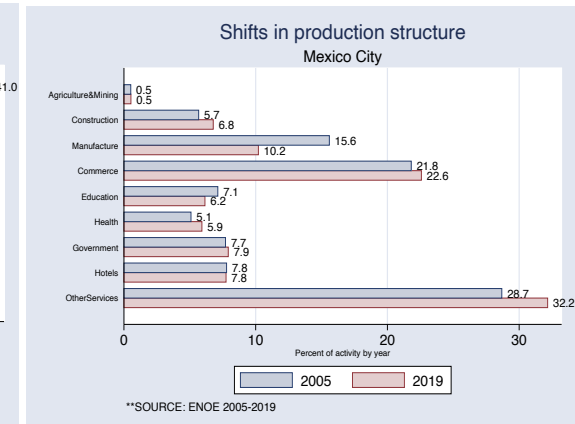
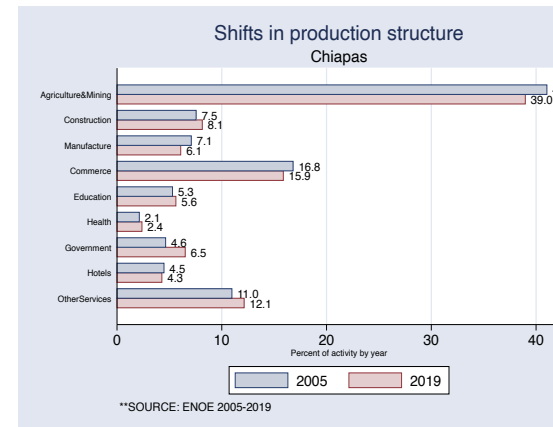
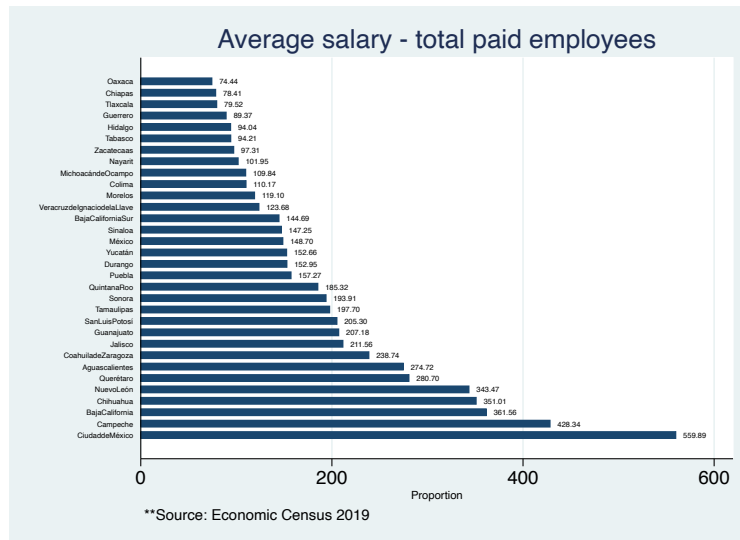
Disparities in public services influence disparities in growth and adequate employment



Who's moving out of Mexico City, but why some to Chiapas?



- Movement of manufacturing out of CDMX since 1990s
- 2013 reforms squeezed ability of firms to use SMEs (REPECOS) to hide “profits”



Sustainable employment hubs: private investment requires connectivity, and local services

- The **2013 national tax reforms leave Mexico much better prepared to take on the challenges of pandemic and global economic slowdown**
 - Improved tax/GDP performance reduces vulnerability to pandemic and externally induced economic shocks
 - More efficient VAT facilitated economic integration and stopped cheating
 - Carbon tax important in sending signals to firms and households; could be improved by a state level piggy-back
 - Development of “hubs in the central states”
 - **Querétaro as an example of “market driven hub”** in the “middle states”
 - Small university town, attractive environment and high-quality public services
 - Attracted Aerospace (\$1.5 bn) and BMW (\$1.3 bn)
 - Good local infrastructure, connected to national highway system and local airport
 - But reliance on land sales risks urban sprawl and losing the attractiveness of the city
- But problems with lagging states of the South are severe

Integrated directions of reform: taxes and investment decisions

- Ahmad and Viscarra (2021) using economy-wide shadow prices **incorporated weights on the human, social and natural capital, and income distribution, to inform both investment and tax decisions**
 - Updated the directions of tax reform adopted in 2013 (based on Seade et al, 1989, Urzúa),
 - Consumption of unprocessed foodgrains less damaging for the poor than previously anticipated
- **Energy products become more desirable to tax when focus on inequality is increased** reflecting the differences in consumption patterns of rich and poor households.
- 2013/14 reforms introduced a **national carbon tax (or pricing above world prices eliminating implicit subsidies)**, with desirable properties better than expected revenues,
 - Useful to consider a state/metropolitan piggy-back on the carbon tax—will help sustainable urban transitions
 - **Facilitate urban transition**, by helping to reduce congestion in CDMX and neighboring states, while
 - also raising revenues and meeting distributional considerations.
 - increasing incentives for transformations within and across states

Directions of reform 2014, shadow prices, different weights on land, labor and capital,

Food	LAND=0.9, K=0.3, LABOR=0.5					LAND=0.9, K=0.3, LABOR=0.9					LAND=0.9, K=0.7, LABOR=0.5				
	e=0	e=0,5	e=1	e=2	e=5	e=0	e=0,5	e=1	e=2	e=5	e=0	e=0,5	e=1	e=2	e=5
Cheese, butter and other related products	60	41	37	25	9	60	40	37	25	11	60	41	37	25	10
Cow meat	41	28	32	21	13	42	29	30	21	15	40	29	32	21	15
Corn products	72	35	15	9	16	72	35	17	11	18	72	35	17	10	17
Wheat flour, tortilla and pasta	58	45	46	33	17	58	46	46	33	19	58	46	47	34	19
Chicken	48	34	35	28	18	48	34	35	29	20	47	34	34	28	18
Beverage industry: non-alcoholic	70	53	45	32	22	70	53	45	32	23	70	53	46	32	23
Rice and other related products	53	46	47	34	27	53	47	47	34	29	53	47	48	35	27
Vegetables	73	50	34	26	33	73	50	34	26	33	73	50	35	26	33
Pork and sausages	56	58	54	48	38	57	58	54	51	38	56	58	53	50	38
Eggs	61	63	58	53	40	61	63	56	53	39	61	63	58	54	40
Other processed food	63	33	19	24	30	64	32	20	24	32	63	33	22	24	30
Milk and related products	65	70	62	56	51	66	70	62	56	52	65	70	62	56	52
Fruits	66	48	41	38	42	65	48	42	36	42	66	48	42	39	43
Energy															
Gasoline	3	15	31	35	11	3	17	32	39	16	5	15	31	36	12
Oil and petroleum	18	39	51	52	37	20	42	52	52	37	19	39	51	53	37
Coal and other fuels	37	43	48	45	50	38	43	49	45	50	38	43	49	46	51
Oils and lubricants	27	65	71	69	62	28	65	71	69	62	27	65	71	69	63
Services															
Electricity	10	6	7	4	5	11	8	9	4	6	11	7	7	5	5
Phonecalls, internet and paid TV	29	21	20	14	6	27	20	18	15	5	29	22	23	14	6
Entertainment and recreational services	5	12	14	20	29	5	10	13	18	27	7	11	16	20	29
Negative externalities															
Sweets	50	31	28	15	1	51	30	29	17	1	50	31	28	15	1
Tobacco	68	49	43	47	56	68	49	44	47	56	68	49	45	49	56
Industry															
Pharmaceutical products	38	13	8	6	10	34	12	10	6	10	37	13	8	7	11
Non-electric household equipment	51	54	53	49	41	50	51	53	50	41	51	55	54	51	41
Manufacture of computer equipment	12	44	57	62	55	16	45	58	62	55	14	44	57	62	55

Source: Ahmad and Viscarra (2021) e=0 indicates that all are treated equally; as e rises, the weight on the poor increases, and e=5 is almost exclusive concern for the poor. The table shows rankings of social costs, given consumption patterns, with 1 as the least desirable for tax and higher ranks more desirable. The government might wish to override this on health grounds, e.g., given the case of consumption of sweets by the poor. **The desirability of taxing energy products increases with a concern for the poor!!**

What to do about dismal property tax performance?

- Mexico generates less than 0.25% of GDP in the property tax and much of this in CDMX
- Little hope to ramp up cadasters and valuation mechanisms to expect rapid movements, especially in lagging regions
- **Alternative of area/location-based recurrent property taxes** linked to cost of services
 - Ahmad, Brosio and Gerbrandy (EC 2018), for Sub-Saharan Africa, and Ahmad et al., 2020 for China, suggests that a
 - tax-benefit approach can yield rapid results: target 1.5% of GDP in Mexican cities to finance basic services, and can be made progressive
 - States legislate a band to permit cities to set rates in localities
- **Maintain valuation and cadaster-based tax on business properties and all sales**
- Together with a revamp of the *participaciones*, quickly transform the fiscal landscape in cities
- Opens up access for a municipal bond system and other forms of private finance

Redressing the resource imbalance: beneficial property tax/m² to generate 1.5% of State GDP

States	Average property size (m ²)	Expected income 1.5% of GDP (millions of pesos)	Tax MX\$/ square meter
AgCal	95,3	2.973	180,73
Baja Calif.	83,5	7.589	201,45
Baja Calif. S	72,8	1.951	245,71
Campeche	75,3	1.904	190,38
Coahuila	98,2	8.608	210,17
Colima	88,6	1.430	186,38
Chiapas	64,5	4.357	87,88
Chihuahua	102,2	7.728	190,04
CDMX	92,2	42.548	437,87
Durango	96,6	2.925	122,18
Guanajuato	96,2	9.918	134,79
Guerrero	61,9	3.480	109,61
Hidalgo	80,3	3.804	108,19
Jalisco	99,6	16.615	178,73
Mexico	77,8	21.578	115,45
Michoacan	77,7	5.875	122,13
Morelos	79,3	2.797	141,74
Nayarit	89,1	1.723	110,34
Nuevo L.	93,1	18.289	264,25
Oaxaca	64,8	3.908	98,60
Puebla	77,9	8.092	123,49
Queretaro	88,8	5.548	211,16
Quintana R	69,6	3.683	255,96
Potosí	94,6	4.952	126,40
Sinaloa	72,0	5.429	161,94
Sonora	85,4	8.062	215,33
Tabasco	76,9	3.935	138,19
Tamaulipas	82,3	7.359	227,69
Tlaxcala	79,3	1.449	97,65
Veracruz	72,4	12.060	139,58
Yucatan	73,5	3.483	152,41
Zacatecas	93,1	2.388	133,93

Source: Ahmad and Viscarra (2020)

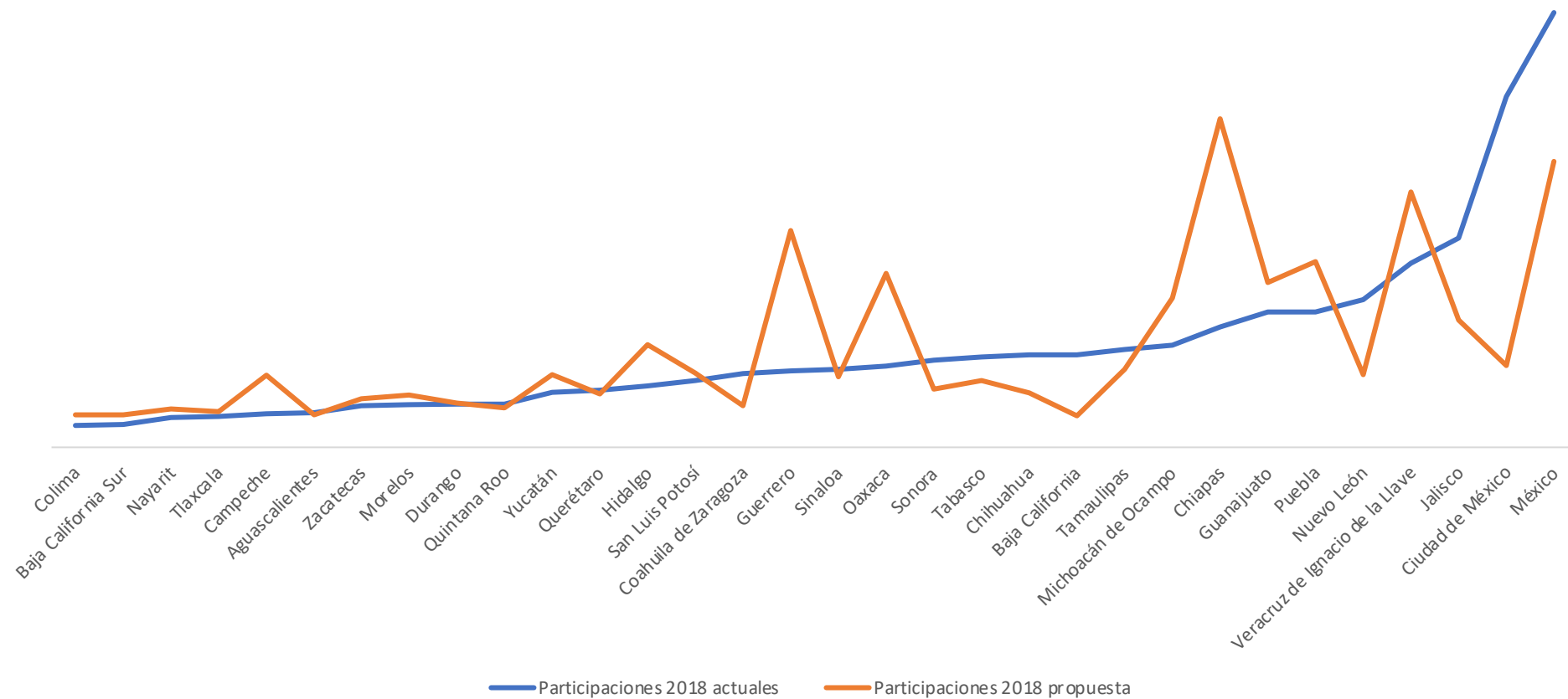
CDMX highest,
Chiapas lowest, so
strongly redistributive

Distributional impact with linkage to benefit structure (Atkinson indices with varying inequality aversion

Estados	$\varepsilon=0.5$			$\varepsilon=1$			$\varepsilon=2$		
	Y1 (Y0-property tax 1,5% PIB)	Y2 (targeted)	Y2 (equal)	Y1 (Y0-predial 1,5% PIB)	Y2 (targeted)	Y2 (equal)	Y1 (Y0-property tax 1,5% PIB)	Y2 (targeted)	Y2 (equal)
Aguas Calientes	0,160	0,090	0,134	0,308	0,176	0,261	0,550	0,338	0,477
Baja California	0,215	0,154	0,188	0,373	0,255	0,325	0,598	0,375	0,515
Baja California Sur	0,219	0,132	0,208	0,382	0,244	0,367	0,590	0,420	0,576
Campeche	0,219	0,085	0,166	0,379	0,158	0,289	0,585	0,281	0,458
Coahuila	0,135	0,066	0,121	0,264	0,125	0,242	0,484	0,225	0,464
Colima	0,172	0,081	0,148	0,313	0,154	0,269	0,520	0,282	0,448
Chiapas	0,246	0,080	0,140	0,450	0,155	0,261	0,720	0,287	0,456
Chihuahua	0,158	0,078	0,133	0,301	0,142	0,250	0,531	0,241	0,437
CDMX	0,151	0,144	0,151	0,277	0,263	0,275	0,467	0,436	0,461
Durango	0,166	0,063	0,129	0,322	0,125	0,252	0,584	0,244	0,464
Guanajuato	0,154	0,091	0,116	0,289	0,162	0,219	0,517	0,271	0,395
Guerrero	0,177	0,068	0,131	0,354	0,130	0,262	0,634	0,234	0,485
Hidalgo	0,283	0,099	0,203	0,490	0,172	0,346	0,761	0,278	0,528
Jalisco	0,172	0,141	0,144	0,315	0,248	0,265	0,554	0,395	0,469
Mexico	0,182	0,157	0,139	0,344	0,289	0,265	0,604	0,480	0,476
Michoacan	0,226	0,109	0,171	0,404	0,192	0,309	0,635	0,308	0,508
Morelos	0,254	0,132	0,206	0,456	0,234	0,369	0,717	0,379	0,594
Nayarit	0,221	0,113	0,186	0,403	0,215	0,340	0,684	0,417	0,597
Nuevo Leon	0,154	0,126	0,139	0,284	0,226	0,257	0,475	0,362	0,442
Oaxaca	0,221	0,089	0,158	0,421	0,178	0,307	0,723	0,364	0,573
Puebla	0,225	0,121	0,171	0,403	0,211	0,312	0,656	0,336	0,527
Queretaro	0,203	0,104	0,166	0,374	0,193	0,307	0,657	0,350	0,546
Quintana Roo	0,149	0,070	0,132	0,278	0,138	0,250	0,472	0,269	0,441
Potosí	0,247	0,130	0,205	0,449	0,230	0,370	0,720	0,378	0,602
Sinaloa	0,188	0,075	0,155	0,351	0,140	0,292	0,583	0,246	0,494
Sonora	0,188	0,120	0,168	0,327	0,202	0,293	0,536	0,311	0,480
Tabasco	0,206	0,106	0,172	0,391	0,206	0,333	0,677	0,407	0,607
Tamaulipas	0,191	0,122	0,168	0,354	0,222	0,311	0,590	0,363	0,517
Tlaxcala	0,182	0,084	0,134	0,349	0,166	0,256	0,643	0,323	0,466
Veracruz	0,217	0,152	0,174	0,390	0,259	0,315	0,648	0,399	0,528
Yucatan	0,241	0,106	0,191	0,422	0,189	0,338	0,650	0,310	0,531

Source:
Ahmad and
Viscarra
(2020).

Need to supplement own-source revenues with equalization framework: rework *participaciones*



Financing state and local infrastructure

- Project-related financing (bonds, PPPs) desirable but do not avoid budgetary consequences
 - Public sector pricing rules will involve tax/subsidy elements that must be incorporated into full GFSM2014-compatible balance sheets
- With incomplete information, higher-level financing of infrastructure as part of the recovery program, could be linked to performance outcomes
 - That are monitorable and priorities, e.g., on environmental and employment impacts for additional tranches
 - Repeated game approach (Ahmad, Tandberg and Zhang, 2004; Ahmad and Martinez 2012)

Mexican agenda for reforms

- **Extensions of national connectivity investments**
 - Tren Maya to Chiapas and Oaxaca
 - Cross-border investment for the Northern Triangle with Central American states, with hubs based in Chiapas and Tabasco
 - Energy grid together with local solar power
- **Better linkages within WHD, and with Asia and Europe**
 - Potential for nearshoring with new global value chains
 - Investments to avoid stranded assets in automobile sector
- **Pilots of beneficial property taxes, and equalization systems to anchor new employment hubs (or CCCs)**

An agenda for sustainable reform

Investment choices affect directions of reform

- **Public investment decisions, from theory of reform** (Drèze and Stern, 1987, Ahmad and Stern, 1991):
 - Impacts on firms and households in different circumstances (backward regions, women, informal settlements)
 - **Appropriate weights** on
 - Skills and labour supply, and on environment, carbon use and emissions
 - **Appropriate discount rate** (Stern and Stiglitz, 2018, 2021)
 - **Minimization of fiscal risks**, especially at the sub-national level, given political economy considerations and incentives to shift liabilities to higher levels, or future generations
- Economy wide-shadow prices) with appropriate discount rate for consistent national decision making for both **investment and tax design** (basis for say national carbon tax and subnational piggy backs)
- But Investment has to be linked to a **long-term growth strategy**, and a focus on **risk management**, including the **provision of key services at different levels of government**
 - for **basic health care, education and human capital**, and **typical local functions** such as clean water and sanitation; tracking tracing and support
 - Supporting **private investment and sustainable employment** in clean “hubs”, including in lagging regions,

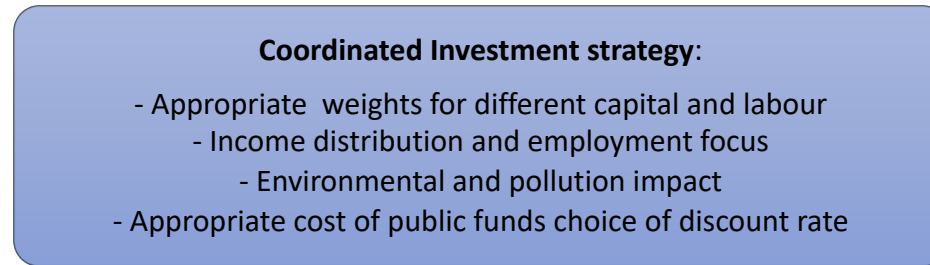
Multilevel finance implications

- **In light of COVID-19**
 - Exclusive reliance on decentralized operations in federations not sufficient (US Trump admin);
 - National coordination, management and additional financing needed (Biden administration, strongly opposed by Republican run states)
 - **But in all cases** increasing importance of local preventive actions, community/local-based support mechanisms, and
 - information generation and incentives facing officials at all levels (China)
- **Fiscal rules straight-jacket at sub-national level is problematic, especially with economic shocks,**
 - Can prevent desired structural change (clean cities) and addressing spatial imbalances
 - Importance of aligning both finance and incentives facing sub-national entities to prevent debt spirals and poor investment choices
- **Spatial mechanisms of urban transition come into play,**
 - Generating clean employment “hubs” —
 - Link reforming metro areas, with new compact and connected cities in lagging regions
 - to address congestion and urban sprawl in metropolitan areas, with distributional and employment concerns in lagging regions
- **Local/subnational own-source revenues** to ensure local accountability and access to private finance (Ambrosio and Bordignon, 2015)
- **Full information on transactions and buildup of liabilities;** GFSM2014-compatible balance sheets to prevent “game play” (Ahmad, Bordignon and Brosio, 2018 for the EU), especially at subnational levels

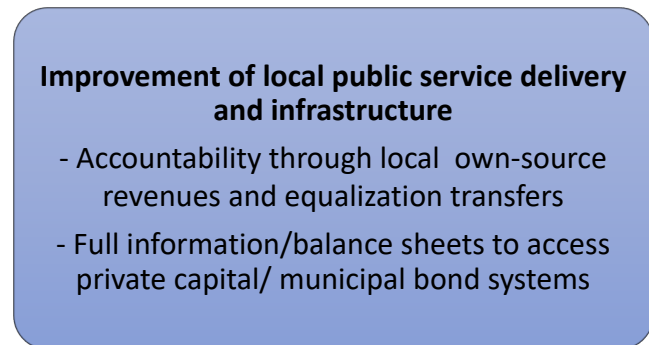
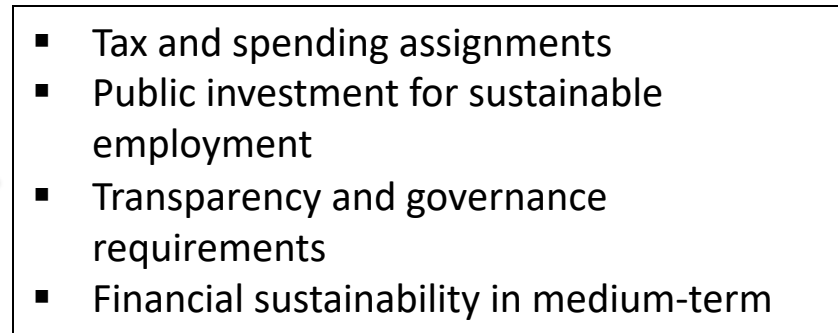
How to restructure cities for sustainable growth?

- **Reforming cities in light of the pandemic involves reversing migrant flows to major metropolitan areas, and building sustainable “employment hubs”**
- **Mitigation in large metropolitan areas—**
 - innovative work patterns, within city transport, restructuring buildings and communal spaces,
 - Innovation zones linked to high-tech research labs and research centers, financing, support for startups and new value chains
 - preventive health clusters within metropolitan areas
 - **But sole focus on Mexico City or Jakarta is self defeating—cannot absorb more migrants**
- **Regional/state and cross-border connectivity** necessary to reorient domestic and external value chains, but not sufficient for “leveling up”
- **Compact, clean and connected (CCC) cities** as “sustainable employment hubs”, to
 - absorb workers from restructuring metropolitan areas, and
 - Generating more labour-intensive activities

Integration of investment strategy with sustainable growth



Source: Ahmad, E. 2021, "Multilevel financing of sustainable infrastructure in China—Policy options for inclusive, resilient and green growth". *Journal of Infrastructure, Policy and Development*.



Coordination of policies across levels of governments and economic sectors