

Simulations

- Group 3: Bilateral trade liberalization in textiles industry between China and India with sluggish unemployed labor (by changing parameters)

SLUG(usklab)=1 (was 0)
ETRAE=-0.5 (-1 for land)

- Group 4: **-10%** shock on Productivity in the machinery & equipment sector (AOALL)

Effect on Sectoral Employment (qfe)

QFE Decomp	Textile		Fibers	
	Mobile	Sluggish	Mobile	Sluggish
Expansion (qva)	0.42	0.28	0.39	0.24
Substitution (ESUBVA)	0.01	-0.15	0.03	-0.02
Total	0.43	0.13	0.42	0.22

- Fibers and Textiles increases employment of all factors while other sectors decreases it!
- Mobile: expansion effect dominates
- Sluggish: Substitution effect is larger for textile but ignorable for fibers (keep this in mind!).
- Total effects are significantly smaller since exp. and subs effects work in opposite directions.
- Expansion effect is always higher!
- QVA is driven by Q_0 since there is no substitution effect ($ESUBT=0$)

Expansion in Qo

- Expansion is driven by exports for textile and domestic demand for fiber in china.
- See that output respond to trade shock is smaller in sluggish case.

	Textile		Fibers	
	Mobile	Sluggish	Mobile	Sluggish
Domestic	0.09	0.03	0.4	0.25
Exports	0.33	0.25	0	-0.01
Total	0.42	0.28	0.39	0.24

Back to qfe: Substitution

- Substitution effect is driven the price of endowment commodity (pfe) and price of value added (pva):
- Substitution effect is important for all factors in both regions. However it becomes significant for mobile factors in fibers under sluggish.

	Total Subs Effect	Land	UnSkLab	SkLab	Capital	NatRes
Text.	Mobile	0.21	-0.01	0	0	0.34
	Sluggish	0.09	0.13	-0.1	-0.1	0.23
Fiber	Mobile	0.26	-0.12	-0.12	-0.11	1.66
	Sluggish	-0.04	0.09	-0.31	-0.31	1.01

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Toward sustainable external balance ...

Akiko Terada-Hagiwara

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Purdue University

What do we expect from fixing trade balance for all?

- Add swaps $dtbalr("i") = dpsave("i")$ for China, EU, India, Japan, ROW, and USA
- Reduced global imbalance, i.e. US saves more and China saves less and consume more?
- Real exchange rates adjust accordingly?
- Which sector gains?
- Output effects?

Global investment and saving INCREASE

GDPEXP	1 cons	2 inv	3 gov	4 exp	5 imp	Total
1 CENTAM	-0.9%	2.3%	-0.9%	0.4%	0.2%	-0.3%
2 China	-0.9%	2.0%	-1.0%	0.4%	0.4%	0.1%
3 Egypt	-0.8%	3.5%	-0.8%	0.2%	0.1%	-0.1%
4 EU	-0.7%	3.3%	-0.7%	0.4%	0.6%	0.1%
5 India	-1.0%	2.3%	-1.1%	0.9%	0.2%	-0.2%
6 Japan	-0.9%	3.2%	-1.0%	0.4%	0.6%	0.1%
7 LDC	-1.0%	2.7%	-1.0%	0.3%	0.2%	-0.2%
8 MERCOS	-1.0%	3.5%	-1.0%	0.5%	0.5%	-0.2%
9 MEXICO	-0.7%	3.6%	-0.7%	0.4%	0.4%	0.2%
10 ROW	-1.4%	3.0%	-1.4%	1.0%	0.5%	-0.1%
11 USA	-0.6%	2.5%	-0.6%	0.5%	0.5%	0.0%
12 XME	0.3%	3.4%	0.3%	-0.6%	1.1%	0.3%

Why?

- When current rate of return on capital increase, investment has to decrease so expected or global rate of return on K unchanged.
- $RORC(r) = (RENTAL(r) / PCGDS(r)) - DEPR(r)$
- $RORE(r) = RORC(r)[VKE(r)/VKB(r)]$
- $VKE(r) = VKB(r) + REGINV(r) - VDEP(r)$

Current net rate of return on K INCREASE in China and DECREASE in US

	China		USA	
	After	Before	After	Before
CGDS	2.8	0.8	2.3	-0.1
pcgds	0.25	0.24	-0.15	-0.19
rental	1.35	1.20	-0.19	-0.10
rorc	1.51	1.31	-0.06	0.15
psave	0.24	0.23	-0.16	-0.20

Can not explain!

- In the US, the investment rate increases to offset the reduced current rate of return on K so expected rate of return on K unchanged.
- ...BUT, in China, the investment rate has to DECLINE and NOT increase if the increase in expected rate of return on K is to be unchanged.

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Closures are important

- Endogenizing “dpsave” will increase global saving substantially.
- p factor or real exchange rate minimally affected.
- The Global Bank reallocates the increased saving across regions, and investment rises in all regions.
- Rate of return effects offset some of the increase but expansion effects dominates.

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Bilateral FTA in textiles between India and China

Rahmet Uslu

Rahul Sen

Motivation

- *“We support the establishment of an India-China FTA with a negative list which should include items like textiles in which the Chinese have a major advantage over their Indian counterparts,”* said Chairman of the Federation of Indian Export Organisations (FIEO), India in 2005, concerns that the Chinese textile industry was highly advanced and Indian industry will be crippled if it allowed complete import of textile items.
- Whether India and China would benefit from further reducing all import tariffs on textiles to zero, from the currently existing MFN applied tariffs in Doha
- Fix trade balances of all countries in the closure, updated data used in this version

Tariff cut: China textiles to India

	China
Tariff rate (Textile, India, China)	Initial rate 20.7%, goes to zero
Qo (Textile,China)-industry output	0.42
Ps (Textile, China)-supply price	0.02
Qxs-export sales	199.61
Qfe (ENDW_COMM, textile, China)-demand for endowment	Land(0.16). UnSkLab (0.42) SkLab (0.42) Capital (0.42)
ps (ENDW_COMM, China)-supply price	LAND(0.07), UnSkLab (0.02), SkLab (0.02), Capital (0.02)
Qds (Textile, China)-domestic sales	0.12
Qim (Textile,China)	0.34

QO

- 1 e1_SHRDM 0.09
- 2 e1_SHRXMD 0.33
- Total 0.42
- Share of China's Exports changes from **0.007 to 0.022**
- Output Increase is dominated by China's share of exports to India (SHRXMD)

1 CENTAM	-0.13
2 China	-0.15
4 EU	-0.18
5 India	
199.72	
6 Japan	-0.11
7 LDC	-0.19
8 MERCOSUR	-
0.15	
9 MEXICO	-0.12
10 ROW	-0.20
11 USA	-0.16
12 XME	-0.26
Total	197.88

NVFA

1 Land	0.003	1 Land	0.003
2 UnSkLab	0.097	2 UnSkLab	0.097
3 SkLab	0.018	3 SkLab	0.018
4 Capital	0.111	4 Capital	0.111
6 AppLeat	0.009	6 AppLeat	0.009
9 Chemical	0.083	9 Chemical	0.083
13 Fibers	0.042	13 Fibers	0.042
25 Textile	0.422	25 Textile	0.422
26 TrdFinsvc	0.083	26 TrdFinsvc	0.083
28 Vegftnt	0.014	28 Vegftnt	0.014

NVFA

This sector heavily depends on the use of textile especially.

QDS

1 e1_SHRDFM

0.122

2 e1_SHRDPM

-0.005

Total 0.117

Also share of textile demanded by firm is %12

QFE

Land	606.44	%0.013
UnSkLab	20481.17	%0.424
SkLab	3735.87	%0.077
Capital	23466.28	%0.0486
NatRes	0	
Total	48289.75	

Within all endowments used by in textile sector, the unskilled labor shows the highest increase by %0.424. Also the ratio of the use of any endowments in any sector declined.

Welfare Change

EV			CNTendw	
CENTAM			1 Land	0
	-1.89		2 UnSkLab	65.407
China	171.96		3 SkLab	0
Egypt	-0.71		4 Capital	0
EU	7.01		5 NatRes	0
India	9.50		Total	65.407
Japan	7.66			
LDC	-2.94	WELFARE		
MERCOSUR	-4.87	1 alloc_A1	29.251	
MEXICO	6.49	2 endw_B1	65.407	
ROW	-17.88	3 tech_C1	0	
USA	-22.04	4 pop_D1	0	
XME	7.39	5 tot_E1	92.220	
		6 IS_F1	-14.923	
		7 pref_G1	0.001	
		Total	171.957	

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Terms of Trade

1 pworld -0.9674

2 pexport 12.3554

3 pimport -2.7625

World price of the textile declines, export prices increases by %12.3 and price for import declines.

	pim	pms	Pms-pim	
1 CENTAM	0	0.02	1 CENTAM	0.02
2 China	-0.05	0.02	2 China	0.07
3 Egypt	-0.01	0.02	3 Egypt	0.03
4 EU	-0.01	0.01	4 EU	0.02
5 India	-7.59	-17.14	5 India	-9.55
6 Japan	0	0.02	6 Japan	0.01
7 LDC	-0.01	0.02	7 LDC	0.03
8 MERCOSUR	0	0.02	8 MERCOSUR	0.02
9 MEXICO	0	0.02	9 MEXICO	0.02
10 ROW	-0.01	0.02	10 ROW	0.02
11 USA	-0.01	0.02	11 USA	0.02
12 XME	-0.02	0.02	12 XME	0.03
Total	-7.71	-16.97	Total	-9.27

PMS

1 tm

0

- 2 tms -17.15
- 3 pcif 0.02
- Total -17.14

The change in the price of the exports of China to India declined after tax by %17.14

Tariff cut effects summary

EV for India increases 9.5 million, China increases 171.9 million, with ROW also suffering a decline of 17.8 million

China textiles to India

	India		India		India
Tms (Textile, China, India)	Initial rate 20.7%, goes to zero	Tms (Appleat, China, India)	Unchanged	Tms (Fibres, China, India)	Unchanged
qxw (Textile, India)	2.86	qxw (Appleat, India)	1.50	qxw (Fibres, India)	1.11
qo (Textile, India)	-0.74	qo (Appleat, India)	1.22	Qo (Fibres, India)	-0.53
qfe (ENDW_COMM, textile, India)	Capital (-0.82), Sklab (-0.78) and Unsklab (-0.74)	qfe (ENDW_COMM, Appleat, India)	Capital (1.16), Sklab (1.20) and Unsklab (1.26)	qfe (ENDW_COMM, Fibres, India)	Capital (-0.59), Sklab (-0.58) and Unsklab (-0.57)
ps (ENDW_COMM, India)	Land (-0.13), Unsklab (-0.11), Sklab (-0.07), Capital (-0.04)	ps (ENDW_COMM, Appleat)	Land (-0.13), Unsklab (-0.11), Sklab (-0.07), Capital (-0.04)	ps (ENDW_COMM, Fibres)	Land (-0.13), Unsklab (-0.07), Sklab (-0.06), Capital (-0.04)
ps (Textile, India)	-0.21	ps (Appleat, India)	-0.21	ps (Fibres, India)	-0.26
qds (Textile, India)	-1.84	qds (Appleat, India)	0.47	qds (Fibres, India)	-0.54
qim (Textile, India)	31.19	qim (Appleat, India)	-0.37	qim (Fibres, India)	-1.09

Decomposing domestic demand effects- India

- qxs (textile, China, India) = 199.61, qxs (textile, India, China) = 33.61, so FTA stimulates bilateral exports of textiles
-
- Output decline dominated by decline in domestic demand in India, why ? Digging into qo (textile, india) we find its dominated by negative domestic demand effect, which in turn is due to decline in demand from two sources –
- private households, dominated by negative substitution effect, ppd (textile,India) declines 0.2% = pm (decline in domestic market price)
- intermediate input use by firms digging into qds (textile, india). We observe there is an intermediate input price decline for textile firms from three main inputs, which also constitute about 44% of total firm's cost of intermediate inputs.

Decomposing export demand effects- India

- What is the source of the export increase, is there trade creation or trade diversion ?
- Decomposing qxs (textile, india, china), we find increase in textile exports from india to china dominated by substitution effect, with trade diversion observed by India diverting exports to China, strong negative TOT effect on welfare driven by significantly negative export price effects

Price linkage effects for Textiles in India

- With tms shocked by a negative value, pms (domestic market price of textiles from india to china) declines, affects pim negatively through the aggregate import price equation, pm falls, ps falls also by 0.2%
- Why does ps fall ?, decomposing, we find decline in price of intermediate inputs dominates decline in supply price of indian textiles

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Conclusions

- FTA in textiles reduce domestic demand mainly from Indian private households and firms, and private households there substitute domestic textiles for imported ones
- firms there substitute cheaper imported inputs, as import prices become cheaper
- generates terms of trade deterioration that ends up in India experiencing a positive welfare worth 9 million, but exports to China are up in shares (at market prices) from 4.4% to 5.7%
- FTA good for Indian textile consumers but not for domestic industry ?

Implications of Improved IPR Protection in China

*Investigating policy effects in China's electrical &
machinery sectors within a GTAP framework*

Alexander Hammer and Ming Wang

Presented at the GTAP Short-Course
Purdue University

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Context

- Egypt not only country seeking unilateral means to ↑ welfare
- China
 - Joined WTO in 2001
 - Tariffs ↓, opened many industries to foreign competition, ↑harmonized trade laws with international standards
 - ↑Complaints about infringement (USTR Special 301, 1998+)
 - Gov seeking ↑ FDI and domestic innovation
- Doha: ↑ push towards TRIPS (Trade Related Aspects of IP)
- ↑ Recognition that Doha Round negotiators using pirated versions of Windows from China



Windows

Hypothesis

Short-term: Paying more for “legitimate inputs” for given output would ↓China’s productivity (in a given sector) & ↓China welfare.

Long-term: These costs to the economy would ultimately be more than offset by future gains in FDI & productivity

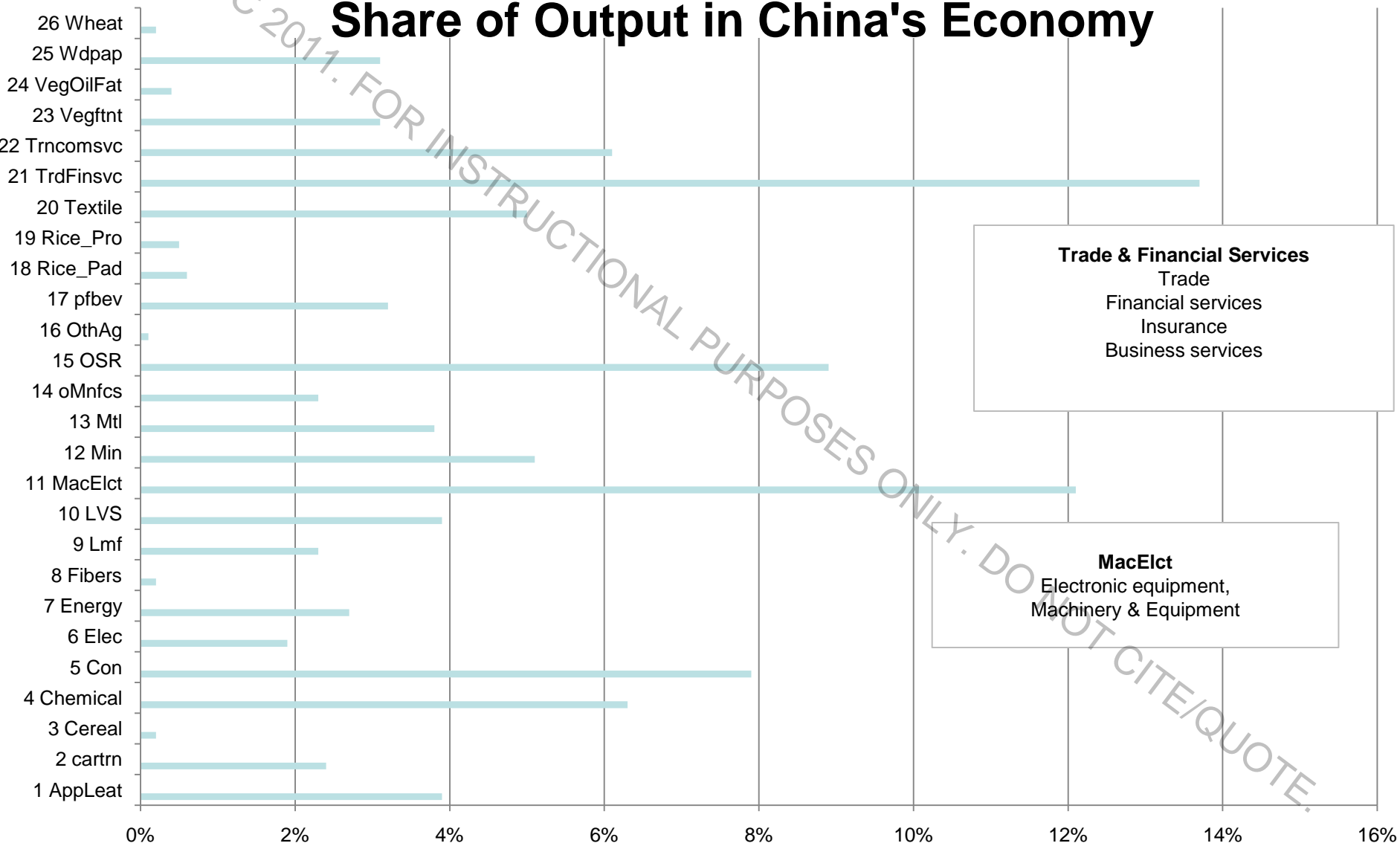
→ Investors & domestic Chinese producers would ultimately benefit from China’s more R&D friendly environment.

Approach

- **Simplify:** Focus on analyzing effects of decreased productivity since we are not considering dynamic model.
- **Cost-Benefit:** If cost $<$ than what policy makers believe would be associated with future FDI flows, then they should implement unilateral moves to improve IPR
- **Sector Selection:** IPR improvement should target a sector w/high output, high IP, and much foreign participation
 - High foreign participation sector to simulate future FDI
- **Avoid Shock Contamination:** Independent from Doha shocks
- **Closure:** Keep default fixed employment closure to enhance reallocative effects (wages fluctuate...inelastic labor supply)

What Sector to Shock?

Share of Output in China's Economy



The Shock

Variable: Productivity in the machinery & equipment sector (AOALL)

Amount: -5%, **-10%**, -15%



Justification: Business Software Alliance says software constitutes “significant” component of capital costs for businesses (see USITC)

What does “significant” mean? Let’s try 10%

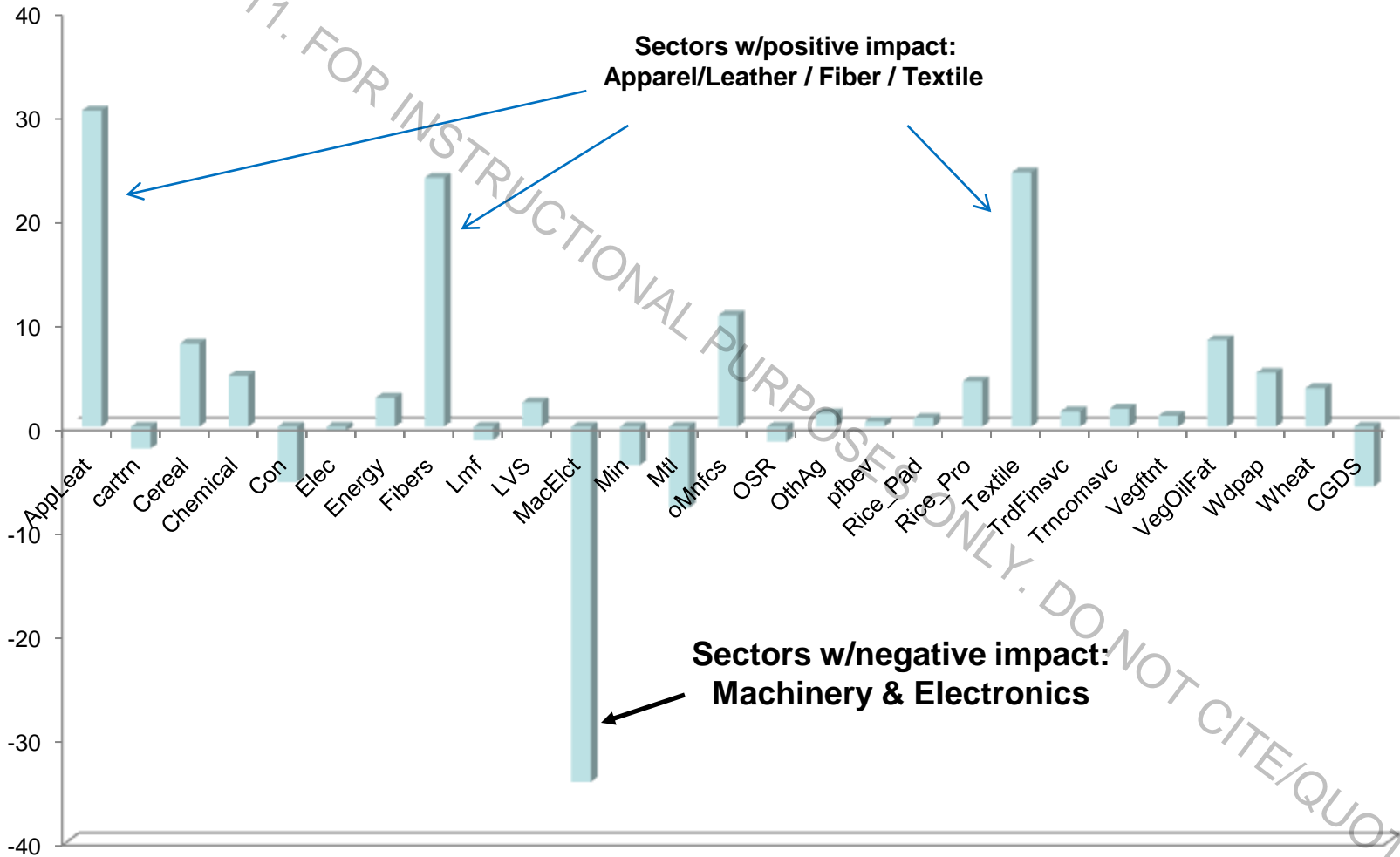
Machinery/Electronics high output sector, relies on IP inputs, much foreign participation (see Hammer)

Expectations vs Reality

Variable	Within Machinery/Electronics		China Econ-Wide	
	Expectations	Reality	Expectations	Reality
Productivity	↓10%	↓10%	↓	? (Exog)
Output Value	↓	↓27%	↓	↓4%
Welfare	↓	↓ n.a.	↓	↓\$47.9 bil
GDP	↓	↓n.a.	↓	↓5.1%
Exports	↓	↓45%	↓	↑ 1.8%
Imports	↑	↑ 82%	↑	↑ 2.3%
TB	Depends	↓\$3 bil	Depends	↑\$4 bil

Impacted Sectors

(% growth in output)



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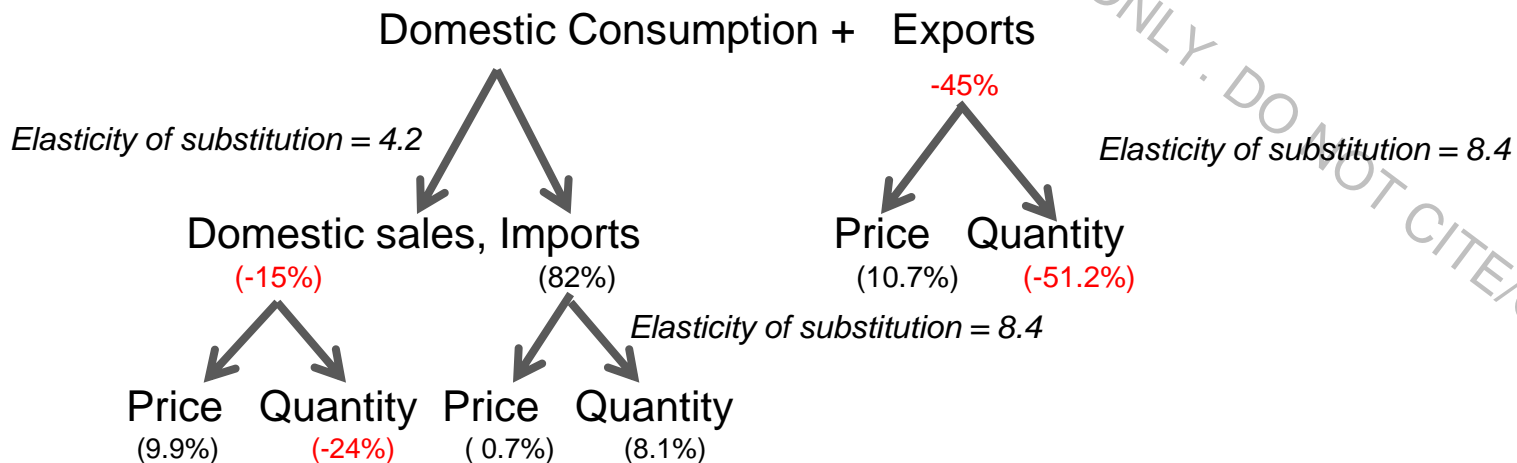
Forward & Backward Linkages

2. **Up Stream Effects:** factors of production moving to labor intensive industries!

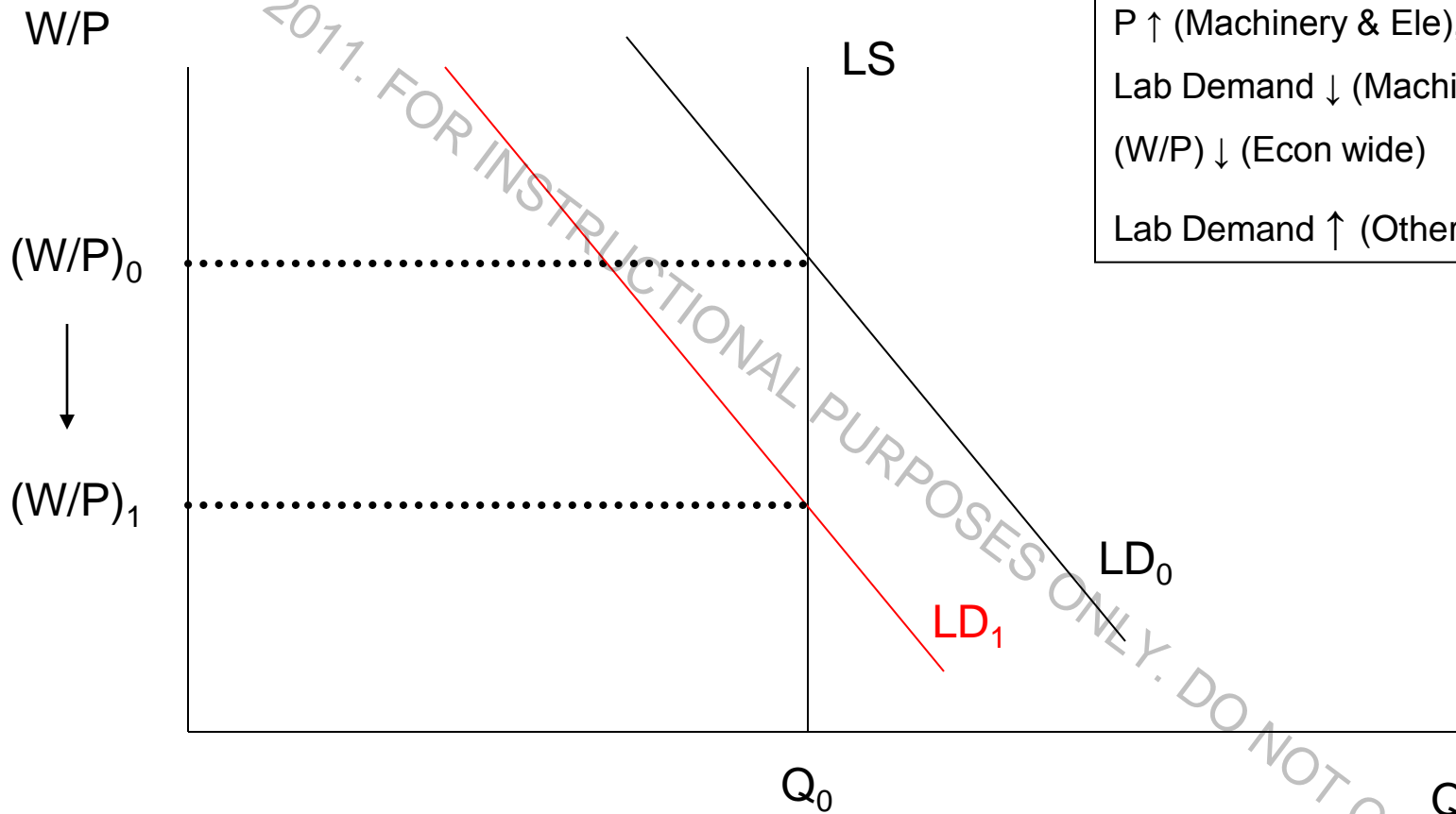
	Endowment Changes					
	UnSkLab		SkLab		Capital	
	Price	Quant	Price	Quant	Price	Quant
MacElct	-2.6	-27.4	-7.4	-26.2	-6.8	-26.8
AppLeat	-2.6	29.9	-7.4	32.1	-6.8	31.0
Fibers	-2.6	26.8	-7.4	27.2	-6.8	27.0
Textile	-2.6	24.1	-7.4	26.2	-6.8	25.2

1. **Down Stream Effects** of ↓ Manufacturing Productivity

Demand_{Machinery & Electric} f(Domestic Consumption, Exports, Imports)



Labor Market & Factor Endowments



$P \uparrow$ (Machinery & Ele),
Lab Demand \downarrow (Machinery & Ele),
 $(W/P) \downarrow$ (Econ wide)
Lab Demand \uparrow (Other Sectors)

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Thank You!

References:

- Hammer, “[The Dynamic Structure of U.S.-China Trade, 1995-2004](#)”, 2006.
- USITC, China: Effects of Intellectual Property Infringement and Indigenous Innovation Policies on the U.S. Economy, 2011.
<http://www.usitc.gov/publications/332/pub4226.pdf>
- USTR, Special 301 Reports, 1995-2010

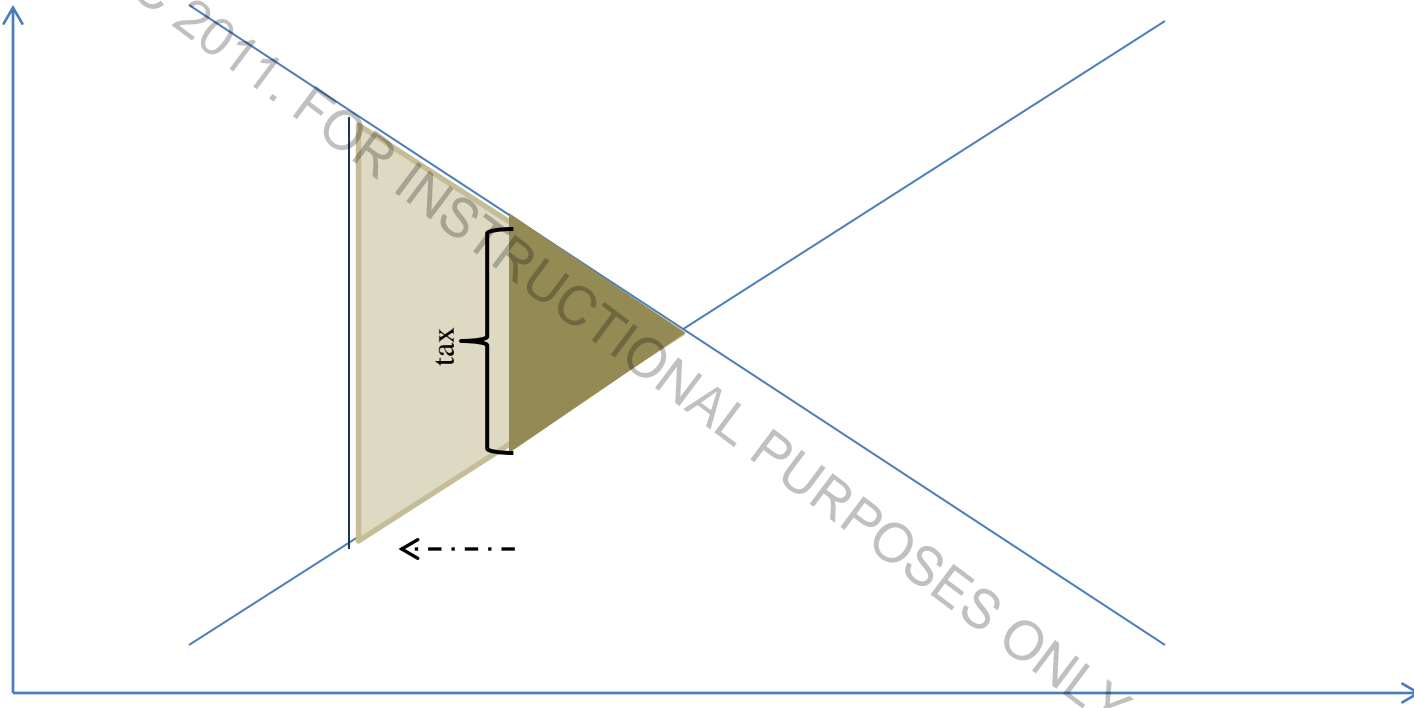
Trade Balance: Welfare Loss for USA

- Fixed Trade Balance for USA
 - Increased investment demand
 - Increased demand for capital goods by 2.35%
- Net welfare loss for USA
 - Biggest loss due to allocative efficiencies
 - Several industries experience significant efficiency loss while a few gain
 - Decline in production of moderately taxed large industries increased the welfare loss for the US

OSR Allocative Efficiency Loss

- Under regular Doha simulation, OSR declined but with a fixed trade balance, OSR allocative efficiency declines by over a \$1 billion
 - Accounts for 53% of USA's \$1.9 allocative efficiency loss
- OSR is only 1.2% of inputs into CGDS (investment)
- With the increase in investment and the shift towards goods used intensively by the capital goods sector, there is a decrease in industries not intensively used by the CGDS sector, like OSR
- OSR experiences a domestic tax rate of 3% and is a large industry of over \$5 billion

OSR Allocative Efficiency Loss

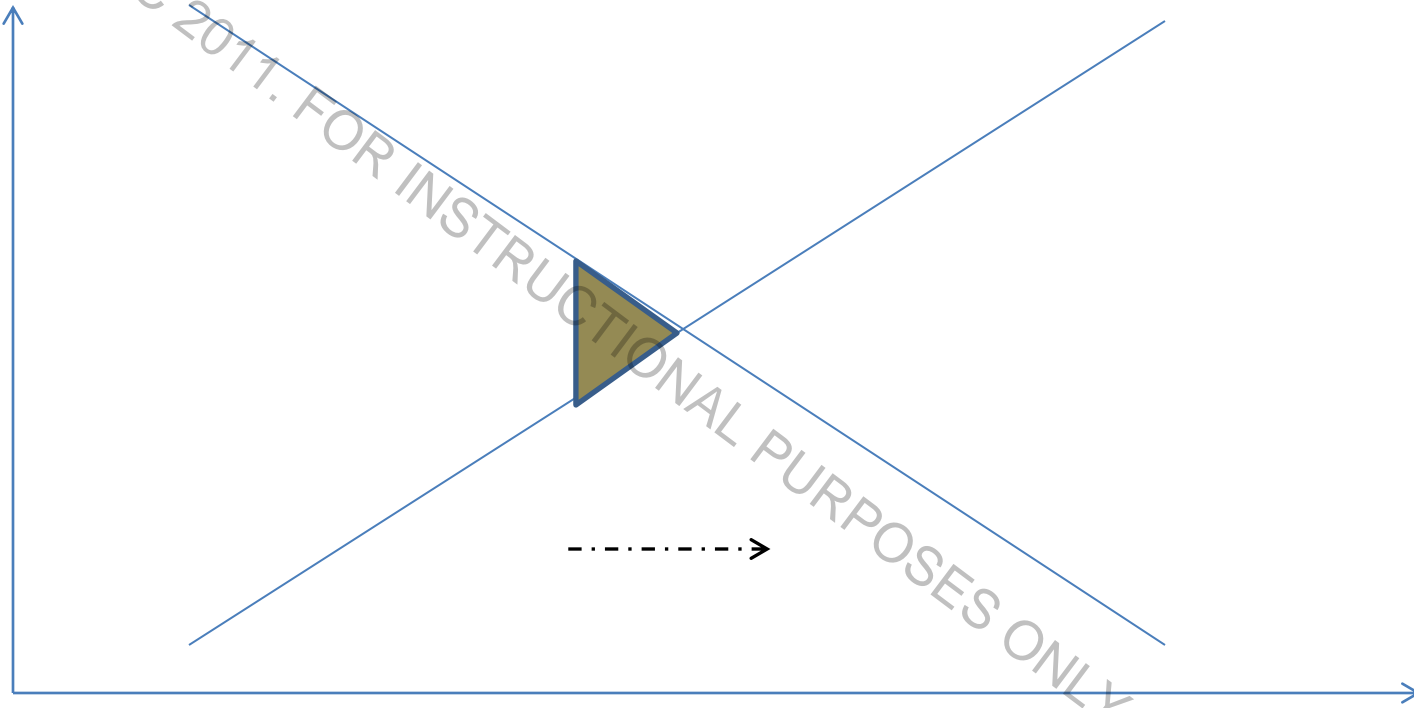


- The tax rate already contributes to loss and with a reduction in OSR, now the current production levels are shifted even further from the equilibrium

Construction Allocative Efficiency Gains

- Under regular Doha simulation, Construction declined but with a fixed trade balance, Construction allocative efficiency increases by \$114 million
- 44% of inputs for CGDS is made up of construction
- With the increase in investment, there is a shift towards industries that are intensively used in CGDS
 - Industries like construction gain efficiency
- Tax rate on construction is low at 1%

Construction Allocative Efficiency Gain



- The tax had created a distortion and thus a loss, but with an increase in construction, efficiency improves and contributes positively to USA welfare

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Sluggish Labor (part 2)

Examining the effects in India



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Sectoral employment effect in India (qfe)

	Textile		Fiber	
	Mobile	Slug	Mobile	Slug
Expansion	-0.74	-0.5	-0.53	-0.3
Substitution	0.01	0.25	-0.05	0.05
Total	-0.74	-0.24	-0.57	-0.25

- **Sluggish (unskilled) labor slows down the rate at which labor is shed.** The effect is larger in the textile sector.
- **As labor becomes sluggish the dominance of the expansion effect decreases in the textile sector.**

So what? Digging into the expansion effect

		India				
	App Mobile	App Slug	Textile Mobile	Textile Slug	Fibers Mobile	Fibers Slug
Dom.	0.13	0.07	-1.41	-1.37	-0.53	-0.31
Exports	1.09	0.61	0.67	0.87	0.01	0.01
Total	1.22	0.68	-0.74	-0.5	-0.53	-0.3

- Overall output is less responsive to the effects of trade liberalization when labor is sluggish.
- Apparel exports decrease (!) significantly in the sluggish case and are the dominant effect.
- Textile exports expand in the sluggish case (relative to the mobile case), yet falling domestic demand for Indian textiles dominates the overall effect.
- Fiber exports remain constant.

Price dynamics

	App Mobile	App Slug	Textile Mobile	Textile Slug	Fibers Mobile	Fibers Slug
Consumption share	0.01	0.01	0.06	0.06	0	0
Domestic price	-0.18	-0.1	-0.76	-0.88	-0.21	-0.29
EXP	0	0	-0.05	-0.05	0	0

- Real wages (pfactreal) are constant in this model so the CPI (-0.11) drives nominal wage changes.
- Changes in the domestic price of textiles (nearly 50%) significantly affect the CPI.



Factor price change

	Fibers				
	Land	UnSkLab	SkLab	NatR.	Total
Shares	0	0	0	0	0
Price of endow	0.17	-0.56	-0.01	0.81	0.42
3 EXP	0.08	-0.21	0	0	-0.12
Total	0.25	-0.76	-0.01	0.81	0.3

	Textiles				
	Land	UnSkLab	SkLab	NatRes	Total
Shares	0	0	0	0	0
Price of endow	-0.07	-0.55	-0.01	-0.15	-0.77
3 EXP	0	-0.34	0	0	-0.35
Total	-0.07	-0.9	0	-0.15	-1.12

- **Factor price is driven by the change in the price of unskilled labor.**
- The percent change in the price of unskilled labor falls (-.56% in fibers and -.55% in textiles) in the sluggish labor case relative to the mobile labor case.
- Firms are attempting to shed labor, but since labor is sluggish they're not able to shed as much as they would like and thus end up in an excess supply situation where nominal labor prices decline.

Conclusion

- Sluggish labor can diminish benefits of trade liberalization.
 - > EV with sluggish labor is -11.20 while without sluggish labor welfare increases by 9.5.
 - > In certain cases (apparel in India) exports decreased more in the sluggish case.
 - > There is an inability to adjust labor as needed=>falling nominal wages for unskilled labor in India.

Thank you.

