IMPERFECT COMPETITION

COMPARATIVE ANALYSIS OF THE EU-MOROCCO FTA vs. MULTILATERAL TRADE LIBERALIZATION

GROUP # 3

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CONTEXT

- In 1996 EU and Morocco signed an FTA, the implementation of which commenced in 2000
- Aim was to create free trade in industrial products over a 12 year period.
- This is more like unilateral liberalization on part of Morocco and EU just provides financial assistance to Morocco
- Liberalization applies to industrial products only while for sectors like processed food products there was a partial liberalization (only on the non-agricultural components of these products).

Analytical Issues

- FTA analyses rely on the assumption of perfect competition and constant returns to scale.
- The industrial sector in Morocco is highly concentrated and scope for unexploited scale economies and high markups is substantial.
- The paper tries to examine the implications of the EU-Morocco FTA for the Morocco economy when there is IRS and imperfect competition characterizing the Morocco economy
- The paper also looks at how the economic benefits from this FTA compare to those from multilateral trade liberalization

Theory behind

Why Bother with Imperfect Competition and Scale Economies?

They may be an important part of the welfare analysis of trade liberalization.

The following welfare decomposition for a small, open economy highlights this fact:

Welfare Change

Terms of Trade Effect

Scale Effect

$$\frac{dV}{V_E} = t \times dm - m \times dp + [p + t - a] \times dX - X \times a_x \times dx$$

Trade Volume = Alloc. Efficiency Effect

Profit Shifting Effect

V: indirect utility function
V_E : marginal utility of expenditure

m: net imports; p: prices
t: tariffs

X: industry output
x: output per firm

a: average cost; a_x: $\partial a/\partial x$

Organization of the presentation of the replications and the extensions of the model

Teams	Extension
1 Chandrima, Sasatra	FTA with imperfect competition, IRS, entry and unemployment
2 Santi, Huong	FTA with imperfect competition, IRS, without entry and full employment and with labour and capital sluggish
3 Ebru, Kengo	Multilateral with IRS, Imperfect competition, without entry & full employment and tax on skilled labour instead of consumption tax
4 Hankyoung, Alison	Multilateral with IRS, Imperfect competition, with entry &full employment with transfer of services of capital and labour instead of income transfer and lowering profit margins in select sectors with high concentration

Team 1 : Extension

For the FTA model between EU and Morocco, with imperfect competition and IRS with entry and exit, we now have the assumption of unemployment replacing the assumption of full employment in the original model.

Results of the Extended version

		Entry with full employment	Entry with unskilled unemployment
Total welfare		190.2	-520.38
	Allocative Efficiency	680.9	618
	Labor Endowment	*0*	*-640*
	Scale Economies	66.1	47
	Terms of Trade	-721.7	-709
	Transfer from EU	164.9	163.62
Allocative Efficiency		680.9	618
	Profit shifting	130.6	136
	Input tax	-40.7	-45
	Consumption tax	-24.9	-69
	Export tax	134.3	132
	Import tax	481.6	464

Decomposition to explain the fall in Labor endowment (-640 US$ million)

Only the price of unskilled labor is fixed, the demand for unskilled labor has to adjust. Some are worth noting:

Welfare

- Wearing apparels (160 US$ million)
- Motor vehicles (-110 US$ million)
- Services (-328 US$ million)

Demand for unskilled labor

- Wearing apparels (7.8%)
- Motor vehicles (-68%)
- Services (-5.1%)

Expansion effects

- Wearing apparels (10.5%)
- Motor vehicles (-67%)
- Services (-1.2%)

Substitution effects

- Wearing apparels (-2.5%)
- Motor vehicles (-3%)
- Services (-4%)

Table 1: Static FTA effects on Morocco

	Wearing apparel	Motor vehicle
Average Mkt share for industry (%)	-45.19	-66.30
Number of Firms (%)	-14.25	-63.38
Markups(%)	-0.27	3.98
Output per firm(%)	29.24	-13.53
Sectoral output(%)	10.82	-68.31
Imports from EU(%)	296.36	105.58
Imports from ROW (%)	-68.02	-82.73
Exports to EU(%)	83.81	61.04
Domestic sales (%)	-22.94	-72.55

Table 2: Allocative efficiency (618 US$ million)

- Two main sectors drive a huge increase in the allocative efficiency
  - Wearing apparels (216 US$ million)
  - Motor vehicles (245 US$ million)
- From profit sharing,
  - Wearing apparels (-1 US$ million; dvol=843; tax rate=0)
  - Motor vehicles (202 US$ million; dvol =- 764; tax rate=-27)
- Very small effects from input (-45 US$ million) and consumption tax (-69 US$ million)
- From export tax,
  - Wearing apparels (62 US$ million; dvol=2066; tax rate=7)
  - Motor vehicles (1 US$ million; dvol =22; tax rate=7)
- From import tax,
  - Wearing apparels (162 US$ million; dvol=1214; tax rate=28)
  - Motor vehicles (84 US$ million; dvol =557; tax rate=9)

Table 3: Figures for scale economies and terms of trade

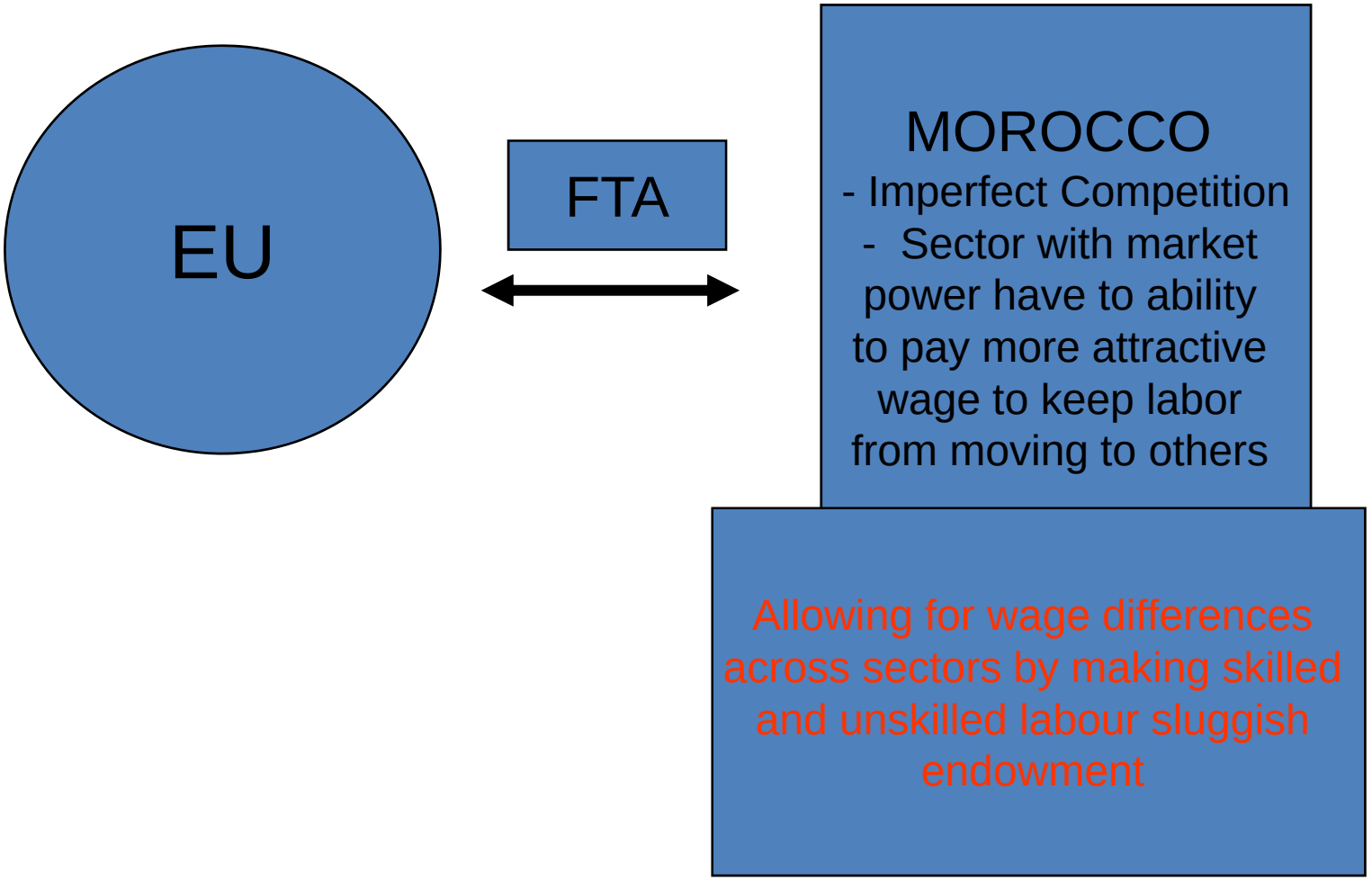
Scale of Economies (47 US$ million)

- Wearing apparels (21 US$ million)
- Motor vehicles (-28 US$ million)

Terms of Trade (-709 US$ million)

- The effects of export/import prices
  - Wearing apparels (-244/-1 US$ million)
  - Motor vehicles (-2/-.1 US$ million)

Team 2: Extension



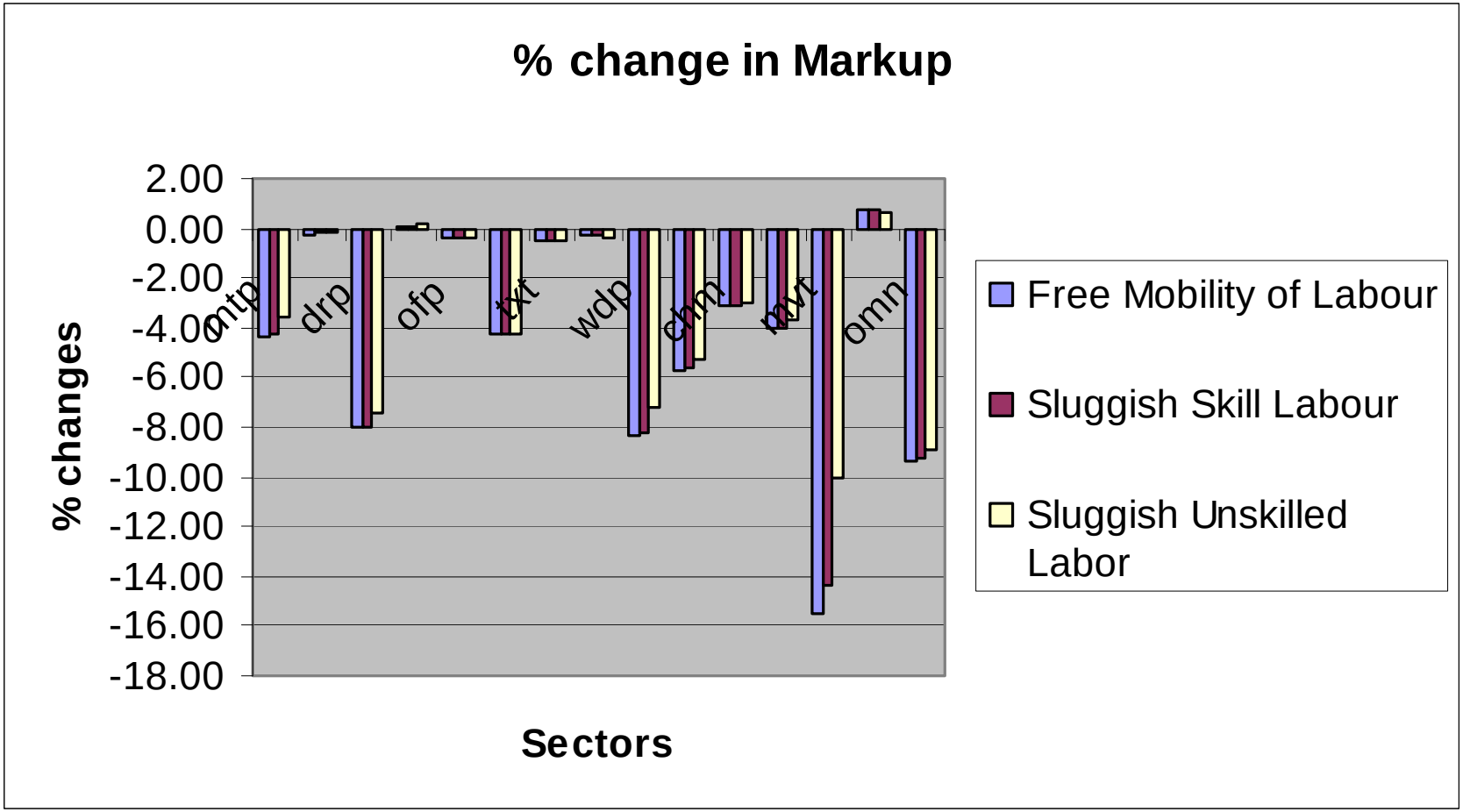
Welfare Comparison

	Free Mobility of Labour	Sluggish Skilled Labour	Sluggish Unskilled Labour
Allocative Efficiency	620.51	604.97	547.75
Scale Economies	-313.86	-295.74	-226.01
Terms of Trade	-660.26	-659.67	-655.32
Transfer from EU	164.00	186.43	169.55
Total Welfare	-189.61	-164.01	-164.03

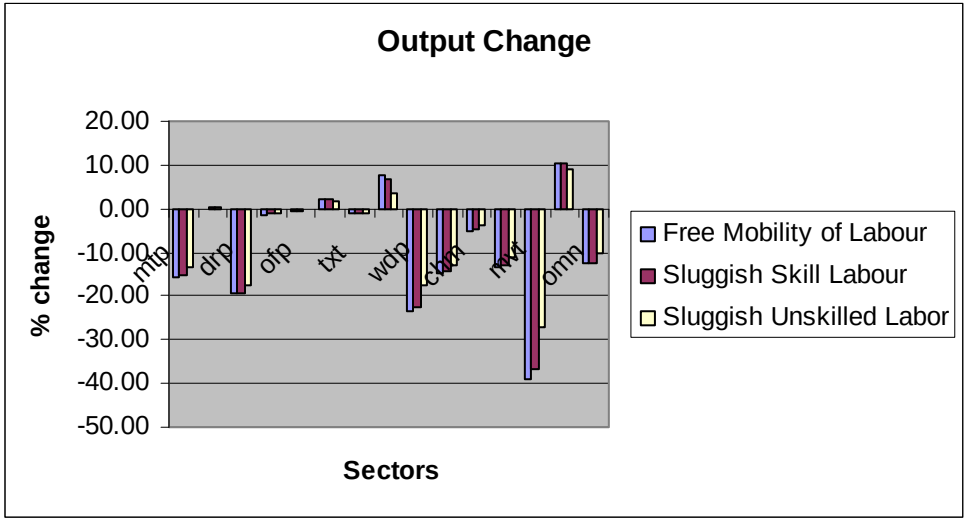
Allocative Efficiency

	Free Mobility of Labour	Sluggish Skilled Labour	Sluggish Unskilled Labour
Profit Shifting	153.87	140.86	93.73
Input Tax	-27.73	-27.10	-23.44
Consumption Tax	-74.08	-73.42	-70.22
Export Tax	118.04	117.67	115.93
Import Tax	450.41	446.96	431.74

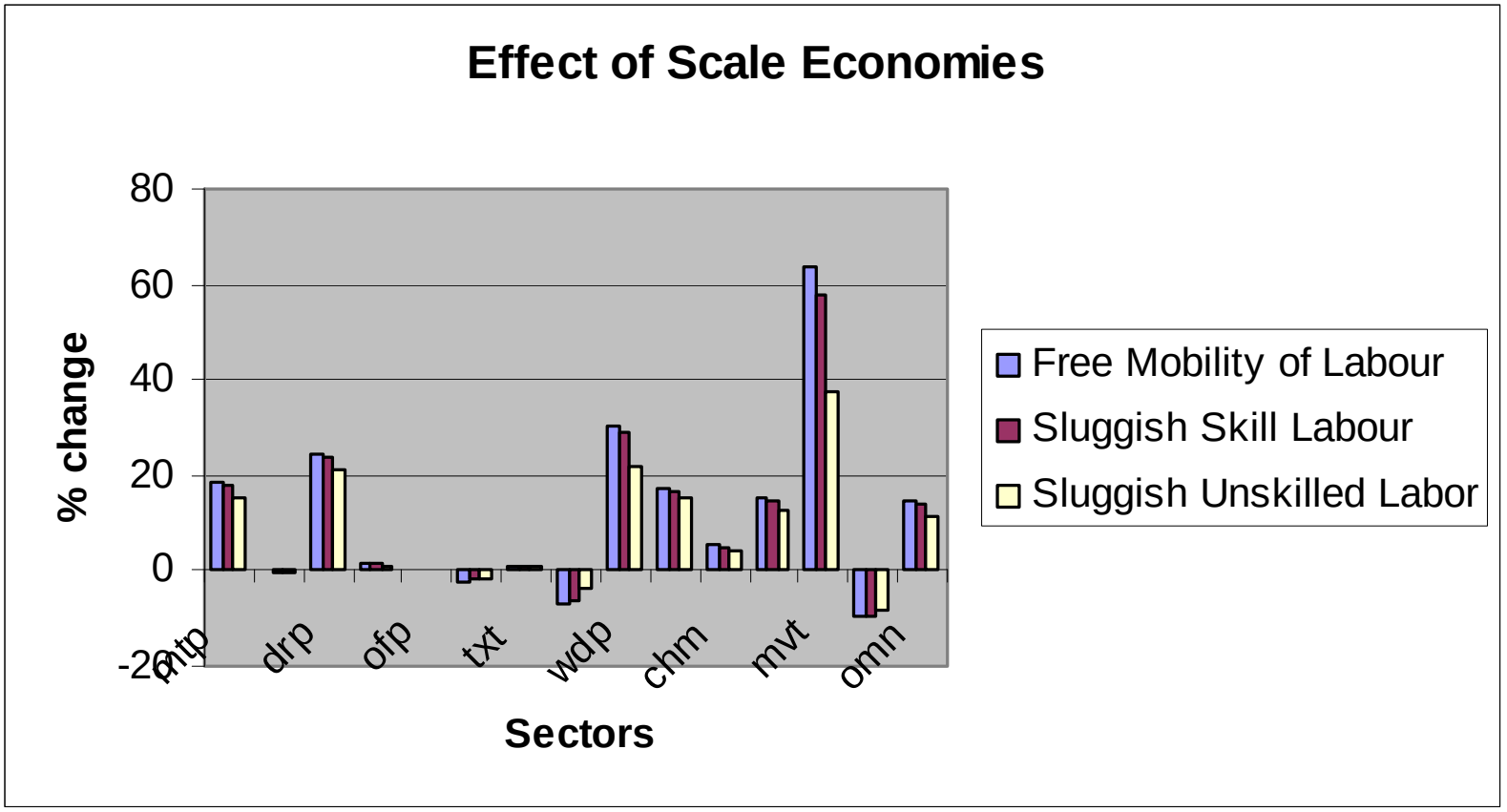
Markup and Profit Shifting



Output Change



Scale Economies



Scale Economies Effect

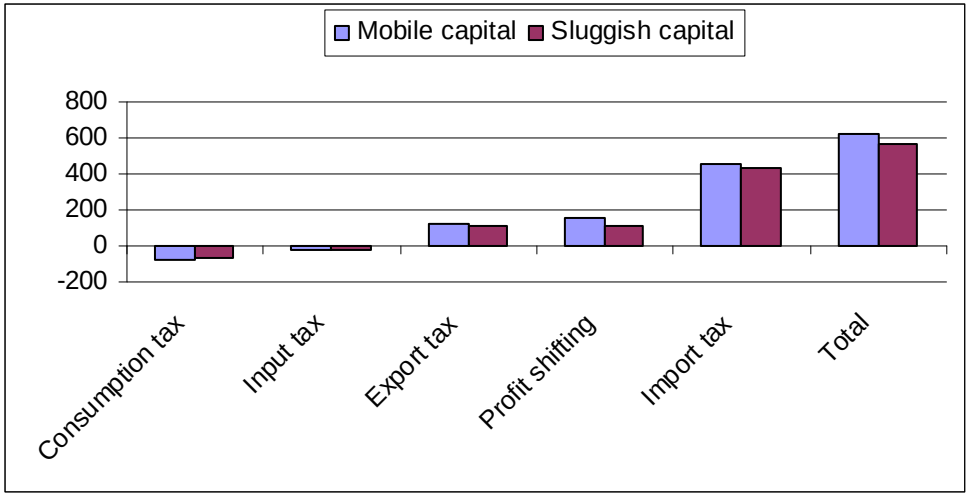
- Smaller scale effect change when wage differences are allow across sectors because it is more difficult for labour to move and thus, less change in output
- Allowing for wage differences for unskilled labour has smaller scale effect than for skilled labour and free labour mobility in most sector due to smaller change in output

Sluggish capital: Good or Bad?

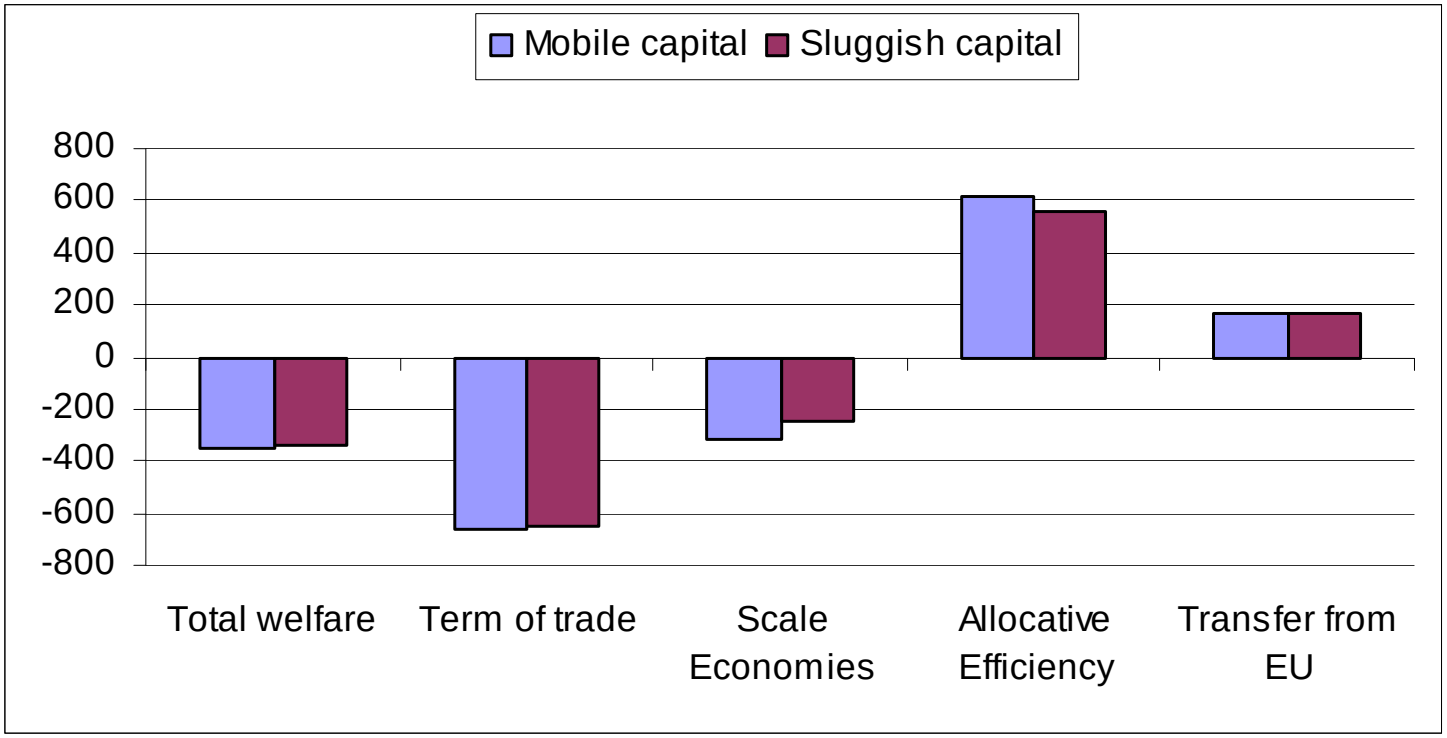
Model setup

- **Closure: FTA, No entry, full employment, Tax replacement:**
  - S1: Freely mobile capital
  - S2: Sluggish capital

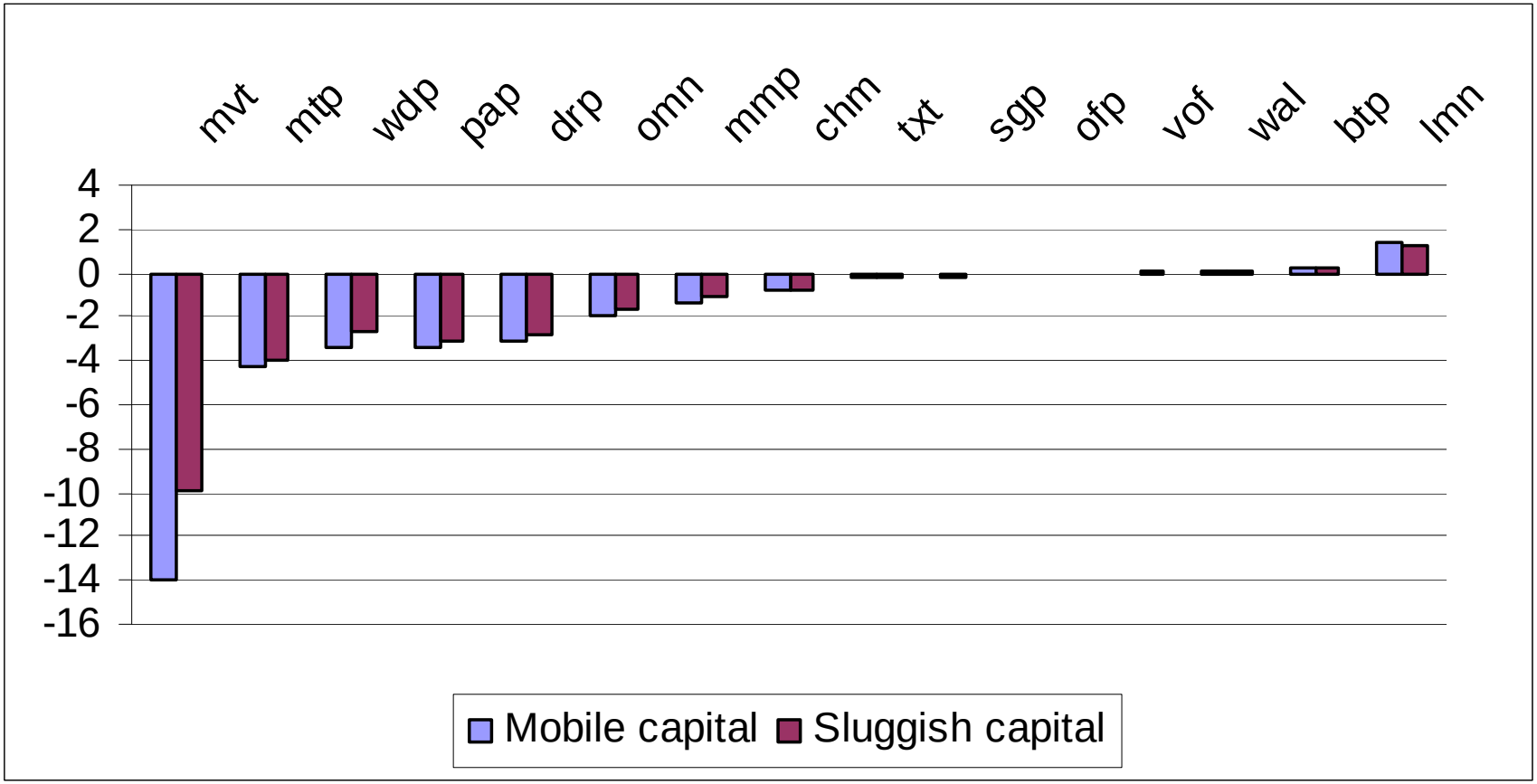
Allocative Efficiency



Welfare Decomposition



Economies of scale difference between the cases of sluggish and mobile capital



Mmp has the second highest combined VOA share & scale effect

What drives the difference in scale effects of the metal product sector

Metal products	Mobile capital	Sluggish capital
CNTtech_aoir(i,r)	**-62.52**	**-46.64**
ao	**-1.31**	**-1.06**
p_SCALE	**15.18**	**12.27**
qo	**-13.18**	**-10.93**
1 e1_SHRDM	-15.40	-13.52
2 e1_SHRXMD	2.23	2.59
qva	**-11.87**	**-9.86**
2 qo	-13.18	-10.93
3 e1_ao	1.31	1.06
qfe(capital, mmp)	-11.73	-6.09

OSCALE(i,r) = [SCALE(i,r)] * [qva(i,r) - firms(i,r)] - ao(i,r);

Team 3: Extension

MULTILATERAL, NO ENTRY, FULL EMPLOYMENT
TAX REPLACEMENT ON SKILLED LABOUR

Welfare Effects

(mil $)	**Skilled LabTax**
Total welfare	429.98
Allocative efficiency	636.95
Labour endowmnet	0
Scale economies	-22.1
terms of trade	-184.86
Allocative Efficiency	636.96
Profit Shifting	9.89
Input Tax	-1.46
Consumption Tax	15.32
Export Tax	44.16
Import Tax	569.05

- Allocative efficiency is the main force
- Tariff cuts are the big part of allocative efficiency
- Scale economies
- Profit Shifting

SCALE ECONOMIES EFFECT

•Scale economies effect is negative (-22.1)
•It differs from sector to sector, some sectors realizing economies of scale
•Other food production sector have benefits, motor vehicles sector having losses

PROFIT SHIFTING (9.89)

•It differs from sector to sector
• biggest profit shifting is in motor vehicles sector
a loss making industry, which declines in size and so there is positive welfare contribution

•Sugar industry and other food product sector having negative profit shifting
Sugar ind: A profit making industry, which declines in size
Other food product: Loss making industry, expand by size

Sectoral examination

(trade, profit shifting, scale economy)

1) Trade

(%change)	Export	Import
mtp	169.84	7.08
vof	63.06	5.33
drp	102.82	21.04
sgp	62.04	54.85
ofp	27.48	32.32
btp	221.79	-0.66
txt	15.24	3.71
wal	8.24	48.39
wdp	21.87	19.63
pap	11.55	17.56
chm	19.09	11.86
mmp	17.15	16.11
mvt	94.44	14
lmn	10.01	4.79
omn	21.62	22.58

- All manufacturing sector increase Export & Import vol

except for Beverages Tobacco import.

- increasing import volume, so welfare increasing

2)Profit shifting

output (%change)	1 welcnt	2 dvol	3 taxrateb	4 taxrateu
17 mtp	-0.72	3.68	-25.1	-15.48
18 vof	0.36	-7.03	-4.55	-6.21
19 drp	0.45	6.72	8.88	6.3
20 sgp	-16.82	-97.83	20.49	15.2
21 ofp	-14.01	226.5	-6.31	-6.12
22 btp	8.95	27.32	36.44	32.89
23 txt	4.16	-20.8	-19.9	-20.43
24 wal	0.1	-61.43	-0.09	-0.2
25 wdp	-0.77	-28.71	3.63	1.82
26 pap	3.13	-38.65	-7.46	-8.8
27 chm	-0.05	119.29	0.25	-0.26
28 mmp	-3.09	-114.47	3.21	2.18
29 mvt	31.29	-108.5	-26.91	-31.28
30 lmn	-2.43	41.37	-5.88	-5.85
31 omn	-0.65	-8.36	9.16	6.72
Total	9.89	383.72	-14.13	-19.99

Welfare loses

- Moderate improving in total, but welfare losing sector not few
- Sugar profit making; declining output
- Other food loss making; increasing output

Welfare benefits

- Beverage profit making; increasing output
- Motor vehicle loss making; declining output (loss making sector getting smaller)

3)Scale economy

CNTtech_a	1 MOR
12 mtp	0.9
13 vof	-1.18
14 drp	0.8
15 sgp	-8.52
16 ofp	23.49
17 btp	1.69
18 txt	-4.82
19 wal	-0.73
20 wdp	-3.21
21 pap	-8.48
22 chm	19.07
23 mmp	-9.85
24 mvt	-36.71
25 lmn	6.48
26 omn	-1.04
Total	-22.1

Welfare loses

- 9 in 15 sectors welfare losing especially
- Motor vehicle, Metal prod., Sugar, Paper & Publishing

Welfare benefits

- Other food, Chemical,

Team 4 : Extension

My(Hankyoung Sung) Extension

- My extension is to implement an EU aid program which expands the capital service or (skilled) labor service in Morocco instead of transferring $182 million from EU to Morocco.

- Therefore, as a implementation the value of service of capital or skilled labor increases by $182 million.

Comparison (I): Welfare

Capital is Depreciating..
”-49.73”

	Income Transfer	Capital Service	Skilled Labor Service
Welfare	**-189.53**	**-246.71**	**-183.24**
Allocative Efficiency	620.51	606.46	619.73
Labor Endowment	0	0	179.51
Capital Endowment	0	130.95	0
Scale Economy	**-313.86**	**-282.23**	**-287.39**
Terms of Trade	-660.26	-701.89	-695.08
Transfer from EU	164.08	0	0
Allocative Efficiency	**620.51**	**606.46**	**619.73**
profit shifting	**153.87**	**141.88**	**144.16**
input tax	-27.73	-26.56	-26.45
comsumption tax	-74.08	-76.02	-72.52
export tax	118.04	126.88	125.17
import tax	450.41	440.29	449.37

Comparison (II): Markup and CDR

	Effect from Capital Service - Effect from Income Transfer			Effect from Skilled Labor Service - Effect from Income Transfer			Effect from Skilled Labor Service - Effect from Capital Service		
	qo	AC_Markup * qo	CDR * qo	qo	AC_Markup * qo	CDR * qo	qo	AC_Markup * qo	CDR * qo
1 mtp	0.97	0.78	0.23	0.64	0.51	0.15	-0.33	-0.26	-0.08
2 vof	0.76	0.73	0.12	0.61	0.59	0.10	-0.15	-0.14	-0.02
3 drp	0.38	0.42	0.05	0.27	0.30	0.04	-0.11	-0.12	-0.01
4 sgp	0.17	0.21	0.02	0.19	0.24	0.02	0.02	0.03	0.00
5 ofp	0.35	0.33	0.04	0.30	0.28	0.03	-0.05	-0.05	-0.01
6 btp	0.70	1.10	0.07	0.58	0.91	0.06	-0.12	-0.19	-0.01
7 txt	1.36	1.13	0.26	0.70	0.58	0.13	-0.66	-0.55	-0.13
8 wal	1.86	1.86	0.02	1.21	1.21	0.01	-0.65	-0.65	-0.01
9 wdp	0.70	0.73	0.08	0.58	0.60	0.06	-0.12	-0.12	-0.01
10 pap	0.54	0.50	0.11	0.56	0.52	0.11	0.02	0.02	0.00
11 chm	0.77	0.77	0.12	0.64	0.64	0.10	-0.13	-0.13	-0.02
12 mmp	0.92	0.95	0.08	0.78	0.80	0.07	-0.14	-0.14	-0.01
13 mvt	1.32	1.04	0.33	1.18	0.93	0.30	-0.14	-0.11	-0.04
14 lmn	1.38	1.30	0.21	1.37	1.29	0.21	-0.01	-0.01	0.00
15 omn	0.90	0.99	0.13	0.64	0.70	0.09	-0.26	-0.29	-0.04

Comparison (III): Profit Shifting Effect

	Effect from Capital Service - Effect from Income Transfer	Effect from Skilled Labor Service - Effect from Income Transfer	Effect from Skilled Labor Service - Effect from Capital Service
1 mtp	-0.02	-0.01	0.01
2 vof	-0.07	-0.05	0.02
3 drp	0.03	0.02	-0.01
4 sgp	0.38	0.41	0.03
5 ofp	-0.85	-0.72	0.13
6 btp	1.23	1.02	-0.21
7 txt	-2.98	-1.55	1.43
8 wal	-0.29	-0.2	0.09
9 wdp	-0.16	-0.11	0.05
10 pap	-0.93	-0.96	-0.03
11 chm	-0.49	-0.41	0.08
12 mmp	0.16	0.17	0.01
13 mvt	**-6.72**	**-6.01**	**0.71**
14 lmn	-1.46	-1.46	0
15 omn	0.14	0.1	-0.04

Motor Vehicles is a loss making sector. Because of FTA, production declines and that is welfare improving. but.. by adding more capital and skilled labor we have smaller decline in production.. → So, difference in welfare is negative with large margin..

(Hankyoung Sung's) Conclusion:

- Welfare: More Skilled labor service is the best..

  - The largest welfare loss from increase in capital service due to "depreciation"
  - No depreciation for skilled labor service

- Sector Productions, Markups, CDRs:

  - Increase in Capital Service is the best and Skilled Labor Service is better…
  - Two exceptions: Sugar, Paper & Publishing

- Profit:

  - Not Much Different Except "Motor Vehicle"

  ➔ by adding more capital and skilled labor we have more production..

  → deteriorate welfare compared to "base"

Increase in Domestic Competition

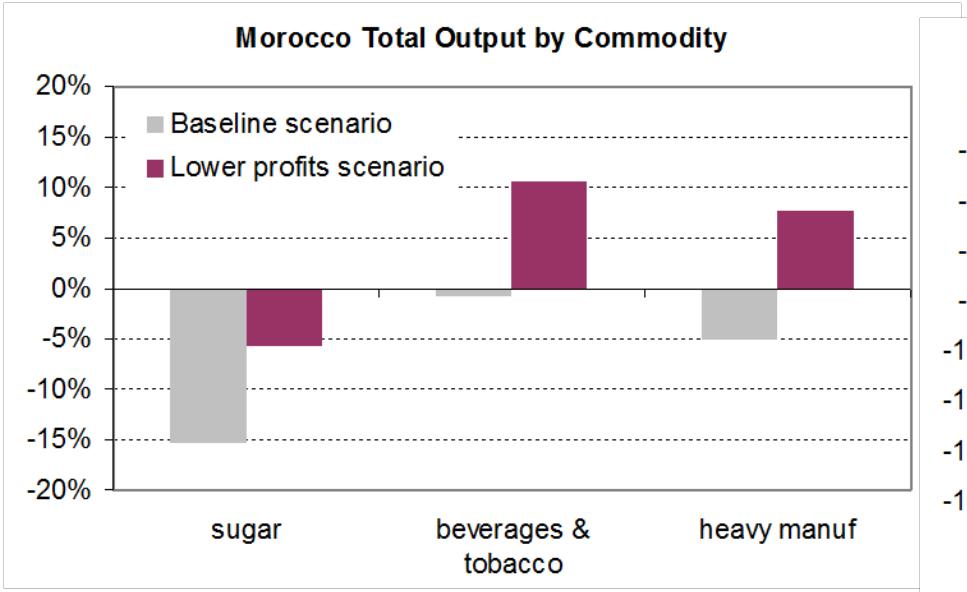
- Initial model closure (baseline scenario)
  - Imperfect competition, increasing returns to scale, and firm entry/exit in Moroccan economy
  - Shock is a multilateral trade agreement
  - Closure in initial model makes profit rate exogenous and equal to initial profit rate by sector
- Extension (lower profits scenario)
  - In Morocco, several industries are highly concentrated and profitable
  - This simulation reduces the profit margins of three industries, lowering the Price/AvgCost ratio
  - This could result from a change in domestic competition policy or from a change in market structure as a result of trade liberalization

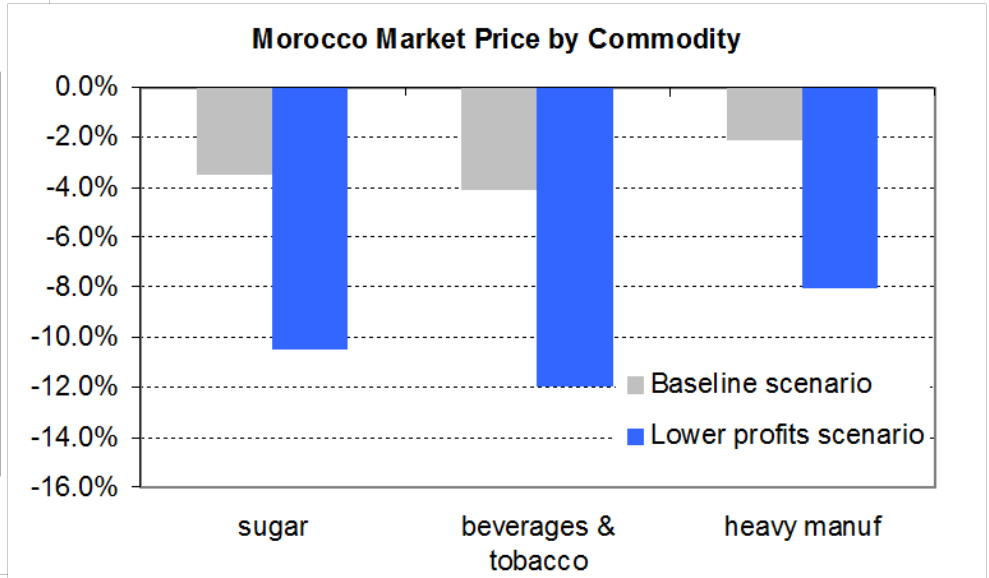
Profit Margins in Top Three Industries

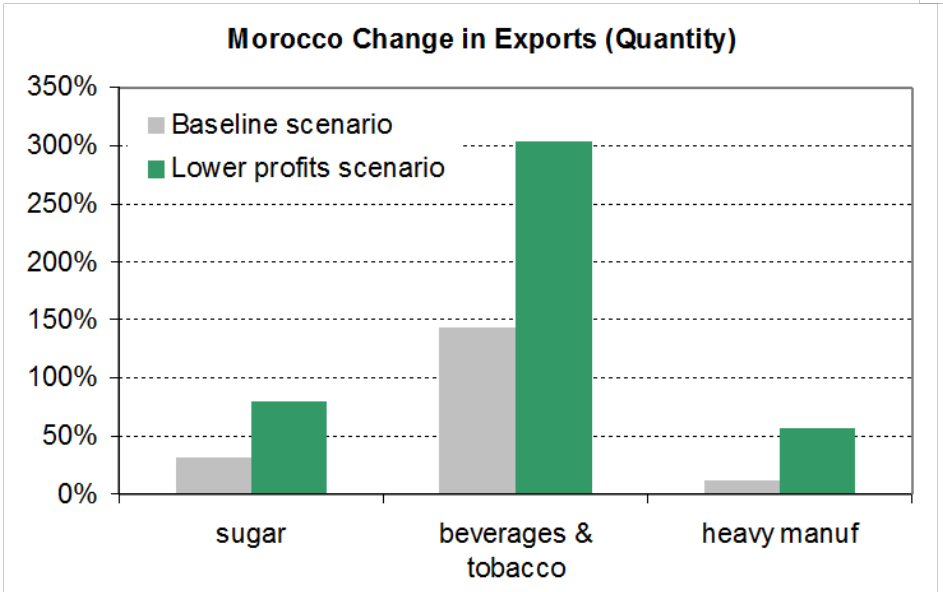
- This simulation reduces the profit margins of three industries
- In the lower profits scenario, these industries become less concentrated (number of firms increases) and output per firm falls

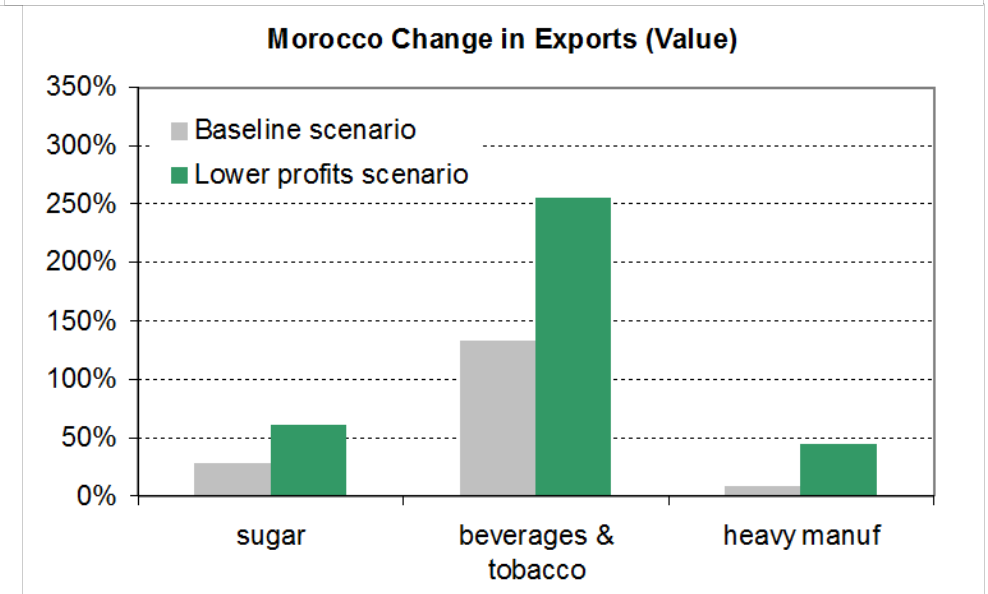
Sector	Scenario	Sugar	Beverages	HeavyManuf
Profit Margin per unit quantity	Baseline	26%	57%	10%
	Lower profits	14%	43%	0%

Changes in Prices and Quantities









Welfare Effects

Sector	Baseline	Lower profits
Allocative efficiency	657	659
Technical (scale effects)	83	45
Terms of trade	-212	-197
TOTAL welfare	528	507

Total welfare is lower: the losses in scale effects outweigh the gains in allocative efficiency

Summary of Morocco-EU FTA Work

- Imperfect Competition model
  - Reflects structure of Moroccan economy
  - Tax replacement for small, developing economy
  - High unemployment from minimum wage policies
- Our extensions
  - Welfare effects from shocks to labor mobility/endowment and changes to tax structure
  - Margin effects from shocks to capital endowment, unemployment rate, and firm profits
- Issues
  - Working with labor variables: skilled/unskilled for labor taxes, wages/employment for labor mobility
  - Defining time horizon

The End