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Trade liberalization, factor market flexibility, and growth:

The case of Morocco and Tunisia

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In recent years there has been an increasing recognition of the importance of complementary policies in enhancing the benefits of a more open trade regime. This study focuses on the importance of factor market flexibility to trade reforms. Using the GTAP model and database, the results show that the welfare impact of trade reform is contingent on the flexibility of factor markets, with higher welfare gains occurring where factor markets are more flexible, and vice-versa. Defining two extreme factor market scenarios over Morocco and Tunisia, we find that the welfare gains of trade reforms under conditions of flexible factor markets can be as much as six times the gains compared to a rigid factor market scenario. This is so because whereas trade reforms may improve the incentive structure for resource re-allocation, the extent to which resources move from less efficient to more efficient sectors of an economy is dependent on the degree of flexibility of factor markets.

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Introduction

There is a large body of literature on the impact of trade reforms on growth. The static gains of an open trade orientation are argued to improve welfare via a more efficient allocation of resources in accordance with the comparative advantage of an economy. The dynamic benefits are purported to increase the long-run steady-state growth rate via improvements in technology and total factor productivity resulting from being 'open' (Grossman and Helpman (1991), Coe and Helpman (1995), and Edwards (1998)). While the empirical literature is generally conclusive on the deleterious impact of inward oriented policies on growth, the theoretical case for the unambiguous positive impact of trade liberalization on economic growth has been far from demonstrated.
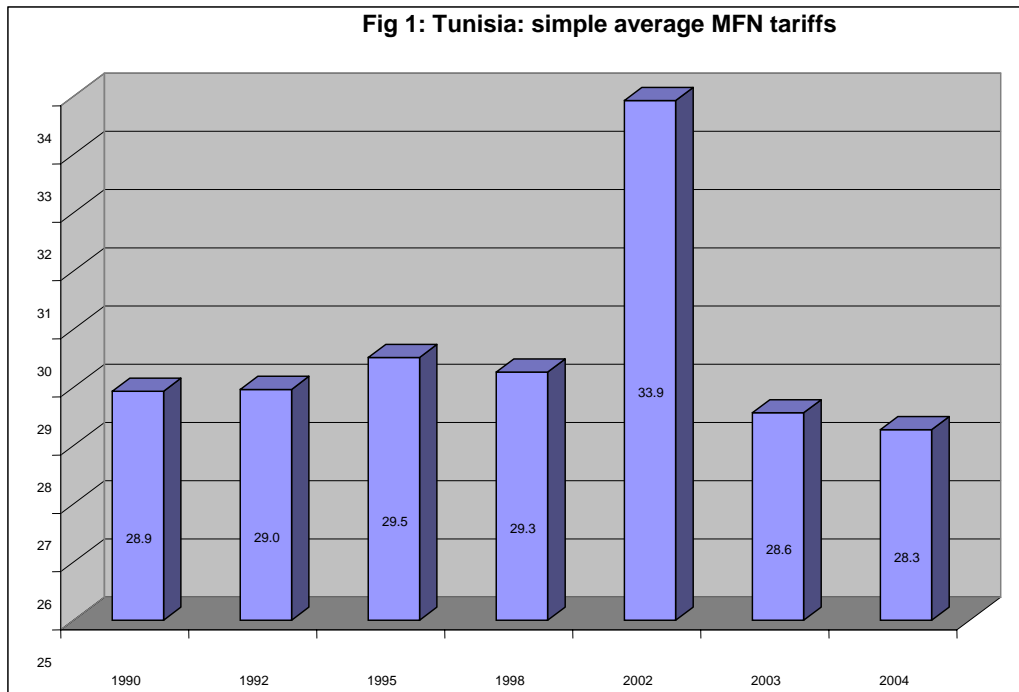
Earlier studies (Michaely 1991, Dollar 1992, Sachs and Warner 1995, Edwards 1998) showing the beneficial impact of open trade policies have in recent years come under sharp criticism. Rodriguez and Rodrik (2001) assert that "……. the nature of the relationship between trade policy and economic growth remains very much an open question. The issue is far from being settled on empirical grounds. We are in fact skeptical that there is a general, unambiguous relationship between trade openness and growth awaiting to be discovered". Similarly (Milner *et. al.*, 1999) succinctly ask whether "we are looking for something that is not actually there". These statements appear to temper earlier views that portrayed trade liberalization as a panacea to the economic problems of inward oriented countries including sluggish growth. Rodrik and Rodriguez (2001) posit that they suspect the relationship to be a contingent one depending on a host of country and external characteristics. Krueger (1998) also shares this view as it is recognized that trade policy does not operate in a vacuum and that other policies supporting trade liberalization may be necessary and in any event can greatly increase the benefits. Failure to address these issues could result in smaller gains from trade liberalization and in extreme cases no benefit would be gained. Not surprisingly, Rodrik and Rodriguez recommend that "research aimed at ascertaining the circumstances under which open trade policies are conducive to growth (as well as those under which they may not be) and at scrutinizing the channels through which trade policies influence economic performance is likely to prove more productive".
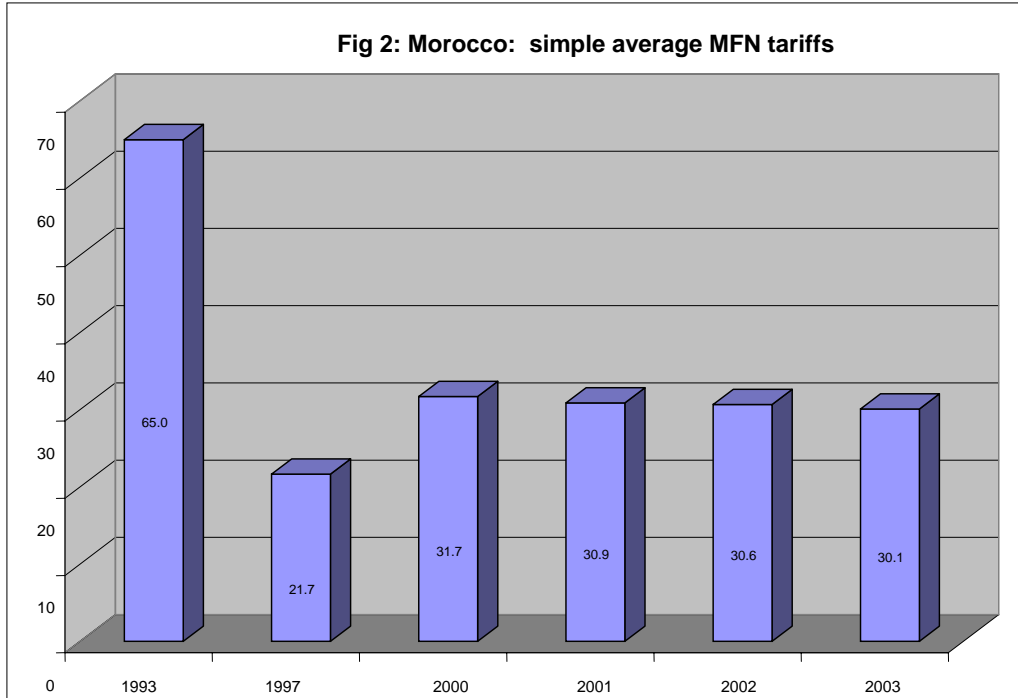
In recent years there has been an increasing recognition of the importance of complementary policies in enhancing the benefits of a more open trade regime. Complementary policies argued to be important have included: sound macroeconomic policies, market supporting institutions, efficient customs procedures, good infrastructural base, business regulations, functioning credit markets, and flexible labor markets (Winters 2002, Hoekmann et al 2001). This study will focus on the importance of factor market flexibility in the effectiveness of trade reforms. Given that some of the gains from an open trade regime come from improvements in resource allocation, rigidities in factor markets are expected to limit the benefits of an open trade regime. Indeed, Bolaky and Freund (2004), using cross-country regressions, find that once the effect of domestic regulation is controlled for, the evidence that trade positively affects growth is stronger than has been found in previous studies. They argue that excessive regulations restrict growth because resources are prevented from moving into the most productive sectors and to the most efficient firms within sectors. Furthermore, using a computable general equilibrium model of the Philippines, Salehezadeh and Henneberry (2002) find that for a given trade policy, a higher degree of factor mobility results in a higher economic growth rate and an improvement in overall economic welfare. This study will consider the extent to which factor market flexibilities might impact on trade reforms, using Tunisia and Morocco as case studies.

Tariff Reforms in Morocco and Tunisia

In contrast to the trend of tariff liberalization in many developing countries, Tunisia and Morocco have demonstrated mixed progress in tariff liberalization. For instance, except in 2002 where tariffs increased to 33.9%, simple average most favored nation (MFN) tariffs have held steady between 28% and 30% over the 1990-2004 period (figure 1) in Tunisia. In the case of Morocco, after significant liberalization of the average MFN rates from 65% in 1993 to 21.7% in 1997, tariff rates have since increased, remaining around 30% in recent years (figure 2). Tariff reforms implemented in Morocco and Tunisia are weak in comparison to Jordan (whose average MFN tariffs fell from 22.1% in 2000 to 13.2% in 2003) and Lebanon (where average tariffs dropped from 14.7% in 2000 to 5.4% in 2002). Morocco and Tunisia are observed to have the most restrictive MFN tariff regime in the Middle East North Africa (MENA) (figure 3). Given that MENA is one of

the most trade restrictive regions in the world (World Bank 2003), this places domestic producers (including exporters) in Morocco and Tunisia at a competitive disadvantage in terms of accessing cheap inputs, as well as raising the prices of imported final goods to consumers with its concomitant effect on their welfare. However, the existence of export processing zones as well as a network of preferential trade agreements (including with the EU) have reduced the actual tariffs faced by some producers. Indeed, preferential access to the EU market has accounted for the large share of trade that both Morocco and Tunisia have with the EU (over 60%). Nonetheless, it would appear that there is considerable room for further liberalization of the MFN tariff regime of both Morocco and Tunisia, especially so as both countries are soon to fulfil their liberalization obligations under the free trade agreement with the EU.

Fig 1: Tunisia: simple average MFN tariffs

Fig 2: Morocco: simple average MFN tariffs

| Year	Tariff
1993	65.0
1997	21.7
2000	31.7
2001	30.9
2002	30.6
2003	30.1

Hence a reduction in MFN rates would serve to reduce the extent of trade diversion that could take place from preferential liberalization, as well as allowing for more competition in both countries.

Fig 3: Simple Average MFN duties in MENA (%)

Country	Value
KWT	3.6
QAT	4.2
LBN	5.4
SDA	6.0
OMN	7.7
JDN	13.2
LBY	17.0
ALG	18.7
MENA	19.1
SYR	19.6
EGY	19.9
Iran, Islamic Rep.	27.3
Tunisia	28.6
Morocco	30.1
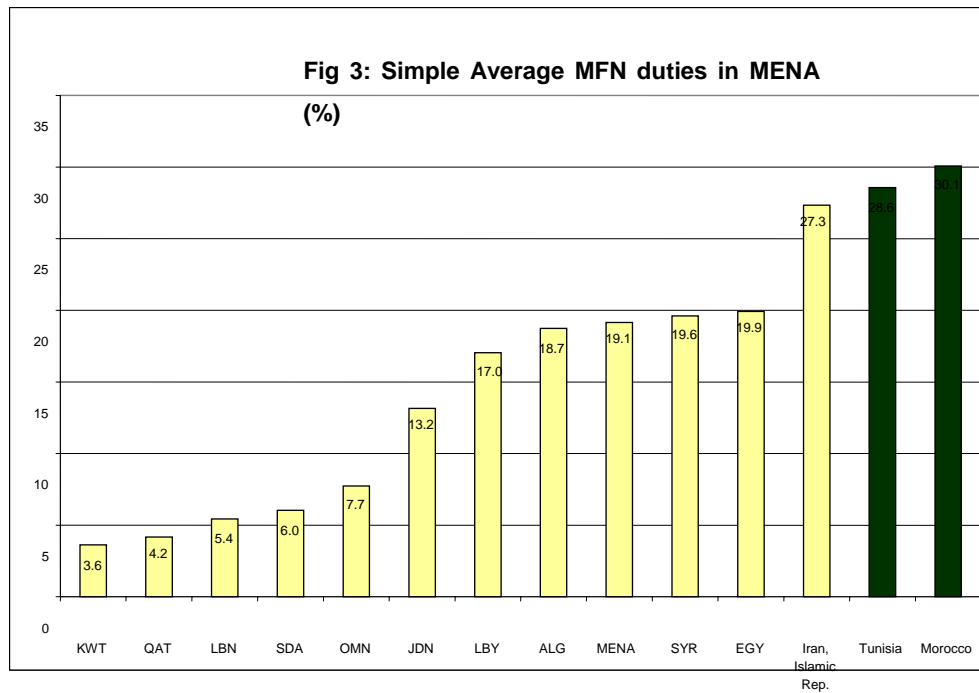
Rigidities in Factor Markets

Recent studies in both Morocco and Tunisia point to the existence of significant rigidities in factor markets. The recent World Bank Development Policy Review on Tunisia recommends that for Tunisia to maximize the employment gains of its international integration, labor market regulations and institutions need to be flexible so that employers and workers can adjust to changes in business conditions. While acknowledging recent efforts to introduce flexibility in hiring, rigidities in the labor market persist due to: restrictions on the use of temporary help agency workers and expatriate employees; heavy bureaucratic processes to be followed before dismissals; and generous severance payments. Similar rigidities also exist in the Morocco labor market. The recent Morocco Investment Climate Assessment (ICA) reports that a third of the enterprises surveyed expressed difficulties in laying-off workers that were no longer needed due to the high costs involved. Some 25% of enterprises surveyed indicated that if restrictions on worker lay-offs were lifted they would downsize their labor force, whereas some 11% indicated that they would increase their employment. Furthermore, evidence from the World

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Bank's Doing Business Report in 2006 (WBDBR) shows Morocco and Tunisia to have rigid labor markets compared to other developing countries (fig 4).[2]

Fig 4: Rigidity of Employment Index
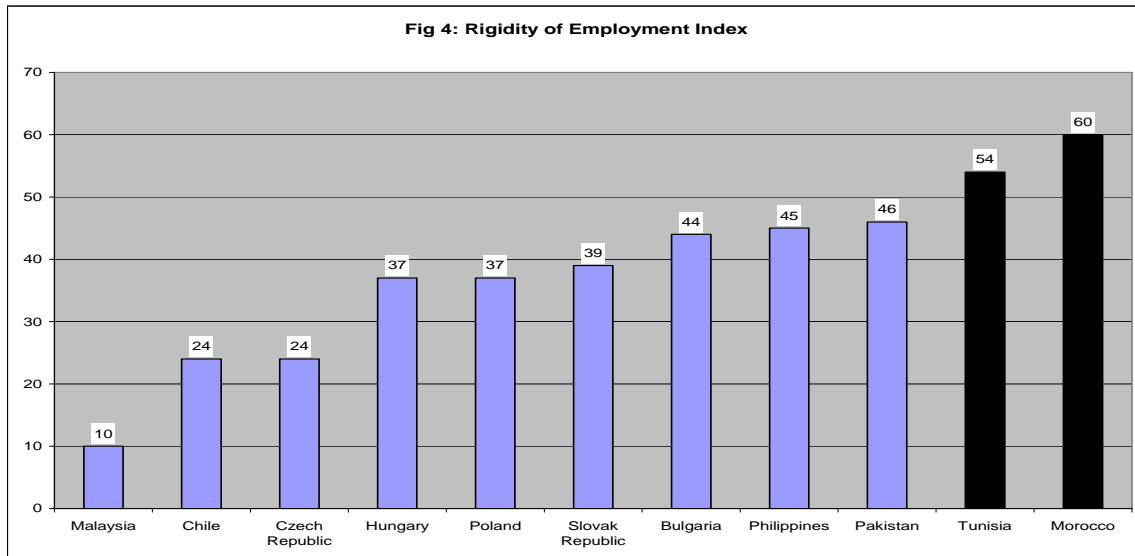
Rigidities in other factor markets in Tunisia include: delays in securing finance, land and construction permits; difficulties in closing businesses due to lengthy bankruptcy procedures; restrictions on majority capital ownership by foreign investors in key sectors; and general restrictions to entry (foreign and national) in certain activities (World Bank 2004). The recent Morocco ICA also points to difficulties faced by firms in raising finances from banks as well as in accessing land. The high cost of finance and access to industrial land was considered to be a major constraint by some 80% and 43% of firms surveyed, respectively. The 2006 WBDBR shows that the minimum capital requirement (as a percent of income per capita) in Morocco was 700.3% compared to an average of 177.3% for all countries included in the survey. The figure for Tunisia declined from 327.8% in the 2004 WBDBR to 29.8% in the 2006 WBDBR, showing improvement in this area.

Model

It is against this background of existing factor market rigidities that we consider how improved flexibilities in the factor markets could affect the impact of trade reforms. A

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[2] Available at: http://www.doingbusiness.org/CustomQuery [1 September 2005].

computable general equilibrium model is adopted for this study. CGE models are economy-wide models with details on different markets in an economy and are well suited to capture the economy-wide ramifications of trade reforms. Furthermore, the existence of an explicit factor market thus allows the modeller to change the level of factor market flexibility. This study applies the standard GTAP model but with changes to certain parameters affecting the flexibility of factor markets. Hertel (1997) provides a detailed description of the model. For purposes of this study we present the production structure of the GTAP model focusing on the contribution of factors of production.

Production takes place through a nested structure. At the top nest, value-added and intermediate inputs are combined in accordance with a Leontief production function (i.e. fixed proportions). Value-added is formed through combinations of labor (skilled and unskilled), land, natural resources, and capital using the constant elasticity of substitution (CES) functional form. Factors of production are assumed to be fully employed. Intermediate goods are formed through the combination of imported and domestically produced goods. At the lowest nest, imported bundles are formed through CES combinations of imported goods from each region.

Factors of production thus enter the production structure through the value-added nest. The derived conditional demand equations for the value-added nest (expressed in percentage changes) in the GTAP model are:

$$pva(j,r) = \sum_k SVA(k,j,r) * [pfe(k,j,r) - afe(k,j,r)]..1$$

$$qfe(i,j,r) + afe(i,j,r) = qva(j,r) - \sigma_{va}(j) * [pfe(i,j,r) - afe(i,j,r) - pva(j,r)]......2$$

where:
qfe(i,j,r) the quantity of endowment commodity i demanded by firms in sector j of region r.
pfe (k,j,r) demand price of endowment commodity k for firms in sector j of region r
SVA (i,j,r) share of endowment commodity i in value-added if firms in sector j of region r evaluated at agent prices.
afe (i,j,r) primary factor i augmenting technical change in sector j of region r
qva(j,r) value added in firms of sector j in region r
pva (j,r) price of value-added in sector j of region r

$\sigma_{va}(j)$ *substitution parameter between primary factors in the CES value-added nest of the nested production structure of sector j of all regions.*

$\sigma_{va}(j)$, the elasticity of substitution parameter, is the component of the conditional demand equation influencing the flexibility of the factor markets. A higher $\sigma_{va}(j)$

implies greater substitution possibilities between factors of production and, ceteris paribus, greater demand for factors of production and vice-versa. On the one hand factors of production can be defined to be inter-sectorally immobile, hence not responsive to relative price changes. On the other hand, factors of production can be allowed to be mobile between sectors, thereby responding to changes in relative prices.

Another part of the model with implications for the flexibility of the capital market relates to the mechanism for investment allocation. In the GTAP model, investment funds are allocated across regions through a "global bank", in accordance with the rates of return to capital across regions. Investors in the model behave as if they expect that a region's rate of return in the next period (RORE(r)), will decline with positive additions to the capital stock. The rate at which this decline is expected is however a function of a flexibility parameter (RORFLEX). The behavioral equation describing this relationship is:

$$rore(r) = rorc(r) - RORFLEX(r)*[ke(r) - kb(r)] \dotfill 3$$

Where:

rore(r) is the expected net rate of return on capital stock in region r
rorc(r) is the current net rate of return on capital stock in region r
kb(r) is the beginning-of-period capital stock in region r
ke(r) is the end-of-period capital stock in region r
RORFLEX is the flexibility of expected net rate of return on capital stock in region r with respect to investment

RORFLEX (r) is defined such that if a region's capital stock increases by 1%, then its expected net rate of return on capital will decline by RORFLEX%. Hence a small value implies that the rate of return on capital is relatively insensitive to net investments. Higher RORFLEX thus imply that the expected rate of return on capital is low; in a certain sense this may reflect a weak investment climate.

Data

The model used for this study draws data from the GTAP 6 database. Although this version of the GTAP database allows for 87 regions and 57 commodities, its coverage of MENA is rather limited. The database has separate data for Morocco and Tunisia, while the rest of MENA is aggregated into "the rest of North Africa" (RONAF), and "the rest of the Middle East" (ROMIDE). This study uses a 13 region by 16 commodity aggregation, which captures all the MENA sub-regions, key trading partners and key commodities. Details of the aggregation are provided in appendix table A1.
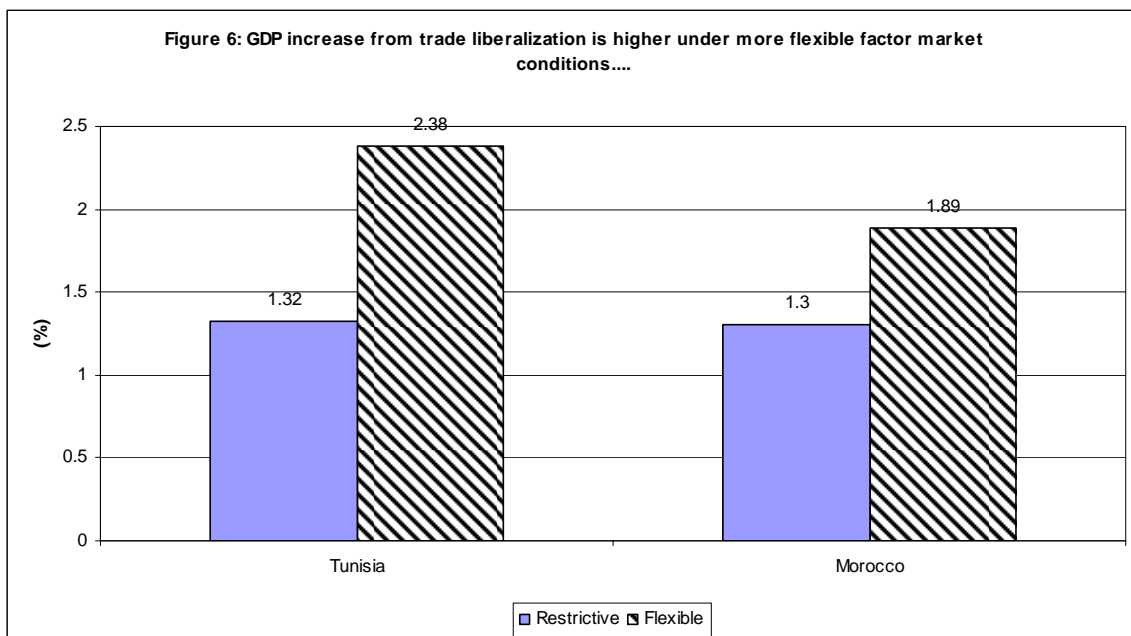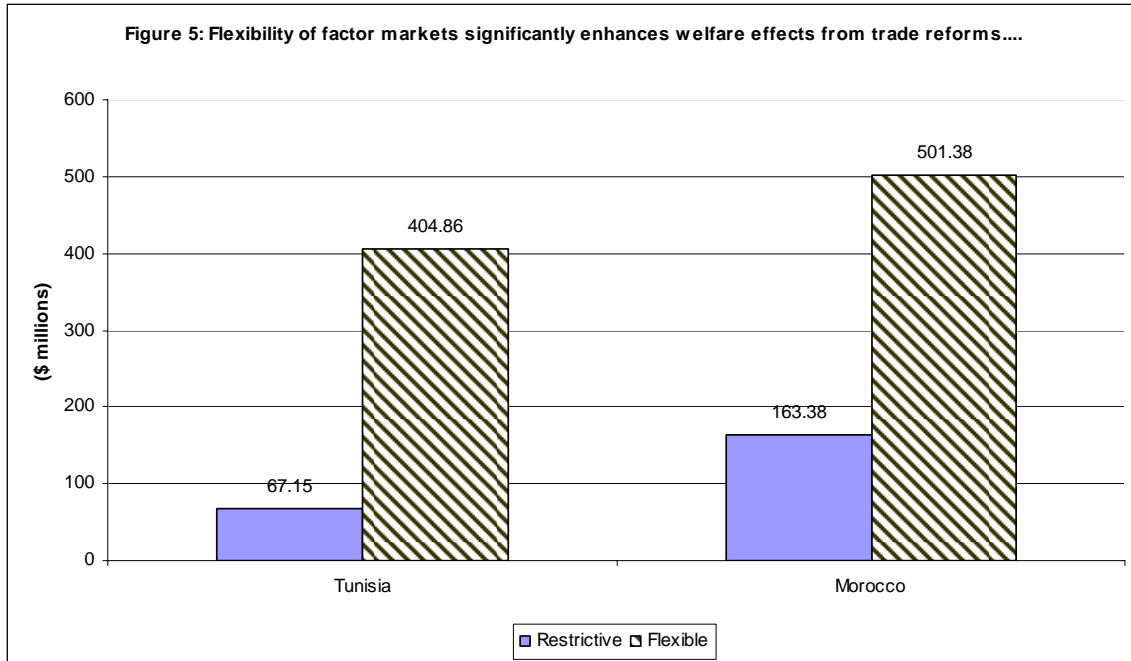
Simulations

Given that there is considerable policy space for the liberalization of the MFN tariff regime in both Morocco and Tunisia, as discussed earlier, a 50% unilateral tariff reduction simulation is carried out. This simulation is, however, performed under two extreme factor market scenarios - restrictive and flexible. A high degree of factor market restrictiveness is defined by a low elasticity of substitution between factors of production $(\sigma_{va}(j)=0.1)$, immobile capital, and low responsiveness of investment to the rate of return on investment (RORFLEX=0.9). The flexible market scenario is defined by a high elasticity of substitution between factors of production $(\sigma_{va}(j)=2)$, mobile capital, and high responsiveness of investment to the rate of return on investment (RORFLEX=0.1). Given that parameters defining the actual level of restrictiveness have not been econometrically estimated (this is beyond the scope of the current study) the two levels of restrictiveness can be seen as some sort of upper and lower bound level. In sum the below four simulations are implemented:

- 50% unilateral tariff liberalization under restrictive factor markets for Morocco
- 50% unilateral tariff liberalization under flexible factor markets for Morocco
- 50% unilateral tariff liberalization under restrictive factor markets for Tunisia
- 50% unilateral tariff liberalization under flexible factor markets for Tunisia

Results and Discussion

Under both restrictive and flexible factor market scenarios, the model shows that trade reforms led to welfare gains for both Morocco and Tunisia. This lends support to the view that a more liberal trade policy is welfare enhancing. However, the results show that the gains to liberalizing the trade regime are significantly higher under the flexible market scenario. Welfare gains in Morocco increased from $163.4 million under the restrictive factor market scenario to $501.4 million under the flexible factor market scenario, i.e. by some three times. In the case of Tunisia, welfare increased from $67.2 million to $404.9 million, i.e. by some six times (fig 5). GDP also increased by about an additional 0.6 and 1 percentage points for Morocco and Tunisia respectively when moving from a restrictive factor market situation to a flexible one (fig 6).

Figure 5: Flexibility of factor markets significantly enhances welfare effects from trade reforms....

Figure 6: GDP increase from trade liberalization is higher under more flexible factor market conditions....

Figures 7 and 8 (more details are provided in appendix tables A2-A5) present the results of resource reallocation due to the changes in the incentive structure that were engendered by the tariff liberalization. As expected, the movement of factors of production in each industry is, in general, greater under the flexible factor market scenario. Hence resources are able to move away from sectors of less comparative advantage to sectors of greater comparative advantage. For instance, the rise in labor used

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in apparel industry was below 5% for both countries under the restrictive factor market scenario compared to at least 21% under the flexible factor market scenario. On the other hand, there was a less than a 1% reduction in labor (skilled and unskilled) employed in the oil and gas sector for both countries under the restrictive factor market scenario compared to the 20% reduction in labor under the flexible market scenario. In other words, labor is more responsive to the improved incentive structure under flexible factor markets than under a restrictive one. It is the greater movement of labor from the less productive sectors to the more productive sectors under the flexible market scenario compared to the restrictive market scenario that generates the higher welfare gains observed under the flexible market scenario. It is important to recognize that there could also be a loss of employment in certain sectors as part of the labor adjustment process from trade reforms, hence governments need to be prepared to deal with this. Hardship relief support say through unemployment benefits could be beneficial in the short-term. In the long term providing re-training and information on job opportunities, and incentives for start-ups could be helpful.

Fig 7: Intersectoral resource re-allocation is higher under flexible factor market conditions ......
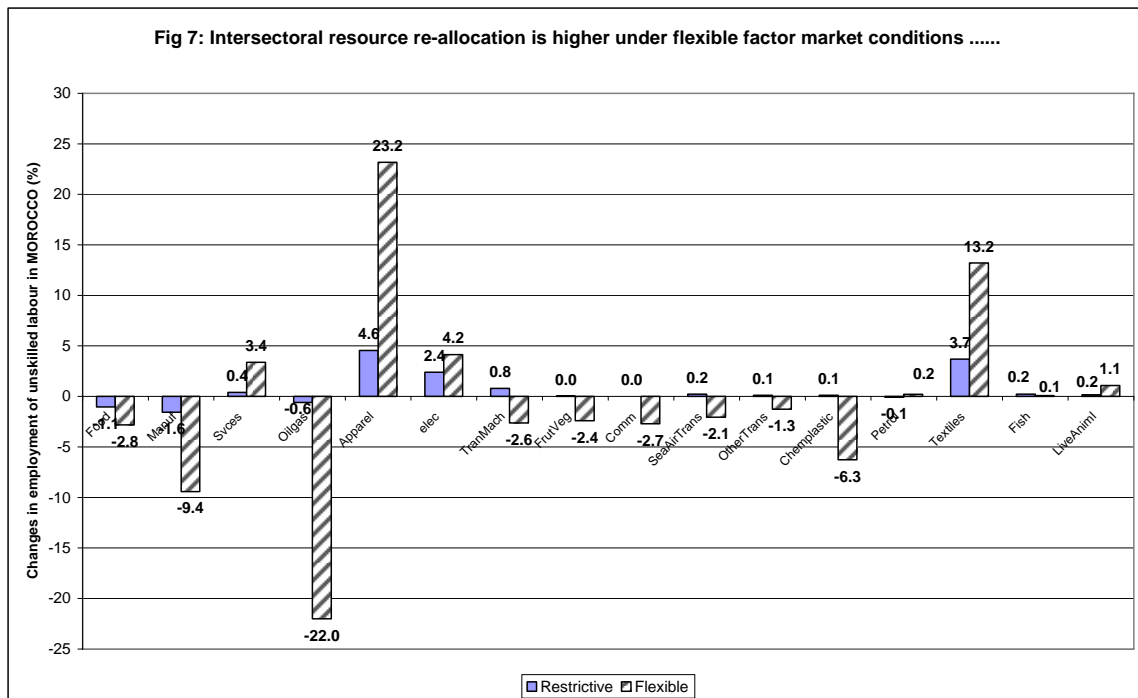
These results are also true for capital and land. Under the restrictive factor market scenario, the capital used remains unchanged due to the sector specific nature of capital,

whereas under the flexible factor market scenario there are varying changes (-7 to 38%) in the amount of capital employed (tables A2-A5). Land use by sector also changes in line with the greater factor market flexibility. By extension, one could argue that to the extent that land and capital are complementary to labor in the production process, rigidities in the land and capital market may also restrain output and employment generation.

Figure 8: Intersectoral resource re-allocation greater under flexible factor market conditions…
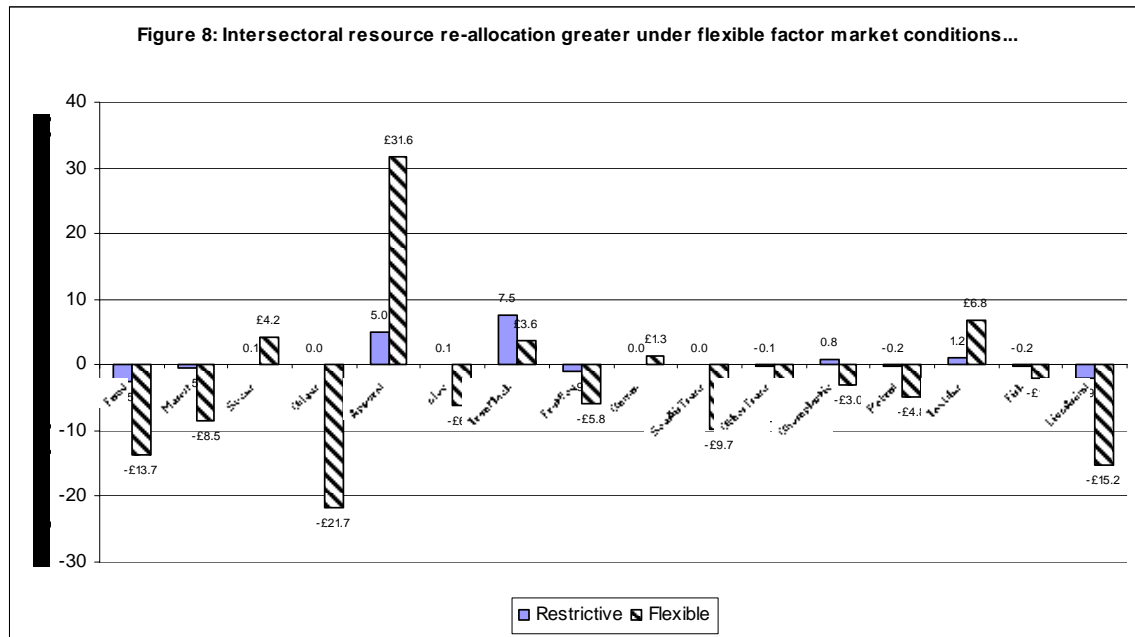
Conclusion and Policy Implications

For the purposes of this paper, the two extreme scenarios used help to highlight the importance of factor market flexibility in determining the impact of trade reforms. It is observed that trade reforms can improve the incentive structure for resource re-allocation in an economy; however, the extent to which resources are reallocated is contingent on the flexibility of relevant factor markets. Limited factor market flexibilities will in turn limit the re-allocation of resources from less optimal uses to more optimal uses, thereby reducing the growth and welfare impact of trade reforms. Given the centrality of factor market flexibility in influencing resource re-allocation, by extension one could argue that the effectiveness of a variety of economic policies (including trade policy) that seek to

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improve the incentive structure for resource reallocation (taxation, privatization, investment incentives, etc.) are also contingent on the flexibility of factor markets. In the light of these observations, efforts to address existing rigidities in factor markets (labor, capital and land) in Morocco and Tunisia should be seen as an integral part of enhancing the effectiveness of trade reforms as well as other structural reforms. More flexible factor markets should be seen as reinforcing the effectiveness of other structural reforms.

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Table A1. Regional and Commodity Aggregation

Regions (13)	Commodities (16)
Morocco, Tunisia, rest of Middle East, rest of North Africa, EU, Central and Eastern Europe, US, rest of North America, Japan, East Asia, China, rest of World,	food, manufactures, services, oil & gas, apparel, electronic equipment, transport and machinery, Fruits and vegetables, Communication, sea & air transport, other transport, chemical & plastics, petroleum products, textiles, fish and live animals.

Fig A2: Morocco (restrictive factor market): intersectoral resource re-allocation

	Land	UnSkLab	SkLab	Capital	NatRes
Food	-0.36	-1.05	-1.35	0	0
Mnfcs	-0.84	-1.57	-1.87	0	-0.01
Svces	0.95	0.39	0.09	0	0.01
Oilgas	0.05	-0.59	-0.89	0	0
Apparel	4.74	4.56	4.26	0	0.05
ele	2.76	2.38	2.08	0	0.03
TranMach	1.32	0.81	0.51	0	0.02
FrutVeg	0.62	0.03	-0.27	0	0.01
Comm	0.59	0	-0.3	0	0.01
SeaAirTrans	0.79	0.22	-0.08	0	0.01
OtherTrans	0.69	0.11	-0.19	0	0.01
Chemplastic	0.7	0.12	-0.19	0	0.01
Petrol	0.53	-0.07	-0.37	0	0.01
Textiles	3.94	3.69	3.38	0	0.05
Fish	0.79	0.22	-0.08	0	0.01
LiveAniml	0.73	0.16	-0.15	0	0.01

Fig A3: Morocco (flexible factor market): intersectoral resource re-allocation

	Land	UnSkLab	SkLab	Capital	NatRes
Food	-0.18	-2.82	-4.98	-3.15	0
Mnfcs	-2.46	-9.42	-11.57	-9.75	0
Svces	1.96	3.38	1.23	3.06	0.01
Oilgas	-6.8	-22.02	-24.18	-22.35	-0.01
Apparel	8.78	23.18	21.02	22.85	0.02
ele	2.22	4.15	1.99	3.82	0.01
TranMach	-0.12	-2.63	-4.79	-2.96	0
FrutVeg	-0.04	-2.4	-4.55	-2.72	0
Comm	-0.14	-2.7	-4.86	-3.03	0
SeaAirTrans	0.08	-2.05	-4.21	-2.38	0
OtherTrans	0.36	-1.26	-3.41	-1.58	0
Chemplastic	-1.37	-6.26	-8.42	-6.59	0
Petrol	0.86	0.21	-1.94	-0.12	0

Textiles	5.34	13.21	11.05	12.88	0.01
Fish	0.81	0.07	-2.09	-0.26	0
LiveAniml	1.17	1.09	-1.07	0.76	0

Fig A4: Tunisia (restrictive factor market): intersectoral resource re-allocation

	Land	UnSkLab	SkLab	Capital	NatRes
Food	-1.08	-2.53	-2.69	0	-0.02
Mnfcs	0.81	-0.45	-0.61	0	0
Svces	1.31	0.1	-0.06	0	0
Oilgas	1.2	-0.02	-0.19	0	0
Apparel	5.76	5	4.84	0	0.05
ele	1.3	0.09	-0.07	0	0
TranMach	8.05	7.52	7.36	0	0.08
FrutVeg	0.42	-0.88	-1.04	0	-0.01
Comm	1.21	-0.01	-0.17	0	0
SeaAirTrans	1.19	-0.03	-0.19	0	0
OtherTrans	1.14	-0.09	-0.25	0	0
Chemplastic	1.98	0.83	0.67	0	0.01
Petrol	1.07	-0.16	-0.32	0	0
Textiles	2.31	1.2	1.04	0	0.01
Fish	1.02	-0.22	-0.38	0	0
LiveAniml	-0.5	-1.89	-2.05	0	-0.02

Fig A5: Tunisia (flexible factor market): intersectoral resource re-allocation

	Land	UnSkLab	SkLab	Capital	NatRes
Food	-1.83	-13.71	-16.91	-13.44	0
Mnfcs	-0.05	-8.53	-11.73	-8.27	0
Svces	4.33	4.15	0.95	4.42	0.01
Oilgas	-4.57	-21.66	-24.86	-21.4	0
Apparel	13.81	31.64	28.44	31.91	0.02
ele	0.8	-6.06	-9.27	-5.8	0
TranMach	4.14	3.61	0.41	3.87	0.01
FrutVeg	0.9	-5.78	-8.98	-5.52	0
Comm	3.32	1.25	-1.96	1.51	0.01
SeaAirTrans	-0.46	-9.72	-12.92	-9.45	0
OtherTrans	0.73	-6.27	-9.47	-6.01	0
Chemplastic	1.87	-2.98	-6.18	-2.72	0.01
Petrol	1.23	-4.83	-8.03	-4.56	0
Textiles	5.24	6.79	3.59	7.06	0.01
Fish	2.23	-1.92	-5.12	-1.65	0.01
LiveAniml	-2.36	-15.23	-18.43	-14.96	0