


Trade liberalisation and employment intensity of sectoral output growth: Lessons from Tunisia

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Abstract

The purpose of this article is to assess the relationship between trade liberalisation in Tunisia and the employment intensity of sectoral output growth, in order to examine the claim that free trade creates jobs by stimulating growth. Using panel data for 15 Tunisian sectors over the period 1983–2010, we compare estimated sectoral output–employment elasticities prior to and following the Free Trade Agreement process with the European Union. The results provide evidence that trade liberalisation in Tunisia has led to an increase in the intensity of employment in exporting manufacturing sectors like textiles, clothing and leather industries, and mechanical and electrical industries. However, their ability to generate jobs in response to value-added growth remains weak. Conversely, since the Free Trade Agreement process, the most labour-intensive service sectors, notably tourism and miscellaneous services, have shown a significant decrease in the employment intensity of their output growth. Our findings suggest that the Free Trade Agreement with the European Union has not really fostered the shift of the Tunisian Economy towards a more inclusive model and support the argument for a reorientation of investment policy in favour of sectors generating more job opportunities.

JEL codes: J23, E24, C33

Keywords

Employment intensity, jobless growth, panel data, sectoral output, trade liberalisation, Tunisia

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Introduction

The theoretical literature on the nexus between trade liberalisation and employment tends to argue that trade openness has a positive effect on employment by stimulating local value-added and enhancing domestic industries' competitiveness. This article provides an empirical assessment of this argument by examining trends in the employment intensity of sectoral output growth in Tunisia since 1986, when the country began a programme of gradual trade liberalisation with a structural adjustment programme.

Tunisia joined the General Agreement on Tariffs and Trade (GATT) in 1990, joined the World Trade Organization (WTO) in 1995 and in the same year entered into an Association Agreement with the European Union (EU). The EU agreement entailed the progressive adoption of free trade between the EU and Tunisia over the period 1996–2008. After the Free Trade Agreement (FTA) process, Tunisia experienced healthy economic growth with a 5% average annual rate of increase in GDP (Gross Domestic Product). However, the rate of employment growth was not very impressive. While employment in Tunisia has shifted towards higher productivity activities, a large proportion of the labour force has remained unemployed, and a large share of the population has remained out of the labour market entirely. The total rate of unemployment in Tunisia has trended down since the mid-1990s to reach, in 2010, a rate of 13.0% across the overall labour force, but it remains much higher than the average rate of 5.2% for upper-middle-income countries (World Bank, 2010). Labour force participation remained well below 50% over the period 1990–2010, far below the 71.5% average among upper-middle-income countries. In summary, Tunisia has been plagued by the phenomenon of jobless growth. Unemployment remained high because the rate of jobs creation was insufficient and the quality of the jobs created remained low (World Bank, 2014). Consequently, unemployment was the main economic factor that triggered the Tunisian revolution in 2011. The motivation of this study is to provide an empirical analysis of the sectoral dimensions of Tunisian economic growth and the extent to which the FTA process has fostered a shift of the Tunisian economy towards a more inclusive growth model.

While a large literature investigates the national employment intensity of growth and its determinants, little attention has been dedicated to the employment intensity¹ of sectoral output growth. The process of job destruction/creation following trade liberalisation depends on country-specific factors such as the sectoral diversification of economic activities. It is important to examine the ability of various industry sectors to generate jobs and improved employment rates. Understanding the composition of sectoral employment intensity may provide an explanation for the weak national employment intensity of economic growth.

For various reasons, estimates of employment intensity for the overall economy can be biased. First, this may be due to the availability of data on the informal segment of the economy, especially for developing countries. Second, Khan (2001) shows that the national employment intensity of economic growth may change if the sectoral composition of the economy changes, because the employment intensity of the overall economy is the weighted average of sectoral employment intensities. Finally, weak employment elasticity for the overall economy can be generated by a high labour productivity of some

specific sector(s) of the economy. For all these reasons, empirical estimates of formal sectoral employment intensity may be more meaningful than overall national estimates.

Furthermore, there are very few studies investigating the employment intensity of growth with special reference to Tunisia. The contribution of this article is its examination of the ability of various economic sectors in Tunisia to generate jobs. We attempt to reveal the winner and loser sectors from the new trade policy in Tunisia. This research complements the existing literature considering sectoral output–employment elasticity, carrying out estimations using a random coefficient model.

This article is organised as follows. The section ‘Trade liberalisation and employment: Literature review’ provides a literature review, containing an overview of the primary empirical studies conducted to date. The section ‘Methodology’ presents the econometric methodology that we used. The section ‘Data’ describes the data. The section ‘Results and discussion’ discusses the empirical results. The section ‘Conclusion and policy implications’ concludes and presents a number of policy implications.

Trade liberalisation and employment: Literature review

There is a growing body of literature investigating the relationship between trade liberalisation and employment. This literature can be subdivided into the following two primary strands: studies supporting theoretical predictions which expect a positive impact of trade liberalisation on employment and studies contesting this optimistic view and indicating an ambiguous nexus between trade openness and employment. In fact, recent empirical studies suggest that trade liberalisation either has no effect on employment or that this causality can be negative for some countries.

Theoretical literature predicting a positive effect of international openness on employment suggests a number of transmission channels, namely, technological diffusion, export promotion, efficient allocation of resources, local value-added stimulation and enhancement of domestic industries competitiveness. However, the empirical evidence on the impact of trade liberalisation on employment is mixed. This relationship is more developed than what is expected by standard trade theories, such as the Heckscher–Ohlin model (1991) and the Stolper–Samuelson theorem (1941). Milner and Wright (1998) study labour market responses to trade policy reform in Mauritius during the pre- and post-liberalisation regimes using dynamic panel techniques on sectoral data. Their empirical findings provide partial support to theoretical predictions, where the estimated responses of employment are increasing in exportable sectors and decreasing in importable sectors. Christev et al. (2008) examine the effects of trade liberalisation on job creation in Ukraine using disaggregated data on manufacturing industries. This study finds that trade openness has a positive effect on sectoral employment, but through varying transmission channels depending on trading areas. Kien and Heo (2009) investigate the same issue in Vietnam from 1999 to 2004 using a system generalised method of moments model. These authors confirm a positive impact of trade liberalisation on sectoral employment levels through export expansion and show that even import expansion did not necessarily have a negative effect on employment in Vietnam.

Surveying the effects of trade liberalisation on employment in Organisation for Economic Cooperation and Development (OECD) countries, Baldwin (1995) concludes that trade openness has no significant effect on employment and that this effect is negative in low-technology sectors such as textiles and agricultural and food industries. Lee and Vivarelli (2006) examine the effect of trade liberalisation on employment using five countries from different developing areas: Ghana, Kazakhstan, Morocco, Nepal and Vietnam. This investigation reveals that Vietnam is the only country where the employment is positively affected after trade openness. They conclude that the effect is quite heterogeneous among countries and depends on the path of the liberalisation process and country specificity, mainly economic development, factor endowments and sector specialisation. In a study of Indian manufacturing using ordinary least squares (OLS) regression model, Kakarlapudi (2010) compares employment trends during the post-liberalisation period and the pre-liberalisation period and provides evidence of a deceleration of employment growth after trade liberalisation for the overall economy and for manufacturing sectors.

Malik et al. (2011) study the impact of globalisation on employment in Pakistan using time series techniques. They find that trade openness negatively affects employment in both the short run and the long run. Peluffo (2013) uses a difference-in-differences estimation methodology to assess the labour market impacts of trade opening in Uruguay for the period from 1988 to 1996, providing robust findings that trade liberalisation decreases employment generation, by increasing unemployment rates among unskilled workers and increasing the probability of unemployment among qualified workers.

Against these mixed but largely negative results based on a range of approaches, we outline the methodology of this Tunisian study before proceeding to the findings.

The measurement of employment intensity of growth

The *employment intensity of growth* or the *output–employment elasticity* can be defined as the ability of economies to generate sufficient employment opportunities for their populations. It is measured as the proportional change in employment divided by the proportional change in GDP during a given period. This indicator describes how the economic growth and the employment growth evolve together over time. The employment intensity of growth can be measured arithmetically as given below

$$\varepsilon_{it} = \frac{(E_{it} - E_{it-1}) / E_{it-1}}{(Y_{it} - Y_{it-1}) / Y_{it-1}} \quad (1)$$

where E_{it} and Y_{it} are employment and economic output in country i at period t , respectively.

Kapsos (2005) provides evidence of an inverse relationship between employment intensity and labour productivity. This so-called fundamental identity is expressed as follows

$$\text{output} = \text{employment} \times \text{productivity} \quad (2)$$

For small changes, equation (2) can be written as

$$\text{output growth} \cong \text{employment growth} + \text{productivity growth} \quad (3)$$

If we divide equation (3) by *output growth*, we derive the following

$$\text{employment elasticity} = \frac{\text{employment growth}}{\text{output growth}} = 1 - \frac{\text{productivity growth}}{\text{output growth}} \quad (4)$$

Using equation (4), Kapsos (2005) provides a range of scenarios for the relationship between employment elasticity, employment growth and productivity growth. He concludes that employment elasticity varying between 0 and 1 corresponds to the ideal scenario for economies with positive GDP growth. In this situation, employment growth and productivity growth are positive, and an increase in employment elasticity within this range leads to more employment-intensive growth.

Islam and Nazara (2000) and Islam (2004) provide evidence that use of an arithmetic method to calculate the employment intensity of growth is not appropriate for the purpose of cross-country comparison because of the difficulty in obtaining reliable estimates of GDP in the presence of a large informal sector. Instead, they argue the importance of using econometric methods and focusing on specific sectors to estimate the employment intensity of growth. We therefore provide an overview of studies using a range of econometric methods at varying levels of disaggregation.

Padalino and Vivarelli (1997) investigate empirically the employment intensity of growth in G7 economies over the period 1960–1994. They provide evidence of null employment intensity of growth for Japan, France, Germany, Italy and the United Kingdom. Only the United States and Canada record positive figures close to 0.5. This study does not detect any downward trend when they subdivide the sample into two sub-periods: the Fordist era (1960–1973) and post-Fordism (1974–1994). However, when they focus on manufacturing employment, Padalino and Vivarelli (1997) find negative intensities for all G7 countries except for Japan. The authors conclude the existence of structural differences between North America, Europe and Japan, and recommend strengthening overall economic growth as a means to achieving moderate employment creation in Europe. Empirical studies focusing on regional differences in employment intensity include Boltho and Glyn (1995) who estimate employment intensity of around 0.5 for a set of OECD countries and Walterskirchen (1999) who, using cross-country analysis on a sample of European countries over the period 1988–1998, find an employment intensity of 0.65 for EU countries overall, with a range from 0.24 for Austria to 0.76 for Spain.

To provide a measure of the employment intensity of growth, Crivelli et al. (2012) use a weighted least squares estimator on a panel of 167 countries over the period 1991–2009. Their empirical results show a robust heterogeneity across countries and across regions with the majority of elasticities ranging between 0.3 and 0.8. In an effort to

identify sources of employment growth, Crivelli et al. (2012) provide comparisons of three main economic sectors (agriculture, industry and services) for the 167 countries in their sample. Their conclusions suggest that the industry and service sectors provide more employment-intensive growth than the agriculture sector in upper- and middle-income countries.

Mourre (2006) demonstrates that the cross-country heterogeneity of employment intensity of economic growth in EU countries is linked to differences in sectoral composition. This study finds higher employment intensity in economies with a high share of job-intensive sectors, such as those where service sector employment is a high proportion of total employment.

To explore these sectoral composition effects, it is necessary to look at country-specific studies. Perugini (2009) investigates sectoral differences of employment intensity in Italy, using a static panel approach on data over the period 1970–2004. This study provides evidence that, following a period of so-called jobless growth, job-rich growth took place in Italy from the mid-1990s. El-Ehwany and El-Megharbel (2008) examine the sectoral employment intensity of six major sectors² in Egypt during the period 1980–2005. Results show that the Manufacturing and Mining sector had the highest employment intensity with a value of 0.61, while Agriculture, Petroleum and Electricity exhibited a lower intensity value of 0.32. The authors conclude that investment must be oriented to sectors with high employment elasticity in order to reduce the high level of unemployment in Egypt. Exploring sectoral employment intensity in Botswana, Ajilore and Yinusa (2011) show jobless growth in an economy characterised by very low sectoral employment intensity except for the Mining sector. They recommend that the mineral-led economy of Botswana diversify into sectors and activities with high labour-absorptive capacity.

Two examples drill down further into single industry sectors. Aydiner-Avsar and Onaran (2010) focus on private manufacturing industry in Turkey, using a panel approach based on a microeconomic perspective. They identify intra-sectoral heterogeneity by using a skill taxonomy to classify manufacturing sectors into two groups: high and medium skilled, and low skilled. Their empirical results indicate that the low-skilled group includes the more labour-intensive sectors with higher output elasticity. Aydiner-Avsar and Onaran (2010) conclude that increased vertical fragmentation of production in Turkey does not seem to be generating a higher demand for employment in high-skilled sectors. Pattanaik and Nayak (2013) adopt a time series approach, using data from 1960 to 2005 to explore the employment intensity of the Service sector in India. They demonstrate that employment elasticity in the Service sector has dropped significantly over the years. This finding suggests that the tertiarisation process in the Indian economy is driving jobless growth.

Finally, Mouelhi and Ghazali (2014) focus on the Tunisian case, measuring sectoral employment intensity and assessing its major determinants. The study uses both the arithmetic method and OLS estimates on dataset of 10 sectors over the period 1980–2012. Conclusions suggest that Agriculture and Fishing and Trade and Tourism represented the most labour-intensive sectors and exhibited an upswing pattern. However, sectors that exhibited relatively low and decreasing employment–output intensities are Manufacturing, Public Service, Transport, Telecommunication and Finance.

Methodology

Our motivation is to shed light on structural change in sectoral employment intensities according to different episodes of economic development in Tunisia, linked to the FTA process with EU. We aim to assess whether the FTA process has fostered a shift of the Tunisian economy towards a more inclusive growth model, when the two sub-periods are compared. The first sub-period covers 1983–1995, that is, prior to the FTA process, while the second sub-period includes 1996–2010, that is, after implementing the FTA process with EU.

Empirical analysis estimates the employment intensity of sectoral output growth using a linear regression in the following form

$$Employment_{it} = \beta_{0i} + \beta_{1i}VA_{it} + \varepsilon_{it}, \quad i = 1, \dots, N; t = 1, \dots, T \quad (4)$$

where $Employment_{it}$ and VA_{it} are the number of employees in sector i and its value added, respectively. Both variables are transformed into logarithmic form. We suppose that sectors are heterogeneous and use a random coefficient model. To avoid spurious regression due to non-stationary variables, we estimate the first-difference transform of equation (4)

$$\Delta Employment_{it} = \beta_{1i}\Delta VA_{it} + \Delta \varepsilon_{it} \quad (5)$$

We use the two-step generalised least squares (GLS) procedure suggested by Swamy (1970) to obtain the feasible best linear predictor of β_{1i} . The estimated coefficient β_{1i} denotes the employment intensity of sectoral output growth. It provides, for each sector, the proportional change in employment divided by the proportional change in value added during a given period. Second, we examine the composition of employment growth by sector. Using the identity that output growth is the sum of employment growth and labour productivity growth, we check whether positive average employment growth is due to an increase in output growth and/or due to a decrease in productivity growth.

Data

Our study uses a balanced sample of 15 Tunisian sectors. The data cover the period from 1983 to 2010 and are provided by the Tunisia National Institute of Statistics. Table 1 shows the sectors list included in the sample.

The dataset includes annual data on employment and gross value added at constant prices (1983 prices) (Figure 1). Tables 2 and 3 report the descriptive statistics and the pairwise correlation coefficients for all variables, respectively.

The descriptive statistics show an average number of employees per sector rate of 120,175, with a high variability for the entire 15 sectors in our sample over the period 1983–2010. In 2010, the primary sector had the smallest number of employees while almost two-third of the labour force were employed in service sectors (Trade, Transport

Table 1. The sectors list included in the sample.

1	Agriculture and Fishing
2	Agricultural and Food Industries
3	Building Materials, Ceramics and Glass
4	Mechanical and Electrical Industries
5	Refining and Chemicals
6	Textiles, Clothing and Leather
7	Miscellaneous Manufacturing Industries
8	Mining
9	Hydrocarbons
10	Electricity
11	Buildings and Public Works
12	Trade
13	Transport and Telecommunications
14	Hotels, Bars, Restaurants
15	Miscellaneous Services

Table 2. Summary statistics.

Variable	Obs	Mean	SD	Minimum	Maximum
Number of employees	448	120,175	137,555	4363	578,902
Gross value added (constant 1983 MTD)	448	1434.627	2365.48	29.183	19,252.47

SD: standard deviation; MTD: million Tunisian dinars.

Table 3. Correlation matrix.

	EMPL	VA
EMPL	1	
VA	0.4197	1

EMPL: employment; VA: value added.

and Telecommunications; Hotels, Bars, Restaurants; Miscellaneous Services). This variability is due to a high employment growth over the period 1983–2010 in the Services, Building and Construction, and Manufacturing sectors, compared with a moderate increase in non-manufacturing industry and a decrease in job creation in the Agriculture and Fishing sector. The sectoral rate of job creation was slower for women than for men, except in the service sector where female employment experienced the strongest rate of growth over this period.

Results and discussion

The results from estimating equation (5) are reported in Table 4. Column (1) presents the standard OLS regression. Random coefficient models are reported in column (2), for the

Table 4. The employment intensity of sectoral output growth in Tunisia.

Sectors	Overall period (1983–2010)		Overall period (1983–2010)		Pre-FTA process (1983–1995)		Post-FTA process (1996–2010)	
	OLS	RCM	OLS	RCM	RCM	RCM	RCM	RCM
	(1)	(2)		(3)	(3)	(4)		(4)
1. Agriculture and Fishing	0.079 (0.055)	0.095 (0.064)	0.009** (0.028)	0.016 (0.101)				
2. Agricultural and Food Industries	0.223** (0.096)	0.221** (0.084)	0.266** (0.027)	0.165* (0.099)				
3. Building Materials, Ceramics and Glass	0.05 (0.103)	0.086 (0.086)	0.063* (0.105)	0.105* (0.103)				
4. Mechanical and Electrical Industries	0.444** (0.075)	0.397** (0.079)	0.343** (0.109)	0.38** (0.09)				
5. Refining and Chemicals	-0.099 (0.11)	-0.046 (0.077)	0.124 (0.115)	-0.06 (0.084)				
6. Textiles, Clothing and Leather	0.10** (0.098)	0.103** (0.037)	0.09** (0.037)	0.144** (0.076)				
7. Miscellaneous Manufacturing Industries	0.33** (0.058)	0.32** (0.057)	0.347** (0.062)	0.236** (0.092)				
8. Mining	-0.085* (0.05)	-0.062 (0.054)	-0.03 (0.059)	-0.061 (0.08)				
9. Hydrocarbons	0.122 (0.127)	0.134** (0.071)	0.076 (0.104)	0.146* (0.086)				
10. Electricity	0.284** (0.124)	0.26** (0.097)	0.147** (0.07)	0.275** (0.103)				
11. Buildings and Public Works	0.192** (0.062)	0.195** (0.073)	0.123** (0.04)	0.265** (0.103)				
12. Trade	0.405** (0.063)	0.384** (0.062)	0.377** (0.08)	0.36** (0.08)				
13. Transport and Telecommunications	0.243** (0.05)	0.241** (0.054)	0.22** (0.041)	0.25** (0.07)				
14. Hotels, Bars, Restaurants	0.435** (0.053)	0.415** (0.058)	0.453** (0.07)	0.304** (0.08)				
15. Miscellaneous Services	0.50** (0.097)	0.43** (0.089)	0.587** (0.082)	0.264** (0.098)				

OLS: ordinary least squares, with robust standard errors (White method); RCM: random coefficient models; FTA: Free Trade Agreement. Standard errors are in parenthesis. ** and * indicate significance levels at 5% and 10%, respectively.

whole period, while columns (3) and (4) present results for the pre- and post-FTA periods, respectively.

The results of OLS regressions show that the relationship between sectoral employment and its output growth is statistically significant for the majority of the sectors included, except for Agriculture and Fishing; Building Materials, Ceramics and Glass; Refining and Chemicals; and Hydrocarbons. This relationship is significantly negative only for the Mining sector. This finding suggests that output growth in the mining sector is attributable to productivity growth and not to employment growth. Random coefficient model estimation outcomes give further support to our previous conclusions.

Column (2) in Table 4 shows that the most labour-intensive sectors in Tunisia, with employment elasticity to value added close to 0.4, are basically in service sectors (Trade, Tourism and Miscellaneous Services) and in some exporting manufacturing industries like mechanical and electrical industries. The values for employment intensity of sectoral output growth in others sectors are positive but weak. Since elasticities range between 0 and 1 and we have positive GDP growth rates, this implies a positive increase in both employment and productivity.

In columns (3) and (4) of Table 4, we present the estimation results for the two sub-periods to capture the effect of trade liberalisation in Tunisia on employment intensity of sectoral output growth. We compute the Chow test to check the stability of the employment intensities across the two sub-periods. With a p -value of 0.01, we reject the null hypothesis of stable coefficients. So, the differences in employment intensities across the two sub-periods are statistically significant. Columns (3) and (4) illustrate that the process of trade liberalisation with the EU has led to an increase in the intensity of employment in export Manufacturing sectors such as Textiles, Clothing and Leather industries, and Mechanical and Electrical industries, and Energy sectors such as Electricity. However, except for the Mechanical and Electrical industries, their ability to generate jobs in response to the growth of the value added remains weak. On the other hand, the most labour-intensive service sectors (Tourism and Miscellaneous Services) have shown a significant decrease in their employment intensity of output growth between the two sub-periods. Also, we note that agriculture's ability to generate jobs in response to an increase in its value added therein is weak before and after FTA adoption.

Thus, the FTA process has not really fostered the shift of the Tunisian economy towards a more inclusive growth model, bringing more opportunities for job creation. This disappointing effect of trade liberalisation in Tunisia on the ability of economic sectors to generate jobs may be explained by the fact that measures to open the Tunisian economy failed to generate trade surpluses owing to very low value-added exports. The liberalisation of trade did not allow Tunisia to unhook exports from imports. The share of exports and imports in GDP converged in the late 2000s, indicating that the added value of exports was insufficient to generate a trade surplus as a result, and over the period the terms of trade have deteriorated.

Table 5 presents findings from decomposing value-added growth into productivity growth and employment growth components for all sectors during the pre-FTA process sub-period (1983–1995) and for the sub-period in which trade openness was increased (1996–2010). When one looks at the trend over time, we conclude that labour productivity growth has been the major source of value-added growth for all

Table 5. Decomposition of output growth by sector.

Sectors	The pre-structural programme adoption (1983–1995)			The strengthening of the trade openness process (1996–2010)			Contribution of productivity growth to value- added growth	
	Average employment growth	Average value-added growth	Average labour productivity growth	Average employment growth	Average value-added growth	Average labour productivity growth	1983– 1995	1996– 2010
1. Agriculture and Fishing	0.19%	8.59%	8.40%	1.49%	5.24%	3.75%	97.8%	71.6%
2. Agricultural and Food Industries	5.79%	9.66%	3.86%	2.31%	9.18%	6.86%	40.0%	74.7%
3. Building Materials, Ceramics and Glass	2.73%	9.60%	6.87%	0.51%	5.92%	5.41%	71.6%	91.4%
4. Mechanical and Electrical Industries	5.62%	9.70%	4.08%	5.35%	12.17%	6.83%	42.0%	56.2%
5. Refining and Chemicals	3.82%	8.72%	4.90%	3.50%	9.87%	6.37%	56.2%	64.5%
6. Textiles, Clothing and Leather	1.66%	15.41%	13.76%	0.72%	5.13%	4.41%	89.3%	86.0%
7. Miscellaneous Manufacturing Industries	4.34%	11.18%	6.84%	2.00%	5.53%	3.53%	61.2%	63.8%
8. Mining	-3.04%	5.93%	8.97%	-3.29%	7.78%	11.07%	151.3%	142.3%
9. Hydrocarbons	2.83%	0.49%	-2.34%	2.68%	11.02%	8.35%	-	75.8%
10. Electricity	1.13%	7.00%	5.87%	1.58%	5.25%	3.67%	83.9%	69.9%
11. Construction and Buildings	1.66%	7.35%	5.69%	3.19%	8.30%	5.10%	77.4%	61.45%
12. Trade	5.22%	9.61%	4.39%	4.15%	9.05%	4.90%	45.7%	54.1%
13. Transport and Telecommunications	2.87%	9.92%	7.05%	3.41%	10.34%	6.93%	71.0%	67.0%
14. Hotels, Bars, Restaurants	6.88%	12.07%	5.19%	3.47%	7.29%	3.82%	43.0%	52.4%
15. Miscellaneous Services	6.39%	8.58%	2.19%	3.44%	8.61%	5.18%	25.5%	60.2%

Source: Authors' Computations.

the sectors, during the second period, 1996–2010. Before the FTA process, on average, employment growth was greater than labour productivity growth in Agri-Food industries; Mechanical and Electrical industries; Petroleum; and Trade, Tourism and Miscellaneous Services. However, for the period 1996–2010, the average rate of labour productivity growth has been greater than the average rate of employment growth for all sectors, but contrasts with the three main sectors experiencing a small increase in employment growth in the former period, that is, Agriculture and Fishing, Building, and Transport and Telecommunications.

Conclusion and policy implications

The main focus of this study is to assess the effect of trade liberalisation in Tunisia on the ability of various economic sectors in the country to generate employment. Using panel data estimation techniques on a sample of 15 Tunisian sectors over the period 1983–2010, the empirical evidence, based on random coefficient models, supports the view that FTA process in Tunisia has had a disappointing impact on sectoral employment.

Empirical results illustrate that the FTA process has led to an increase in the intensity of employment in export manufacturing sectors like Textiles, Clothing and Leather industries, and Mechanical and Electrical industries. However, except for the Mechanical and Electrical industries, their ability to generate jobs in response to the growth of the value added remains weak. Otherwise, after the FTA process, we see that the most labour-intensive service sectors (Tourism and Miscellaneous services) have shown a significant decrease in the employment intensity of their output growth. The employment–output intensity in the Agriculture and Fishing sector has been very low both prior to and post the FTA process. This suggests that agriculture policy should balance between a strategy ensuring food security in basic products and production of labour-intensive crops.

We conclude that the FTA process has not fostered the shift of the Tunisian economy towards a more inclusive growth model, nor brought more opportunities for job creation. The relative lack of market diversification has made Tunisia vulnerable to the recent economic downturn in the EU³ as well as to political upheaval in Libya. Tunisia has long depended heavily on Europe as a market for its exports. Among the top 10 destinations for Tunisia's merchandise exports in 2010, 7 were in Europe, with France and Italy alone absorbing more than half of the total. The three non-European destinations were neighbouring Libya, Algeria and the United States. More broadly, nations of the EU purchased 73% of Tunisia's exports in 2010. In order that trade strategy in Tunisia contributes to employment creation, policymakers should strengthen integration into the world market. Fortunately, in recent years Tunisia has made modest steps towards diversifying its export markets. One recent source of diversification has been the growing share of exports sold to countries in sub-Saharan Africa, which grew to 2.4% of total exports in 2010, up from less than 1% in 2001. The share of exports sold to the United States also grew to 2.4% in 2010, four times its share as recently as 2003 (Table 6).

In the same vein, we note that the high value of employment intensity for trade, in comparison with that of Transport and Telecommunication, may indicate the failure of

Table 6. Top destinations of Tunisia's exports, 2010.

Country	Exports in USD million	Percentage of total merchandise exports
1. France	4717	29.8
2. Italy	3265	20.6
3. Germany	1388	8.8
4. United Kingdom	825	5.2
5. Libya	732	4.6
6. Spain	637	4.0
7. Algeria	475	3.0
8. United States	389	2.5
9. Netherlands	360	2.3
10. Belgium	320	2.0
Total	15,848	10.0

Source: United Nations (2010).

trade liberalisation to realise a successful shift towards sectors with higher productivity levels, like in India, since the increase in employment in the service sector occurs in the informal sector with low productivity, such as trade, while Information and communication technology (ICT) sectors with high productivity levels cannot absorb a growing inflow of university graduates entering the labour market. The continuous growth experienced by Tunisia in the last 30 years allows drawing the lessons of the past regarding economic policies. Economic policies which support trade liberalisation are conditions necessary but not sufficient to reduce unemployment and to lead to more employment-intensive growth. It may be useful to maintain some barriers to protect some sectors in Tunisia like agriculture and selected service sectors.

Some growth drivers like exports stalled due to the international specialisation of Tunisia in low value-added products. Foreign direct investment remained below expectations, and notwithstanding a dramatic increase in young graduates, the unemployment rate worsened. Eventually despite substantial structural reforms, unemployment and inequalities destabilised the regime and swept it away in January 2011.

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Notes

1. The terms 'the employment intensity of growth' and 'output–employment elasticity' are used interchangeably throughout the article.
2. (1) Agriculture, (2) Manufacturing and Mining, (3) Petroleum and Electricity, (4) Construction and Building, (5) Social Services and (6) Production Services (which include trade, finance, insurance; transportation, storage, telecommunications, Suez Canal, restaurants and hotels).
3. IMF Country Report No. 10/109 (May 2010).

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