

“Import, Export and Turnover in Morocco”

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1. Introduction

International trade is commonly view as an useful tool to remove market distortions, to promote competition among firms and hence increase welfare. However, trade openness is not costless and unavoidably creates gainers and losers (Wood (1995, 1998)). Hence, a complete evaluation of the gain from trade should consider both efficiency benefits and adjustment costs. Indeed, to enjoy of the gain from trade liberalisation, some adjustment processes are required. Increasing trade will induce reallocation of resources from less efficient firms to more productive one, with a final positive effect on growth and uncertain consequences for the labour market. With increasing competition, the less efficient firms will exit from the market and the others should increase their productivity to strengthen their position. The first attempts to analyse the impact of trade on labour market focused on the net change in wage and employment levels (Bottini (2005) and Hoeckman and Winters (2005) for a review of the literature). However, further analysis have highlighted that looking at total levels of employment is likely to conceal important dynamics in the labour market and in the economic analysis (Davis and Haltiwanger, 1996). Indeed net change in total employment is derived by adding up new places available through the entry of new firms and expansion of existing firms and employment losses over shrinking and exiting establishments. Studying the link between trade liberalisation and job dynamics is hence a way to examine how increasing trade impacts on job turnover and input reallocation. Furthermore, it is important to detangle the effect of trade on labour market by dealing separately with import and export flows. The available literature shows that trade liberalisation will lead to labour reallocation, with jobs moving away from import-competing industries toward export industries (Davidson and Matusz (2001)). Intuitively, import and export flows have an opposite impact on labour market. Increasing import competition worsen market condition for domestic firms and causes firms exit and downsizing with a final negative effect on employment. On the other side, increasing exports creates more opportunities for domestic firms, induces sector expansion and creation of new jobs. Finally, trade liberalisation. has been also blamed for a “race to the bottom” in the labour market in the form of lower compliance with labour market standards, more extensive use of part-time and temporary labour, and a decrease in the job quality for the neo-employed (Goldberg and Pavcnik, 2004). Hence, it would be interesting to investigate whether trade liberalisation impact in a different way on temporary and permanent workers.

The purpose of this paper is to study how import and export flows impact on job reallocation in the Moroccan economy. This paper makes two main innovative contributions. First of all, we explore the link between trade and job dynamics for a developing country, indeed the available evidence refer to Europe (Bentivoglio and Pagano), USA (Davidson and Matusz) and transition countries (Konings at.all (2003). Secondly, we decompose total employment in permanent and temporary workers to understand

whether trade flows impact in a different way on these categories. The data derives from the Annual Industrial Census. The sample covers 4,762 enterprises and contains data for five macro-sectors for 1990 and 2002 in Morocco. The twenty sectors covered could be classified in five groups: clothing and textiles, food processing, chemicals and plastics, metallurgy, and electrical machines. One of the substantial advantages of this survey is that it contains extremely detailed information at the firm level. For each firm we have information on the sales, production, exports, and start-up data. In particular we have detailed information on labour supply for each firm, with employment divided by gender, skills and employment period. Following the Davis and Haltiwanger (1996)'s methodology, we compute the indexes of job creation and job destruction at sectoral level for temporary and permanent workers. Aggregating firm at sectoral level, we get the main indicators of job dynamics. Gross job creation (POS) is defined as the sum of the new places available through expansion of existing firms and creation of new establishments within the sector. Similarly, gross job destruction (NEG) is computed by adding up employment losses over shrinking and dying establishments within a sector. Adding up POS_{st} and NEG_{st} produces SUM_{st} , a measure of the gross job reallocation rate in sector s between $t-1$ and t . Using a panel data approach., we regress the export and import shares on these indexes of job reallocation at sectoral level, after controlling for other sector specific characteristics.

The paper proceeds as follows. Section 2 provides a brief overview of the empirical evidence on trade and employment. Section 3 present the key features of the data, with a particular focus on the Moroccan economy structure and its openness. Section 4 analyses labour markets dynamics in the Moroccan economy. Following the Davis and Haltiwanger's methodology, we compute the indexes of job creation, job destruction, job reallocation and excess job reallocation at sectoral level. After presenting the estimation strategy, in Section 5 we regress the import and export shares on labour dynamics for permanent and temporary workers, after controlling for other sector specific characteristics. Section 6 concludes.

2. Trade and Labour market: some stylised facts.

The available literature presents evidence for high rates of job turnover and suggests that looking at total levels of employment is likely to conceal important dynamics in the labour market and in the economic analysis (Davis and Haltiwanger, 1996). Indeed, job reallocation (as well as input and output reallocation) contributes significantly to aggregate productivity growth (Haltiwanger, 2000). Thought turnover workers move from high-cost firms to low-cost firms increasing the productive level of the economy. Moreover, trade increases the input reallocation by promoting the competition among firms and removing market distortion. Hence, it's interesting to analyse how trade impacts on labour reallocation and firm performance by changing turnover. Many empirical studies have attempted to

explain this pattern. In these analyses, increased openness of economies has been put forward as one explanation for increasing gross job reallocation in the form of new hires, recalls, quits, displacements, temporary layoffs, and retirements. In particular, trade liberalisation will lead to labour reallocation, with jobs moving away from import-competing industries toward export industries.

Although much of the available evidence focus on developed countries, in the last decades some efforts have been done to analyse the pattern in developing countries. This has been possible because new data set on developing countries have been published.

The link between trade liberalisation and labour market dynamics has been exploited following three main methodologies: the input-output approach; the regression-based method that involves estimation of labour demand, turnover or production functions; and CGE-based methods. In particular, within the regression-based method we could identify two different trends which differ for the dependent variable. Indeed, the authors link the trade policy to the change in the general level of employment or the index of labour churning.

With regard to the first approach, the change in the employment level across sectors due to trade liberalisation is studied using *the market-clearing models of labour market*. Following this approach, Grossman (1987) analyse the impact of an increase of import competition on the U.S. labour market. The OLS-estimations show that job (or earning) losses in nine unskilled labour intensive US manufacturing sectors due to import competition were very small. The only exception is for the consumer electronics (radio/television) sector, where employment was estimated to be some 70% lower than it would have been in the absence of import competition. Conversely, Freeman and Katz (1991) focus exclusively on the within-industries effect. They conclude that trade impacts on labour market outcomes in term of inter-sectoral changes in employment, but that domestic factors (demand for skilled labour, skill-biased technical change) were much more important drivers of job losses in the developed countries studied. Moreover, little impact of change in policy trade on wages was observed. Gaston and Trefler (1997) analyse the impact of the Canada-US Free Trade Agreement on employment and earnings in Canada. They provide evidence for the fact that the 1989-93 Canadian massive job losses were not primarily caused by the FTA. Instead, other factors (including fight against inflation) explain more than 85% of the job losses. The effect of FTA on Canadian labour market was analysed also by Beaulieu (2000), but he investigates whether change in tariffs affects skilled and unskilled workers differently. He finds that Canadian tariff reductions do not affect the earning of either non-production or production workers. However, change in employment level affects more non-production workers. When controlling for the endogeneity of tariffs through instrumental variable approach, estimation indicates that a 1 percent point decline in the Canadian tariffs rate lowers Canadian production employment by 3 per cent. These results are explained by the fact that the most protected industries prior to the FTA tariffs cuts were intensive in the use of less-skilled workers. Revenga (1992)

using a panel data for manufacturing industries over the 1977-87 analyses the effect of an increase in import competition on wages and employment in the U.S. manufacturing sector. The wage and employment elasticities estimations suggest that labour is quite mobile across industries. It means that most of the adjustment to adverse trade shocks occurs through employment. Moreover, the 1980-85 exchange rate appreciation of the dollar reduced employment on average by 4.5-7.5 percent and wages by 1-2 percent in the sample of trade-impacted industries. Finally, from the comparison of the OLS and the 2SLS estimates, Revenga show that the OLS estimates of the import price elasticities seem to be significantly downward biased. Following Revenga considerations, this could explain why previous studies of the labour market effects of import competition have usually found weak results (see Mann (1984, quoted in Revenga (1992), and Branson and Love (1986, quoted in Revenga (1992)). Kletzer (2000) examine the relationship between increasing foreign competition and job displacement in the U.S. manufacturing during the period 1975-94. In this paper Kletzer present an empirical framework for examining the relationship between international trade and labour market that is a bit different from the general model described above. Indeed, he links international trade directly to job displacement¹. The results confirm the widespread idea that imports displace some domestic jobs. Across industries, there is some evidence that the risk of job loss increases as imports rise and/or import prices falls. This relationship is strong and positive for sectors identified as import sensitive, such as footwear, leather products, radio and television, watches and clocks, and toys. Anyway, the overall relationship between increasing competition and permanent job loss is not strongly systematic. At the same time, in the cross-country specification, increasing foreign competition accounts for a small share of job displacement. Results do not change by correcting for industry fixed effects, in the within-industry estimates. Lang (1998) analyses the effects of trade liberalisation on wages and employment in New Zealand, with particular attention on labour market imperfections. The negative relationship between wage and protection is interpreted by Lang as a tendency for government to protect low-wage industries. Results show that trade liberalisation decreases employment in protected sectors, but the reallocation of workers among sector in the aftermath of tariffs reduction is in part offset by the increase in wages in protected industries. Lang concludes that protection has been an extremely expensive method for shifting employment across industries. Milner and Wright (1998) analyse labour market adjustment to trade liberalisation in Mauritius. They use a panel data for 25 manufacturing industries from 1968 to 1991. Results indicate that in the exportable sector, employment and wages increase in the long-run in response to trade liberalisation, but there is some evidence of wages decrease in the short run. In contrast with the theoretical predictions, employment and wages expand also in the importable sector in the aftermath of trade liberalisation, both in the short- and long-run. Milner and

¹ This work suffers of an important limitation. Displacement is just one of the flows that contribute to net changes in employment. As the literature suggests, it is likely that firms use all the components of turnover (quits and replacements hiring) in response to change in trade policy.

Wright attribute this phenomenon to Mauritius' overall strong economic performance. Indeed, it has been accompanied by general expansion of the economy and labour supply. As emphasised by Hoeckman and Winters (1995), Mauritius opened up via export promotion rather than import liberalisation and, according to Rodrik (1997) and Subramanian (2001), its success is mainly due to its institutions rather than its trade policy.

A second approach analyse the impact of trade on the labour market dynamic using the indexes of job reallocation as dependent variable in the estimation. Davis and Haltiwanger (1996)² and Dunne, Roberts and Samuelson (1989) suggested different indexes to capture the creation, destruction and reallocation of job at sectoral level, which are widely applied in the empirical work. Following this approach, Dewatripont, Sapir and Sekkat (1999) link import and export directly with job creation, job destruction and turnover using European labour market data. They mainly show no effect of trade with developing countries on job creation, job destruction and job reallocation in Europe. Bentivoglio and Pagano (1999), in their analysis on the effect of international trade with the newly industrialised Asian economies (Nies) on the labour markets of Germany, France, Italy and the United Kingdom, apply the methodology proposed by Dewatripont et.al (1999). They show that while job destruction is absolutely independent from trade flows with the emerging Asian economies, the evidence on job creation is less clear. In two cases imports appear to have depressed employment dynamics, but in another case exports turn out to have been beneficial. The most striking evidence is that on sector-specific features and individual characteristics, such as sector of (last) employment, sex and education: these variables appear to be much more important than trade in explaining individuals' positions in the labour market. Levinsohn (1996) investigates the pattern of job creation and job destruction in the years following Chile's trade liberalization using the indexes of churning proposed by Davis and Haltiwanger (1996). He adopts both a parametric and a non-parametric approach to analyse the data. Results indicate that job turnover is somewhat higher among exportable than importable, and that both these sectors show higher turnover than non-tradable. Moreover, as firm size increased, job destruction rates almost monotonically decreased, while job creation rates don't change across size deciles. The real difference between firms of different sizes, then, is due to a difference in job destruction rates. Wacziarg and Wallack (2004) provide another example of the attempt to bring together the literature to job reallocation and the literature on the effects of trade liberalisation. Moreover, their paper is one of the few available works that analyses these patterns using a cross-country data set. Results show that liberalisation is followed by an unexpected reduction of intersectoral labour shifts at the economy-wide 1-digit level of disaggregation. Liberalisation has a weak positive effect in the 3-digit level, and this effect is small in magnitude and sensitive to minor changes in the definition of liberalisation or of the measures of sectoral shifts. Moreover, the Wacziarg and Wallack analysis (2004) suggest that the policy

² See Section 4 for a detailed description of the methodology.

environment affects the amount of labour reallocation. In particular, broad-based reforms that include domestic deregulation and privatisation have greater effects on intersectoral labour movements than trade reform in isolation. Baldwin, Dunne and Haltiwanger (1993) analyse the effect of trade on job creation and job loss for the manufacturing sector in Canada and the United States. In particular, exports are positively associated with job creation in Canada and the United States though this result primarily reflected variation across industries rather than changes over time. Indeed, when they analysis the dynamic across time, they found that in both countries increases in exports over time lead to lower job creation though the effect is only significant in the United States. In the United States, but not in Canada, exports are also associated with increased job losses. With regard to imports, Baldwin et al (1993) show that they are correlated with higher job creation and higher job losses in both countries. This is true in both the short and the long-run. From a dynamic point of view, increasing imports over time are associated with increased job losses in Canada but not in the United States. Davis, Haltiwanger and Schuh (1994) find that, in general, there are not distinct patterns in job creation and destruction when industries were grouped according to import penetration and export share, except that in industries with high import penetration ratios, job loss was elevated. More recent evidence is provided by Konings, Kupets and Lehmann (2003) who investigate how relative openness of a sector impact on the creation and destruction of jobs at firm and sectoral level in Ukraine. In particular, they analyse the different impact of trade flows to the world at a large, to the EU and to the Commonwealth of Independent States (CIS). With regard to the manufacturing sector, they show that more import competition has a positive effect on employment growth without regards to the origin of trade flows. Contrary, only firms that export to the world at a large and the EU and are located in more export intensive sectors have higher employment growth rate. Also at sectoral level the trade flow origins matter. In particular, sectors that exports to the EU market and to the world at a large present higher job creation and lower job destruction. Conversely, imports competition from the CIS destroys fewer jobs at sectoral lever but do not increased job creation. Moreover, while export links to the EU have a positive effect on excess job reallocation rate, EU import exerts a negative one. Bruelhart, Murphy and Strolb (2004) analyse the link between intra-industry trade (IIT) and job turnover using a panel for Ireland. They find no relationship between the static IIT index (in the sense of the Grubel-Lloyd Index) and their intra-industry measure of excess job reallocation, computed following the Davis and Haltiwanger (1996) methodology. However, marginal IIT has a small positive effect on the reallocation of labour within an industry. These results are consistent with the theoretical framework and the empirical evidence in the labour literature which suggests that job moves within industries are less costly than flows between industries. Moreover they show that job turnover in the Ireland sector is positively related to the industry's openness to trade and negatively to the plant concentration ratio. Using different data sets on turnover in USA, Davidson and Masutz (2001) find strong evidence that

exports decreases job destruction and workers separation rates. Weaker evidence suggests a positive correlation between exports and job acquisition. Conversely, the estimated coefficient of the deviation between period t and average turnover rates are small in magnitude, change signs under alternative specifications, and are statistically different than zero. This suggests that turnover is relatively insensitive to changes in exports and imports. Haltiwanger, Kugler A., Kugler M., Micco and Pages (2004) find that trade reforms have significant effects on the pace of job reallocation within sector among Latin American countries. Lowering tariff increases the pace of job reallocation, as well as real exchange rate appreciation. This result is consistent with the hypothesis that reforms improve allocative efficiency. However, such improvement is small and not without costs. Indeed, they find that a reduction in tariff is also associated with a decline in net employment growth.

Recent evidence using industry-level data show that not only trade policy changes but also dollar movements have had implication for labour-market outcomes in the U.S. industries. Klein et.al (2003) analyse the impact of real exchange rate movements on gross job flows. From the estimation results, Klein et.all (2003) find strong evidence that movements in real exchange rates have statistically and economically important effects on both net and gross job flows, with the largest changes coming in the most open industries. Whether real exchange rate fluctuations primarily affect net or gross flows seems to depend on whether the fluctuation occurs in the trend or cyclical part of the real exchange rate. Movements in trend real exchange rates significantly affect both job creation and destruction in the same direction by similar magnitudes, thus they have large allocative effects but no effect on net employment growth. In contrast, an appreciation of the cyclical component of real exchange rates increases job destruction but has little effect on job creation, thus it reduces net employment growth but has no other allocative effects. Gourinchas (1999) evaluates the impact of exchange rate fluctuations on inter- and intrasectoral job reallocation among French industries. Estimations show that traded-sector industries are very responsive to real exchange rate movements. In the benchmark estimation, a 1% appreciation of the real exchange rate destroys 0.95% of tradable jobs over the next two years. This variation in net employment is brought about through a simultaneous increase in job destruction and decrease in job creation of 0.24% and 0.71%, respectively. Unlike the US data, French job destruction does not appear systematically more volatile than job creation, except possibly for non-traded sectors. Moreover, import-competing industries appear more responsive, both in magnitude and timing, than exporters. Using a similar approach, Gourinchas (1998) investigate the effect of real exchange rate movements on net and gross job reallocation in the U.S. manufacturing sector. They use four-digit level data for the period 1972-1988. Using a 2SLS estimation, with growth rate of military expenditure used as instrumental variable, they find that a 10% appreciation of the real exchange rate causes a 0.27% contraction in tradable employment. This contraction is due to a simultaneous

destruction of 0.44% and creation of 0.17% of tradable jobs. Conversely, currency depreciation does not display much job churning.

Finally some authors study the effect of trade reform on the transition probability of employment into other sectors and unemployment. Goldberg, Tracy and Aaronson (1999) explore the link between movements in exchange rates and employment adjustment using a probit-model.: The results suggest that switches in exchange rate, and mostly dollar appreciations, increase job reallocation. However, these results are not systematic for all industries and over time. Rather, they document that dollar impacts are concentrated in specific sectors and the effect depends on whether dollar movement arise through the export or import channel. Moreover, results indicate that exchange-rate movements have larger relative effects on the probability that a worker switches industries than on the probability that a worker change jobs. (OR results indicate that exchange-rate movements have larger relative effects on across-industry than between-industry job reallocation). Finally, Goldberg et.al. show that in many sectors the job reallocation across industry (industry attachment) is more affected by dollar appreciations than by dollar depreciations. Using a survey on Austrian male workers, Egger, Pfaffermayr and Weber (2003) show that an increase in imports, terms of trade and in the share of outsourcing negatively affect the probability of staying in (or changing into) the manufacturing sector. These effects are more accentuate for industries with a comparative disadvantages (net importing industries).

The available literature suggest that international factors (whether defined: tariff reduction, export and import competition, exchange rate fluctuation, outsourcing, change in term of trades) are important for labour market dynamic both in term of labour turnover or changes in employment level. In particular, while import competition seems decreasing job reallocation, export has a positive effect. Moreover, these patterns are not uniform in a given country but depend on the geographical origin and destination of the trade flows.

3. Trade Flows in the Moroccan Economy

3.1 The Trade Reform

Since 1980s, the Moroccan government signed wide range of trade agreements that have increased the trade exposure of Moroccan firms. In 1995 Morocco joined the WTO, and also signed a quadrilateral FTA with Tunisia, Egypt and Jordan, which expanded in following years to include other Arab states, and a bilateral FTA with Turkey. Following the Barcelona Agreement an accord with the EU was agreed in February 1996. Another wave of agreements started in the new millennium. The FTA with

the US was signed in June 2004 and was expected to come into effect in March 2005. This agreement covers industrial and agricultural goods, services, telecommunications, customs, intellectual property, employment and the environment. In 2004-05 Morocco signed further trade and investment agreements with a range of countries in Eastern Europe, Asia, Latin America and Africa. Morocco has also recently signed agreements with Turkey, as well as the Agadir Agreement with Egypt, Jordan and Tunisia. These processes of liberalisation have, not surprisingly been accompanied by a reduction in tariffs, and this can be seen in Table 1 below.

Table 1: Moroccan Tariffs

| | 1993 | 1997 | 2000 |
|-------------------|-------------|-------------|-------------|
| Food | 72 | 61 | 52 |
| Textiles | 92 | 61 | 38 |
| Clothing | 99 | 71 | 50 |
| Leather | 60 | 50 | 43 |
| Chemical | 47 | 35 | 26 |
| R&P | 61 | 48 | 38 |
| Electrical | 65 | 37 | 17 |

Source: Trains database

These accords will lead to a wider dismantling of tariffs over the longer term, a diversification of trade partners and a lower dependence from the EU economy.

3.2 Structure and openness of manufacturing sector

The data for this paper are derived from the Moroccan Annual Industrial Census, which is based on the Moroccan industrial classification and divides manufacturing into 20 sectors (as listed in Table 1). The raw data set covers 11,054 enterprises for the period 1990-2002; however this required extensive cleaning due to a number of data irregularities. After extensive cleaning we get a non-balanced panel data set with 4,762 enterprises and a total of 61,906 observations. An important feature of the data is that it contains extremely detailed information at the firm level. For example, for each firm we have information on sales, production, exports, and start-up data, as well as information on the labour supply for each firm, with employment divided by gender, skill and temporary versus permanent workers. However, the data set doesn't include information about import. Hence, we rely on two different data sets: the WITZ data set for the import value and the OECD data set for the sales. However, since they are expressed in a different currency (dollar and dirham, respectively), before to compute the import shares, we transformed both sales and imports in dirham. The main constraint is

that these data are available from 1996 onwards³. Notice that the data don't measure the imports of input or intermediate good by the firms in a sector, but imports of goods, which this sector produce.

Table 2: Sector share in term of Total Employment

| Sector Code | Sector | 1996 | 2002 | % Change |
|-------------|--|-------|-------|----------|
| 15 | INDUSTRIES ALIMENTAIRES | 22.83 | 29.58 | 0.23 |
| 17 | INDUSTRIE TEXTILE | 15.77 | 7.05 | -1.24 |
| 18 | INDUSTRIE DE L'HABILLEMENT ET DES FOURRURES | 21.07 | 24.18 | 0.13 |
| 19 | INDUSTRIE DU CUIR ET DE LA CHAUSSURE | 2.64 | 3.09 | 0.14 |
| 20 | TRAVAIL DU BOIS ET FABRICATION D'ARTICLES EN BOIS | 2.15 | 2.09 | -0.03 |
| 21 | INDUSTRIE DU PAPIER ET DU CARTON | 2.09 | 1.54 | -0.36 |
| 22 | EDITION, IMPRIMERIE, REPRODUCTION | 1.63 | 1.08 | -0.50 |
| 24 | INDUSTRIE CHIMIQUE | 8.91 | 8.31 | -0.07 |
| 25 | INDUSTRIE DU CAOUTCHOUC ET DES PLASTIQUES | 2.68 | 2.99 | 0.10 |
| 26 | FABRICATION D'AUTRES PRODUITS MINERAUX NON METALLIQUES | 7.72 | 4.39 | -0.76 |
| 27 | METALLURGIE | 0.61 | 1.02 | 0.40 |
| 28 | TRAVAIL DES METAUX | 4.90 | 3.91 | -0.25 |
| 29 | FABRICATION DE MACHINES ET EQUIPEMENTS | 1.66 | 0.88 | -0.88 |
| 30 | FABRICATION DE MACHINES DE BUREAU ET DE MATERIEL INFORMATIQUE | 0.33 | 0.00 | |
| 31 | FABRICATION DE MACHINES ET APPAREILS ELECTRIQUES | 1.48 | 2.37 | 0.38 |
| 32 | FABRICATION D'EQUIPEMENTS DE RADIO, TELEVISION ET COMMUNICATION | 0.15 | 3.55 | 0.96 |
| 33 | FABRICATION D'INSTRUMENTS MEDICAUX, DE PRECISION D'OPTIQUE ET D'HORLOGERIE | 0.11 | 0.13 | 0.13 |
| 34 | INDUSTRIE AUTOMOBILE | 2.35 | 1.80 | -0.31 |
| 35 | FABRICATION D'AUTRES MATERIELS DE TRANSPORT | 0.31 | 0.56 | 0.45 |
| 36 | FABRICATION DE MEUBLES, INDUSTRIES DIVERSES | 0.61 | 1.48 | 0.59 |

Table 2 provides some summary information on the basis of the cleaned data set on the share of each industry in employment. From the table, it can be seen that there are a few industries, which dominate the Moroccan economy. In terms of employment the key industries in both 1996 and 2002 were Food and Beverages, textiles, and clothing, with shares in total employment of 22.83%, 15.77% and 21.07% respectively. Over the period 1996-2002 the share of Food and Beverages increased to 29.58, and that of clothing to 24.18%. In contrast the share of textiles declined to 7.05%. These employment shares are by and large reflected in the export and import shares (Table 3).

³ This implies to drop the information available in our data set from 1990 to 1995. However, since there are some irregularities in term of firm number between the 1990-1994 sample and the 1995-2002, also in our panel it would be better rely only on the last period.

Table 3: Sector Share in term of Export and Import

| Sector Code | Sector Description | Export _{it} / Total Export _t | | Import _{it} / Total Import _t | |
|-------------|--|--|-------|--|-------|
| | | 1995 | 2002 | 1996 | 2002 |
| 15 | INDUSTRIES ALIMENTAIRES | 16.93 | 19.26 | 10.98 | 6.94 |
| 17 | INDUSTRIE TEXTILE | 16.79 | 6.64 | 6.57 | 17.79 |
| 18 | INDUSTRIE DE L'HABILLEMENT ET DES FOURRURES | 21.94 | 30.92 | 0.13 | 1.94 |
| 19 | INDUSTRIE DU CUIR ET DE LA CHAUSSURE | 3.91 | 2.96 | 0.58 | 1.32 |
| 20 | TRAVAIL DU BOIS ET FABRICATION D'ARTICLES EN BOIS | 1.97 | 1.58 | 2.82 | 2.07 |
| 21 | INDUSTRIE DU PAPIER ET DU CARTON | 1.68 | 1.63 | 3.03 | 2.27 |
| 22 | EDITION, IMPRIMERIE, REPRODUCTION | 0.01 | 0.01 | 1.14 | 1.02 |
| 24 | INDUSTRIE CHIMIQUE | 26.33 | 21.04 | 20.23 | 14.07 |
| 25 | INDUSTRIE DU CAOUTCHOUC ET DES PLASTIQUES | 1.07 | 0.82 | 3.50 | 3.51 |
| 26 | FABRICATION D'AUTRES PRODUITS MINERAUX NON METALLIQUES | 0.84 | 0.99 | 1.65 | 1.34 |
| 27 | METALLURGIE | 1.45 | 2.05 | 8.39 | 6.75 |
| 28 | TRAVAIL DES METAUX | 1.26 | 1.50 | 3.43 | 2.73 |
| 29 | FABRICATION DE MACHINES ET EQUIPEMENTS | 0.14 | 0.25 | 16.79 | 11.43 |
| 30 | FABRICATION DE MACHINES DE BUREAU ET DE MATERIEL INFORMATIQUE | 0.24 | 0.00 | 2.10 | 2.37 |
| 31 | FABRICATION DE MACHINES ET APPAREILS ELECTRIQUES | 0.78 | 6.63 | 3.78 | 4.85 |
| 32 | FABRICATION D'EQUIPEMENTS DE RADIO, TELEVISION ET COMMUNICATION | 1.76 | 2.41 | 2.99 | 6.25 |
| 33 | FABRICATION D'INSTRUMENTS MEDICAUX, DE PRECISION D'OPTIQUE ET D'HORLOGERIE | 0.12 | 0.04 | 1.91 | 1.85 |
| 34 | INDUSTRIE AUTOMOBILE | 2.49 | 1.00 | 7.46 | 7.01 |
| 35 | FABRICATION D'AUTRES MATERIELS DE TRANSPORT | 0.24 | 0.14 | 1.16 | 2.70 |
| 36 | FABRICATION DE MEUBLES, INDUSTRIES DIVERSES | 0.03 | 0.13 | 1.38 | 1.80 |

One notable difference is with regard to Chemicals which had employment shares of 8.9% and 8.3% in 1990 and 2002 respectively, but is the most outward oriented sector with considerably higher export shares (26.33% in 1996, and 21.04% in 2002), and import shares (20.23%, 14.07% respectively). However, it reports a sharp decrease in its openness degree over the period. The clothing sector plays an important role in the Moroccan export and registered a large increase in its export shares over the period, moving from 21.94% in 1996 to 30.92% in 2002. Moreover, the import shares in this sector are the lower of the Moroccan economy. Worth noting is the sharp increase in the export share reported by the Machinery and Electronic Apparels sectors (industry 31) which saw its share rise from 0.78% to 6.63%, while several other industries experienced only modest increases in their shares. On the other side, the biggest declines in the export shares were experienced by Textiles sector, which was counterbalanced by a small increase in the import share. Finally, the incidence of foreign goods in the Machine and Equipment, Automobile and Metallurgic sectors is considerable. We can conclude that

while the Moroccan exports are dominated by few important sectors, the imports are much more diversified. Since we have data on sales, we could compute a more accurate openness index,

$$\text{Export_share}_{jt} = \text{Export}_{jt} / \text{Sales}_{jt}$$

$$\text{Import_share}_{jt} = \text{Import}_{jt} / \text{Sales}_{jt}$$

The openness ranking that we get using this sector doesn't depend on the sector size:

As Table 4 suggest, generally sectors that weight more on the trade balance, export a large share of their output, except for "Food and Beverage". Moreover, the Leather, the Watches and Telecommunication sectors account for a small share of total export but sell abroad more than half of their output⁴. With regard to import, the picture that we get using this openness index is quite different. While the main sector of the Moroccan economy import only a small share of their output, the minor sectors, like Metallurgy, Equipment, Bureau Machines, Telecommunication and Watches, buy from abroad a large share of goods

Finally, it is also worth highlighting that Moroccan trade is heavily dominated by Europe, which is the destination and origin of more than three-quarters of exports and imports (Table 5 and 6). Among the EU countries, France is the main trading partner, taking over one-third of exports and providing over one-fifth of imports. Spain is the second trading partner, typically taking 16-18% of exports and providing 10-12% of imports. The UK, Italy and Germany are other important trading partners (Economist Intelligent Unit, Report 2005). Disaggregating the flows by sector, we immediately notice that the Europe is the destination and origin of the majority of imports and export in each sector but there are substantial differences. In particular, among the more outward oriented sectors, the Food and Beverage and the Chemical sectors present a relative diversified pattern of trade. Indeed, Europe account on average for the 43% and 49% of total export and import (versus an average for the whole economy of 72%). Instead, the Textile and Clothing are heavily dependent on Europe. It's worth noting that despite the Textile sector reported a decline in export share, it's quota to Europe is slightly increasing. With regard to the Machinery and Electronic Apparels sector, the export boom is mainly driven by the European demand.

⁴ The sector ranking on the base of this index is confirmed by the Klein, Schuh and Triest (2002) index, which compute openness as follow: $\text{open}(\text{flow})_{jt} = (\text{Flow}_{jt} / \text{Flow}_{\text{tot},t}) / (\text{employment}_{jt} / \text{employment}_{\text{tot},t})$, where flow = import and export.

Table 4: Export and Import share on total sales by sector

| Sector Code | Sector Description | Export _{it} / Sales _{it} | | Export WITZ _{it} / SalesOECD _{it} | | Import WITZ _{it} / SalesOECD _{it} | |
|-------------|--|--|------|---|------|---|------|
| | | 1996 | 2002 | 1996 | 2002 | 1996 | 2002 |
| 15 | INDUSTRIES ALIMENTAIRES | 0.14 | 0.16 | 0.02 | 0.02 | 0.01 | 0.01 |
| 17 | INDUSTRIE TEXTILE | 0.44 | 0.30 | 0.03 | 0.06 | 0.03 | 0.18 |
| 18 | INDUSTRIE DE L'HABILLEMENT ET DES FOURRURES | 0.90 | 0.90 | 0.06 | 0.15 | 0.00 | 0.01 |
| 19 | INDUSTRIE DU CUIR ET DE LA CHAUSSURE | 0.59 | 0.54 | 0.06 | 0.11 | 0.01 | 0.06 |
| 20 | TRAVAIL DU BOIS ET FABRICATION D'ARTICLES EN BOIS | 0.35 | 0.23 | 0.01 | 0.02 | 0.05 | 0.07 |
| 21 | INDUSTRIE DU PAPIER ET DU CARTON | 0.15 | 0.19 | 0.01 | 0.01 | 0.03 | 0.04 |
| 22 | EDITION, IMPRIMERIE, REPRODUCTION | 0.00 | 0.00 | 0.00 | 0.00 | 0.03 | 0.04 |
| 24 | INDUSTRIE CHIMIQUE | 0.43 | 0.44 | 0.04 | 0.05 | 0.05 | 0.07 |
| 25 | INDUSTRIE DU CAOUTCHOUC ET DES PLASTIQUES | 0.10 | 0.07 | 0.01 | 0.01 | 0.05 | 0.07 |
| 26 | FABRICATION D'AUTRES PRODUITS MINERAUX NON METALLIQUES | 0.03 | 0.04 | 0.00 | 0.01 | 0.01 | 0.01 |
| 27 | METALLURGIE | 0.16 | 0.25 | 0.03 | 0.04 | 0.14 | 0.11 |
| 28 | TRAVAIL DES METAUX | 0.06 | 0.12 | 0.00 | 0.01 | 0.02 | 0.04 |
| 29 | FABRICATION DE MACHINES ET EQUIPEMENTS | 0.02 | 0.05 | 0.03 | 0.01 | 0.85 | 0.57 |
| 30 | FABRICATION DE MACHINES DE BUREAU ET DE MATERIEL INFORMATIQUE | 0.37 | 0.00 | 0.00 | 0.01 | 0.13 | 0.34 |
| 31 | FABRICATION DE MACHINES ET APPAREILS ELECTRIQUES | 0.12 | 0.52 | 0.03 | 0.06 | 0.07 | 0.07 |
| 32 | FABRICATION D'EQUIPEMENTS DE RADIO, TELEVISION ET COMMUNICATION | 0.80 | 0.95 | 0.00 | 0.57 | 0.26 | 0.59 |
| 33 | FABRICATION D'INSTRUMENTS MEDICAUX, DE PRECISION D'OPTIQUE ET D'HORLOGERIE | 0.56 | 0.08 | 0.01 | 0.34 | 0.35 | 0.86 |
| 34 | INDUSTRIE AUTOMOBILE | 0.21 | 0.11 | 0.00 | 0.02 | 0.08 | 0.18 |
| 35 | FABRICATION D'AUTRES MATERIELS DE TRANSPORT | 0.22 | 0.16 | 0.00 | 0.03 | 0.13 | 0.59 |
| 36 | FABRICATION DE MEUBLES, INDUSTRIES DIVERSES | 0.02 | 0.03 | 0.17 | 0.02 | 0.80 | 0.09 |

Table 5: Export and Import Share to Europe

| Sector Code | Sector Description | Export Share | | Import Share | |
|-------------|--|--------------|-------|--------------|-------|
| | | 1996 | 2002 | 1996 | 2002 |
| 15 | INDUSTRIES ALIMENTAIRES | 49.36 | 53.17 | 32.74 | 32.96 |
| 17 | INDUSTRIE TEXTILE | 80.70 | 95.85 | 84.23 | 86.00 |
| 18 | INDUSTRIE DE L'HABILLEMENT ET DES FOURRURES | 91.88 | 95.21 | 85.03 | 91.17 |
| 19 | INDUSTRIE DU CUIR ET DE LA CHAUSSURE | 76.78 | 93.06 | 89.51 | 84.87 |
| 20 | TRAVAIL DU BOIS ET FABRICATION D'ARTICLES EN BOIS | 90.02 | 93.00 | 62.60 | 59.11 |
| 21 | INDUSTRIE DU PAPIER ET DU CARTON | 45.57 | 46.25 | 84.83 | 78.61 |
| 22 | EDITION, IMPRIMERIE, REPRODUCTION | 72.64 | 84.35 | 82.25 | 79.14 |
| 24 | INDUSTRIE CHIMIQUE | 40.50 | 34.28 | 68.92 | 65.27 |
| 25 | INDUSTRIE DU CAOUTCHOUC ET DES PLASTIQUES | 55.19 | 53.05 | 76.83 | 78.50 |
| 26 | FABRICATION D'AUTRES PRODUITS MINERAUX NON METALLIQUES | 63.03 | 86.79 | 79.17 | 73.08 |
| 27 | METALLURGIE | 55.16 | 57.45 | 64.30 | 55.18 |
| 28 | TRAVAIL DES METAUX | 28.74 | 68.15 | 77.98 | 75.28 |
| 29 | FABRICATION DE MACHINES ET EQUIPEMENTS | 15.23 | 59.68 | 83.85 | 80.58 |
| 30 | FABRICATION DE MACHINES DE BUREAU ET DE MATERIEL INFORMATIQUE | 65.25 | 78.69 | 59.11 | 60.68 |
| 31 | FABRICATION DE MACHINES ET APPAREILS ELECTRIQUES | 84.66 | 92.56 | 71.75 | 77.21 |
| 32 | FABRICATION D'EQUIPEMENTS DE RADIO, TELEVISION ET COMMUNICATION | 30.42 | 99.18 | 47.14 | 70.64 |
| 33 | FABRICATION D'INSTRUMENTS MEDICAUX, DE PRECISION D'OPTIQUE ET D'HORLOGERIE | 88.00 | 88.27 | 65.58 | 61.63 |
| 34 | INDUSTRIE AUTOMOBILE | 71.98 | 62.82 | 74.38 | 71.52 |
| 35 | FABRICATION D'AUTRES MATERIELS DE TRANSPORT | 36.26 | 80.69 | 39.41 | 26.00 |
| 36 | FABRICATION DE MEUBLES, INDUSTRIES DIVERSES | 84.79 | 89.78 | 70.07 | 70.04 |

The import and export indexes put in light a consistent and increasing involvement of Morocco in the international trade. This means, an increase in product market competition for exporter and domestic firms. In the literature, increasing competition induce firms to increase their efficiency and productivity in order to remain on the market. Thus trade openness and competition could impact on input reallocation and, as a result, on labour turnover.

4. Churning in the Moroccan Manufacturing Sector

We do this by considering job creation and job destruction, as well as looking at the extent of turnover, and the decomposition of that turnover between the intra- and inter-sectoral movements of jobs.

Following the Davis and Haltiwanger's methodology, Job creation (POS) is defined as the sum of the new places available through the expansion of existing firms within the sector; and job destruction

(NEG) is derived by adding up employment losses over shrinking establishments within a sector. These are then expressed as rates by dividing by the average size of the sector between t and $t-1$, X_{st} :

$$POS_{st} = \sum_{\substack{e \in E_{st} \\ g_{et} > 0}} \left(\frac{x_{et}}{X_{st}} \right) |g_{et}|$$

$$NEG_{st} = \sum_{\substack{e \in E_{st} \\ g_{et} < 0}} \left(\frac{x_{et}}{X_{st}} \right) |g_{et}|$$

Where E_{st} is the set of establishments in sector s at time t ; POS and NEG are each bounded between 0 and 2. Summing up Job Creation and Job Destruction we get Job Reallocation (SUM), while their difference gives us the Net Change (NET). Finally, excess job reallocation (EXCESS) analyses the labour market dynamics in a deeper way by studying the ability of each sector to replace and destroyed jobs:

$$EXCESS_{st} = sum_{st} - |net_{st}|$$

where s represent the sector and i the single firm. Notice that also this index is bounded between [0 and 2. The higher is the value of EXCESS the higher is the level of *simultaneous* job creation and job destruction. This is not captured by NET, for this will be zero when POS and NEG are equal and both high, or when they are both low. Moreover this index captures the job dynamics *within* a sector⁵.

Table 6: Job Creation, Job Destruction and Job Reallocation by Sector (weighted average)

| | Job Destruction | Job Creation | Job Reallocation | Net Change |
|------|-----------------|----------------|------------------|-----------------|
| 1996 | 0.08 (0.02) | 0.12 (0.06) | 0.20 (0.05) | 0.04 (0.07) |
| 1997 | 0.07 (0.02) | 0.11 (0.03) | 0.18 (0.04) | 0.04 (0.03) |
| 1998 | 0.07 (0.04) | 0.08 (0.03) | 0.15 (0.06) | 0.01 (0.04) |
| 1999 | 0.11 (0.06) | 0.08 (0.03) | 0.19 (0.07) | -0.03 (0.06) |
| 2000 | 0.08 (0.04) | 0.10 (0.05) | 0.18 (0.08) | 0.02 (0.04) |
| 2001 | 0.07 (0.04) | 0.08 (0.04) | 0.15 (0.08) | 0.01 (0.03) |
| 2002 | 0.08 (0.05) | 0.07 (0.05) | 0.15 (0.08) | -0.01 (0.04) |

*** Standard Deviation in Parenthesis

⁵ We focus on the job dynamics within sectors since in the previous analysis (Bottini (2006), we shown that the movement of jobs within sectors explain the majority of churning in the Moroccan economy.

Table 6 reports on the weighted average measures of job creation (POS), job destruction (NEG), job reallocation (SUM), as well as the net change (NET) by year. For this part of the analysis we work with the data from 1994 onwards. This is because of certain data discrepancies between the data for this earlier period and the later period. There are several messages, which emerge from the table. First if we look at the reallocation effect across years for continuing firms one immediately notices that the net rate hides much of the dynamics. In 1998, for example, the net rate was close to zero (0.01) but job creation and job destruction were about 7% and 8%, respectively⁶. In 1999 the net rate fell to -0.03, while there was job creation of about 8% and 19% of jobs were reallocated. Hence while on average and in aggregate it might appear that there is little change in the Moroccan labour, in reality there is considerable movement and change. Here, it is also worth noting that the magnitude of turnover in Morocco is similar to that found by Levinsohn (1999) for Chile, Davis and Haltiwanger (1996) for USA, Konings et.al (2003) for Ukraine and slightly lower than the value for Latin American countries (Kugler et.al, 2004).

Secondly, there is little evidence of any change in the indices over time. Hence, although this was a period of some trade policy change, as well as other changes in the policy environment with regard to the aggregate data there is little evidence of direct impact on the labour market as a result of these changes in policy. This was also confirmed by a set of regressions which failed to capture a significant structural break with regard to these indices. Thirdly, there is a lot of variation across the sector since the standard deviations are quite large.

In the preceding we treated labour as a homogeneous group and did not distinguish labour by employment relation. The Moroccan data set, though, contains quite detailed information about the type of labour used in each plant. All of the analyses conducted above with homogeneous labour have been repeated for sub-groups of labour. In particular, separate analyses were done for temporary and permanent workers. As we can immediately see in Table 7 and Table 8, job-reallocation is greater for temporary workers than permanent workers⁷. In particular, the higher level of turnover is mainly due to higher Job Destruction. However, as figure 2 suggests, job destruction starts to decline after 1999 but it's compensated by an increase in job creation. With regard to permanent workers, we could see that job creation is higher than job destruction and their paths are quite stable across the period. The lower level of permanent job reallocation in Morocco could be explained by its comprehensive and rather restrictive labour market regulations, which particularly regards firing procedures for the private sector workforce. The time trend reported in figure 1 and 2 were explored more formally also in time trend regressions (not reported). Both the analysis indicates that while permanent workers don't change their

⁶ As these indices are bounded between -2 and 2, and as they are highly non-linear these figures do not correspond exactly to percentages. However, at lower levels they do approximate percentage changes, and hence are often referred to in the literature as percentage changes. We follow that convention here.

⁷ This gap is confirmed by a t-test on the mean.

job reallocation pattern across the years, temporary workers record an increase in turnover after 1998. This is interesting as trade liberalisation is often claimed of increasing labour market vulnerability and worsening workers conditions (Goldberg and Pavcnik, 2004). Although it may also be the case that the increase in job instability could impact positively on firm-level productivity (see for example Baily, Hulten and Campbell (1992), Baily, Bartelsman and Haltiwanger (1996), Griliches and Regev (1995), Olley and Pakes (1996) and Foster, Haltiwanger and Kizan (1998)).

Figure 1: Churning for Permanent Workers: Time Trend

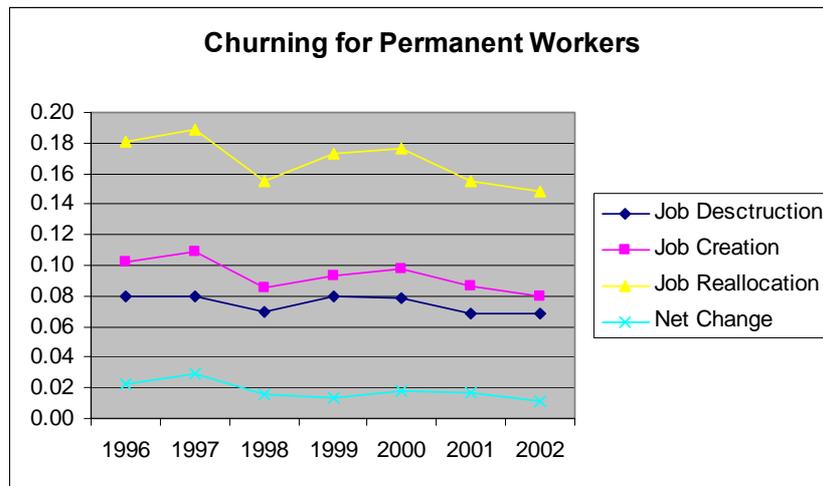
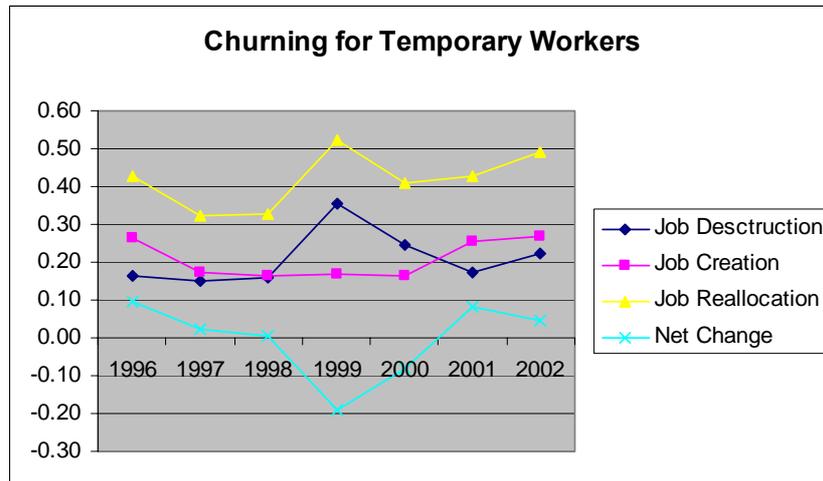


Figure 2: Churning for Temporary Workers: Time Trend



Contrary to the previous analysis, the time trend analysis for the excess job reallocation suggests an increase in the excess average value for total employment and permanent workers from 1999. Instead, for temporary workers the increase in churning is still in 1998. This results support the idea that trade liberalisation increases the job dynamics

Finally, we analyse the difference across sectors in term of churning for permanent and temporary workers. Indeed, looking at the standard deviation in table 7, we infer that there should be a lot of variation in churning across sectors. This is confirmed by the average value reported in Table 7 and 8. As shown in these tables simultaneous job creation and job destruction is an important phenomenon in all sectors. While the average value of turnover is 36% for temporary workers, it varies from 13% to 56% across sectors. For permanent workers the average value of excess is 14% and the range is narrower (from 7% to 21%). A similar pattern is observed for the excess job reallocation, which is in the range [2%-36%] for temporary and [3% - 17%] for permanent workers. As we can see, the main sector of the Moroccan economy present high churning (“food and beverage”, “Textile” and “Clothing” sectors), but only the last two sectors are particularly outward oriented. On the other side, the chemical sector, one of most involved in international trade, present very low level of turnover. This could be explained by the sector maturity and hence its lack of flexibility. Moreover, the BOIS and the paper sector present quite high level of churning but they are of minor importance in the Moroccan economy and trade balance. Turnover among temporary workers is consistent also in the automobile sectors, which increases its share in the trade balance between 1996 and 2002; and in watches sector, which is characterised by a significant foreign competition in its domestic market. The descriptive statistics reported above suggest the presence of a lot of churning in the Moroccan manufacturing sector, as well as a lot of heterogeneity across sectors and years (mainly for temporary workers). However, this preliminary analysis doesn’t allow us to disentangle a clear relationship between openness and turnover. As a result, sectoral level regression analysis seems to be the more appropriate tool to shed light on the impact of trade openness on churning.

5. Evidence from Sectoral Level Regressions

5.1 The Estimation Model

In the previous analysis we show that Moroccan manufacturing sector is characterised by an increasing exposure to foreign competition both in domestic and foreign markets as well as high level of churning. However, given the high heterogeneity of job dynamics pattern across the Moroccan sectors, it was impossible to identify a clear correlation between trade exposure and turnover. Moreover, there could be other sector specific variables that impact on the level of turnover. The aim of this section is to test whether openness affects labour market dynamics and whether it exerts different effect on permanent and temporary workers. In order to shed light on these patterns, we estimate the effect of export and import share, computed as the ratio of total export and total import on sales for each sector, on

turnover and its determinant (job creation and job destruction), both for permanent and temporary workers. We use UN_COMTRADE for import and export at 2 digit. The value of output is from OECD data. Following the literature, we expect that increasing trade would create more instability in the labour market, i.e increase turnover (Davis and Haltiwanger (1996), Gourinchas (1998), Klein et al (2003). In particular, we would expect a negative effect of import on job creation and a positive effect on job destruction, since the increasing competition could hurt domestic firms, which reacts by cutting costs and shirking their labour force. On the other side, export should increase job creation and decrease (or keep constant) job destruction. If a firm increases its share on the foreign market, it means that it's performing very well. Hence it's reasonable an increase in its size, particularly if it deals in labour intensive goods (like the clothing and textile sectors)⁸. Moreover, the positive effect of export on labour market could also be driven by the “inshoring effect”. European firms relocate different stages of their production process in Morocco, mainly in the textile sector, to take advantage of the lower factor prices. Hence, exports from Morocco to the EU include not only final goods but also intermediate goods, in this way trade openness with Europe have a double positive effect on exports. However, since the Moroccan labour market regulation is particularly comprehensive and rather restrictive about the firing procedures for the private sector workforce, it's possible that this feature could impact on the significance of regressors. Following the literature, we add among the regressor the Herfindal index, which capture the concentration/market structure of each sector; the share of investment on sales as a proxy of technological change; and the labour productivity. Especially, we expect a negative sign for the Herfindal index. Indeed, more concentrate sectors are dominated by few, large firms and are characterised by a low degree of competition; as a result they should present lower turnover. We introduce investment share, labour productivity and skill share as a “crude” indicator of technological change. In particular, higher investment share as well as higher productivity level should decrease job creation and increase job destruction if firms invest in labour-saving technology, vice versa in case of labour-using innovation. These causality linkages should hold both for permanent and temporary workers but the magnitude should be bigger for the latter group. However Moreover, as a precedent analysis of Moroccan labour market shows (see Bottini, 2006), firm size matters. The statistical and econometric analysis indicates that small firms present much more turnover than large firms, and this is confirmed by the empirical evidence for other countries. Hence, we control also for the average size of firm in each sector and we expect a negative sign of its coefficient. Finally, since we demonstrated (see Bottini, 2006) that churning is higher among female and skilled workers, also the share of skilled and female workers are included as independent variables in order to control for employment composition. However, since skilled workers and female are only a small share of total

⁸ Moreover, as widely demonstrated in the literature (Bernard and Jensen (1996)), there is a clear connection between firm size and export status: exporter firms are large. However, the direction of the causality linkage is not well defined.

employment, it's possible that they not impact on sectoral turnover. Hence we cannot assume a priori a positive sign of their coefficients.

Starting from the sectoral level regressions, we estimate the following equation:

$$JobFlow_{jt} = \alpha_j + \beta_t + \delta Exp_share_{jt} + \phi imp_share_{jt} + \varphi Herf_index_{jt} + \gamma inv_ca_{jt} + \eta skill_share_{jt} + \zeta Femm_share_{jt} + \psi AV_TotEmpl_{jt} + \mu Labour_prodLAG_{jt} + \varepsilon_{jt}$$

(1)

Where j refers to sector [15;36] and t to year [1996-2002]. $JobFlows_{jt} = \{Job\ Reallocation\ (SUM_{jt});\ Job\ Creation\ (POS_{jt});\ Job\ Destruction\ (NEG_{jt});\ Excess\ Job\ Reallocation\ (EXC_{jt})\}$; Exp_share is the share of total export on sales in sector j in year t (using data from WITZ and OECD data sets); Imp_share is the share of import on total sales (using data from WITZ and OECD data sets); $Herf_index$ capture the concentration/market structure of each sector and is computed following the Herfindal methodology based on firm level sales; inv_ca is the share of total investment on sales and could be a proxy of technological change; $skill_share$ and $Femm_share$ are the ratio of total skilled workers and total female workers on the level of total workers; $AV_TotEmpl$ is the average size of firms in each sector and $Labour_prod$ is the indicator of productivity and is computed as the ratio of total employment on sales at current/constant prices (corrected for the yearly inflation). However, since we cannot control for price level differences across sectors, this proxy for productivity is quite crude and a higher value of this variable could reflect a higher production value per worker than a real higher productivity.

Finally, following the literature, we further include growth in goods import and exports as explanatory variables. Indeed, Davidson and Matusz (2002) suggest that only “changes in trade flows, not levels of trade flows, cause changes in turnover rates”. The equation became:

$$JobFlow_{jt} = \alpha_j + \beta_t + \delta Growth_Exp_share_{jt} + \phi Growth_imp_share_{jt} + \varphi Herf_index_{jt} + \gamma inv_ca_{jt} + \eta skill_share_{jt} + \zeta Femm_share_{jt} + \psi AV_TotEmpl_{jt} + \mu Labour_prodLAG_{jt} + \varepsilon_{jt}$$

(2)

Moreover, we would control also for lagged effect of import and export growth on job dynamics by including these variables delayed by one and two years..

5.2 Methodology

Since my data set pools time series data with cross-sectional data, the best tool of analysis is a panel data approach. This method allows us to capture both the temporal dimension (within variation) as well as the space dimension (between variations). On the other hand, a simple OLS model, which stacks the

observations of each firm over time on top of one other, discards the temporal and space dimension and thus throws away useful information. Indeed, in the standard pooled model intercepts and slope coefficients are homogeneous across all N cross-sections and through all T time periods. Hence, first of all we should test for the poolability of the data using a Chow test. If the null hypothesis is rejected, it means that sectoral dummies are jointly significant and different from zero. Hence the pooled OLS model yields biased and inconsistent estimates of the regression parameters. This is an omission variables bias due to the fact that OLS deletes the time and individual dummies when in fact they are relevant. Once we reject the pooled estimator, we use a two-way fixed effect model where sectoral and time dummies are assumed to be fixed parameters to be estimated. However, given that we would capture the impact of openness on general turnover in Morocco, we would weight our regression for the relative importance of each sector in each year. In this case, we emphasize job dynamics in larger sector that employ more workers. However, before move to the regression results, we present some statistics on the independent variables. In order to control for control for the multicollinearity problem, Table 9 report the bilateral correlation among the regressors. Following the general rule, we can affirm that there is not multicollinearity if the coefficient of correlation is smaller than 0.5. As Table 9 show, in only three cases it overcomes this threshold. Not surprising, we get a positive and high correlation between average firm size and concentration ($\rho = 0.83$): more concentrated sector are mainly composed by large firms (Tirole, 1988). The average firm size is strongly correlated to the export share ($\rho = 0.81$): exporter firms are usually larger (Bernard and Jensen (1996). Moreover, for an empirical evidence of the positive link between export share and firm size in the Moroccan manufacturing sector see Bottini (2006). Finally, sector more exposed to export competition present also higher concentration ($\rho = 0.74$). However, as we notice from the descriptive statistics in Table 10, Moroccan sector are not very concentrated. The average Herfindahl Index value is 0.14 and the more concentrated sectors are the “office machine”, “television and telecommunications”, “metallurgic” and chemical. Finally, Figure 3 put in evidence a positive relationship between productivity and skill intensity. This could suggest that also in Morocco productivity is driven by skilled intensive and labour savings technologies.

5.3 The Empirical Evidence

5.3.1 Evidence for Permanent Workers

First of all we estimate the effect of trade openness and sector specific variables on job reallocation (SUM) for permanent workers. As the results in Table 11 shows, import and export exert different effects on turnover. Indeed, while the sectoral import share doesn't change turnover, export increases turnover by raising the creation of new jobs (Table 12). Kletzer (2002) find the same effect for US, with

the difference that the positive effect of export on labour market is due to a reduction in displacement rate instead of an increase in job creation. The results seem suggest that firms in sectors that import larger share of goods aren't characterised by high instability, while firms in more export oriented sectors present an higher, but positive, turnover. The positive effect confirm our assumption of a "double" positive effect of trade with Europe: increasing export of final goods as well as intermediate goods. Import as well export doesn't impact on job destruction (Table 13). The non significance of these coefficients could be justified by the restrictive labour market legislation of Morocco. These results are robust to the introduction of other controls and other openness specifications⁹. The negative sign of the average size of a firm confirm our previous results: larger firms present lower turnover and this is due to lower job creation. As expected, more concentrate industry present lower turnover. However, the coefficient became significant if we don't control for labour productivity. In particular, more concentrated sectors present higher job creation and lower job destruction. This suggests that firms in these sectors are consolidating their position. To control for the multicollinearity problem that come out in Table 9, we exclude these two variables from the regressions. However, their exclusion doesn't impact on the significance of other regressors. With regard to labour productivity, we get that, sectors with higher productivity present lower turnover and this trend is explained by a decrease in job creation. Controlling for the labour force composition, we get that a higher proportion of skilled and female workers doesn't increase sectoral turnover. This result could be explained by the lower incidence of these two categories of workers on total employment. However, sectors with higher skill share present lower job creation. Skill share and labour productivity exert the same downward pressure on job creation. This support the positive relationship between these two variables that we put in evidence in Figure 3: skilled intensive sectors are the more productive one. On the base of the regression results, we can make a further step and affirms that productive sectors adopt labour-saving technologies. Finally, we analyse how change in the level of import and export impact on labour market dynamics (Table 14). We get that change in import and export share are not significative, also if we consider the deleted effect. This could be explained by the strictness of labour market regulation: since firing is strictly regulated, firms don't rely on permanent workers to adjust to short run changes in trade patterns. These results suggest that trade openness has a positive impact on labour market and it mitigates the labour saving impact of technological change, reflected in the negative sign of skill share and labour productivity. The non significance of change in import and export on job destruction is explained by the strictness of Moroccan labour market.

⁹ As a robust check we use the import and export share of Morocco to the EU as openness proxy.

5.3.2 Evidence for Temporary Workers

As table suggest, the degree/level of trade openness doesn't impact on the job dynamics for temporary workers (Table 15, 16, 17). However, changes in the openness degree are a key factor in explaining job dynamics among temporary workers. An increase in export share seems increasing turnover across temporary workers (Table 18). In particular, the increase in job reallocation is driven by an increase in job destruction among temporary workers. These results suggest that an increase in export decreases the number of temporary workers. On the other side, an increase in import has a double effect: decreases job destruction and increase job creation. Since the two effects have the opposite signs, increase in imports doesn't change turnover. This suggests that sectors more exposed to foreign competition react by increasing the share of temporary workers. Hence the impact of increasing openness on the labour market is not clear. From one side export seems to have a negative impact, since it decreases temporary employment. However this could be interpreted as a positive signal. If the decrease in the number of temporary workers is compensated by an increase in permanent one, openness improves the labour quality in Morocco. The opposite holds for increasing import shares. However, since in the original panel data there are a lot of missing information about the number temporary workers, this conclusion is not very strong. With regard to the other variables (Table 15, 16, 17), we can see that larger firms present less turnover also among temporary workers and this is mainly due to lower job destruction. Productivity is significant but only if the variable is one year lagged. In this case, however, the coefficient is positive: more productive sectors present higher turnover and this is driven by higher job destruction among temporary workers. Hence hiring temporary workers is not a strategy for increasing productivity in Moroccan sectors.

Table 11: Sectoral Level Regressions: Turnover for Permanent Workers

| Dependent Variable: SUM_perm (Turnover Permanent Workers) | | | | | | | |
|--|--------------------|--------------------|--------------------|--------------------|--------------------|-------------------|-------------------|
| | 1 | 2 | 3 | 4 | 3 | 4 | 5 |
| imp_share | -0.096 (1.56) | -0.075 (1.17) | -0.081 (1.37) | -0.091 (1.49) | -0.082 (1.39) | -0.047 (0.76) | -0.035 (0.54) |
| exp_share | 0.183 (2.63)* | 0.185 (2.34)* | 0.191 (2.76)** | 0.164 (2.47)* | 0.174 (2.75)** | 0.218 (3.04)** | 0.208 (2.50)* |
| Herf_index | 0.131 (0.88) | 0.221 (1.48) | | 0.077 (0.57) | | -0.191 (1.76) | -0.058 (0.47) |
| skill_share | -0.307 (1.09) | | -0.297 (1.06) | -0.300 (1.07) | -0.295 (1.06) | -0.352 (1.20) | |
| Femm_share | -0.001 (0.01) | | 0.004 (0.06) | 0.005 (0.07) | 0.007 (0.10) | 0.020 (0.28) | |
| inv_ca | 0.190 (1.35) | 0.050 (0.32) | 0.201 (1.43) | 0.197 (1.40) | 0.203 (1.45) | 0.259 (1.77) | 0.084 (0.51) |
| AV_TotEmpl | -0.000 (2.91)* | -0.000 (2.56)* | -0.000 (2.61)* | | | -0.000 (2.25)* | -0.000 (2.13)* |
| labour_prod | -0.000 (3.03)** | -0.000 (3.18)** | -0.000 (3.44)** | -0.000 (2.91)** | -0.000 (3.55)** | | |
| labour_prodLAG | | | | | | | -0.000 (0.95) |
| Constant | 0.402 (5.92)** | 0.358 (6.34)** | 0.365 (6.89)** | 0.386 (5.91)** | 0.364 (6.90)** | 0.236 (5.62)** | 0.224 (4.86)** |
| Sector | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 116 | 137 | 116 | 116 | 116 | 116 | 137 |
| R-squared | 0.79 | 0.70 | 0.79 | 0.79 | 0.79 | 0.77 | 0.68 |
| Heterosched: Prob>chi2 | 0.36 | 0.37 | 0.56 | 0.53 | 0.63 | 0.74 | 0.14 |

Absolute value of t statistics in parentheses

* significant at 5%; ** significant at 1%

6. Conclusion

In the last decades, Morocco has largely increased its openness degree. This implies an increase in import competition for domestic firms, but at the same time better opportunities for exporters firms and increase in “inshoring”. Indeed, the decrease in tariff barriers has induced many European firms to relocate some of their production stages in the Mediterranean countries. The sectors more exposed to this phenomenon have been the textile and the clothing sectors. Using sectoral level data, we analysis how change in trade openness have impacted on labour market dynamics in Morocco. We get three main results. First of all, we provide evidence that temporary workers are more flexible than permanent one. Indeed, change in the level of import and export impact only on the temporary workers dynamics. This suggests that firms adjust to trade shock mainly relying on temporary workers. Secondly, import and export have two opposite effect on the Moroccan labour market. Indeed, greater export induces an increase in job creation among permanent workers and an increase in temporary workers dismissing. This could be seen as a positive impact on Moroccan labour market quality, since firms replace temporary worker with permanent one. On the other side, increasing import has a negative “qualitative” impact, indeed sectors more exposed to foreign competition rely more on temporary workers. Finally, the positive effect of greater export on permanent workers is partially offset by the negative impact of technological change. Indeed, sector with higher labour productivity and higher skill share present lower job creation among permanent workers.

Appendix

Table 7: Churning for Permanent Workers: average value by Sector

| Sector Code | Job Destruction | Job Creation | Job Reallocation | Net Change | Excess Job Reallocation |
|-------------|-----------------|----------------|------------------|-----------------|-------------------------|
| 15 | 0.09 (0.10) | 0.10 (0.02) | 0.20 (0.03) | 0.01 (0.03) | 0.17 (0.03) |
| 17 | 0.06 (0.01) | 0.07 (0.01) | 0.14 (0.02) | 0.01 (0.01) | 0.13 (0.02) |
| 18 | 0.08 (0.01) | 0.11 (0.01) | 0.18 (0.02) | 0.03 (0.02) | 0.16 (0.02) |
| 19 | 0.07 (0.01) | 0.10 (0.02) | 0.17 (0.02) | 0.02 (0.02) | 0.15 (0.03) |
| 20 | 0.09 (0.03) | 0.12 (0.07) | 0.21 (0.06) | 0.02 (0.10) | 0.14 (0.01) |
| 21 | 0.08 (0.03) | 0.09 (0.03) | 0.17 (0.03) | 0.01 (0.05) | 0.12 (0.04) |
| 22 | 0.07 (0.03) | 0.07 (0.01) | 0.14 (0.02) | 0.00 (0.04) | 0.11 (0.01) |
| 24 | 0.04 (0.02) | 0.06 (0.03) | 0.10 (0.04) | 0.03 (0.03) | 0.08 (0.03) |
| 25 | 0.07 (0.02) | 0.07 (0.03) | 0.14 (0.02) | 0.01 (0.04) | 0.12 (0.03) |
| 26 | 0.08 (0.03) | 0.09 (0.03) | 0.18 (0.05) | 0.01 (0.04) | 0.14 (0.04) |
| 27 | 0.03 (0.03) | 0.04 (0.02) | 0.07 (0.05) | 0.01 (0.01) | 0.06 (0.05) |
| 28 | 0.08 (0.02) | 0.08 (0.01) | 0.16 (0.01) | 0.01 (0.03) | 0.14 (0.03) |
| 29 | 0.07 (0.03) | 0.06 (0.03) | 0.13 (0.04) | -0.01 (0.04) | 0.09 (0.04) |
| 30 | 0.04 (0.05) | 0.03 (0.05) | 0.07 (0.08) | -0.01 (0.05) | 0.04 (0.07) |
| 31 | 0.05 (0.02) | 0.10 (0.07) | 0.15 (0.07) | 0.05 (0.08) | 0.08 (0.02) |
| 32 | 0.02 (0.03) | 0.10 (0.07) | 0.12 (0.05) | 0.08 (0.09) | 0.03 (0.04) |
| 33 | 0.06 (0.04) | 0.08 (0.07) | 0.14 (0.07) | 0.02 (0.10) | 0.08 (0.05) |
| 34 | 0.07 (0.03) | 0.07 (0.04) | 0.14 (0.03) | 0.00 (0.06) | 0.09 (0.01) |
| 35 | 0.08 (0.06) | 0.07 (0.04) | 0.16 (0.06) | -0.01 (0.09) | 0.09 (0.03) |
| 36 | 0.04 (0.01) | 0.06 (0.03) | 0.10 (0.04) | 0.02 (0.03) | 0.07 (0.02) |

*** Standard Errors Parenthesis

*** Average values computed over the period 1996-2002

Table 8: Churning for Temporary Workers: average value by Sectors

| Sector Code | Job Destruction | Job Creation | Job Reallocation | Net Change | Excess Job Reallocation |
|--------------------|------------------------|---------------------|-------------------------|-------------------|--------------------------------|
| 15 | 0.21 (0.10) | 0.20 (0.04) | 0.42 (0.12) | -0.01 (0.09) | 0.35 (0.11) |
| 17 | 0.22 (0.18) | 0.14 (0.07) | 0.35 (0.20) | -0.08 (0.20) | 0.22 (0.09) |
| 18 | 0.28 (0.12) | 0.28 (0.16) | 0.56 (0.12) | 0.00 (0.25) | 0.36 (0.07) |
| 19 | 0.39 (0.22) | 0.17 (0.11) | 0.56 (0.17) | -0.22 (0.31) | 0.28 (0.19) |
| 20 | 0.24 (0.21) | 0.23 (0.21) | 0.47 (0.19) | -0.01 (0.38) | 0.20 (0.13) |
| 21 | 0.26 (0.24) | 0.22 (0.24) | 0.48 (0.31) | -0.04 (0.37) | 0.22 (0.17) |
| 22 | 0.15 (0.08) | 0.14 (0.07) | 0.29 (0.07) | -0.01 (0.14) | 0.21 (0.07) |
| 24 | 0.15 (0.09) | 0.18 (0.22) | 0.33 (0.21) | 0.04 (0.25) | 0.18 (0.12) |
| 25 | 0.13 (0.08) | 0.15 (0.05) | 0.28 (0.06) | 0.02 (0.12) | 0.17 (0.08) |
| 26 | 0.10 (0.06) | 0.18 (0.16) | 0.27 (0.13) | 0.08 (0.20) | 0.12 (0.07) |
| 27 | 0.06 (0.06) | 0.07 (0.03) | 0.13 (0.06) | 0.01 (0.07) | 0.08 (0.08) |
| 28 | 0.15 (0.07) | 0.18 (0.10) | 0.33 (0.13) | 0.03 (0.13) | 0.22 (0.09) |
| 29 | 0.09 (0.08) | 0.21 (0.15) | 0.31 (0.20) | 0.12 (0.13) | 0.18 (0.15) |
| 30 | 0.01 (0.03) | 0.24 (0.64) | 0.25 (0.66) | 0.23 (0.61) | 0.02 (0.05) |
| 31 | 0.13 (0.16) | 0.20 (0.30) | 0.34 (0.27) | 0.07 (0.40) | 0.07 (0.05) |
| 32 | 0.19 (0.24) | 0.12 (0.14) | 0.31 (0.29) | -0.07 (0.26) | 0.13 (0.18) |
| 33 | 0.31 (0.64) | 0.18 (0.23) | 0.48 (0.60) | -0.13 (0.76) | 0.03 (0.06) |
| 34 | 0.26 (0.24) | 0.21 (0.28) | 0.47 (0.28) | -0.05 (0.44) | 0.13 (0.08) |
| 35 | 0.12 (0.14) | 0.16 (0.11) | 0.29 (0.20) | 0.04 (0.15) | 0.15 (0.21) |
| 36 | 0.07 (0.09) | 0.15 (0.21) | 0.22 (0.21) | 0.08 (0.24) | 0.08 (0.08) |

*** Standard Errors Parenthesis

*** Average values computed over the period 1996-2002

Table 9: Bilateral Correlations

| | Imp Share | Exp Share | Herf Index | Skill Share | Femm Share | Inv Share | AV Empl | labour prod | labour prod LAG | $\Delta\%$ Exp Share | $\Delta\%$ Imp Share |
|----------------------|-----------|-------------|-------------|-------------|------------|-----------|---------|-------------|-----------------|----------------------|----------------------|
| Imp Share | 1.00 | | | | | | | | | | |
| Exp Share | 0.51 | 1.00 | | | | | | | | | |
| Herf Index | 0.47 | 0.74 | 1.00 | | | | | | | | |
| Skill Share | 0.26 | 0.14 | 0.38 | 1.00 | | | | | | | |
| Femm Share | -0.09 | 0.28 | -0.03 | -0.22 | 1.00 | | | | | | |
| Inv Share | -0.04 | 0.26 | 0.21 | 0.02 | 0.31 | 1.00 | | | | | |
| AV Empl | 0.31 | 0.81 | 0.83 | 0.28 | 0.15 | 0.29 | 1.00 | | | | |
| labour Prod | -0.21 | -0.23 | 0.14 | 0.25 | -0.37 | -0.35 | 0.01 | 1.00 | | | |
| labour prod LAG | -0.19 | -0.22 | 0.13 | 0.23 | -0.35 | -0.33 | 0.00 | 0.96 | 1.00 | | |
| $\Delta\%$ Exp Share | 0.23 | 0.34 | 0.40 | 0.18 | 0.10 | 0.20 | 0.20 | -0.08 | -0.08 | 1.00 | |
| $\Delta\%$ Exp Share | -0.01 | 0.16 | 0.00 | -0.12 | 0.37 | 0.10 | 0.06 | -0.17 | -0.14 | 0.23 | 1.00 |

Figure 4: Labour Productivity and Skill_Share (year=2000)

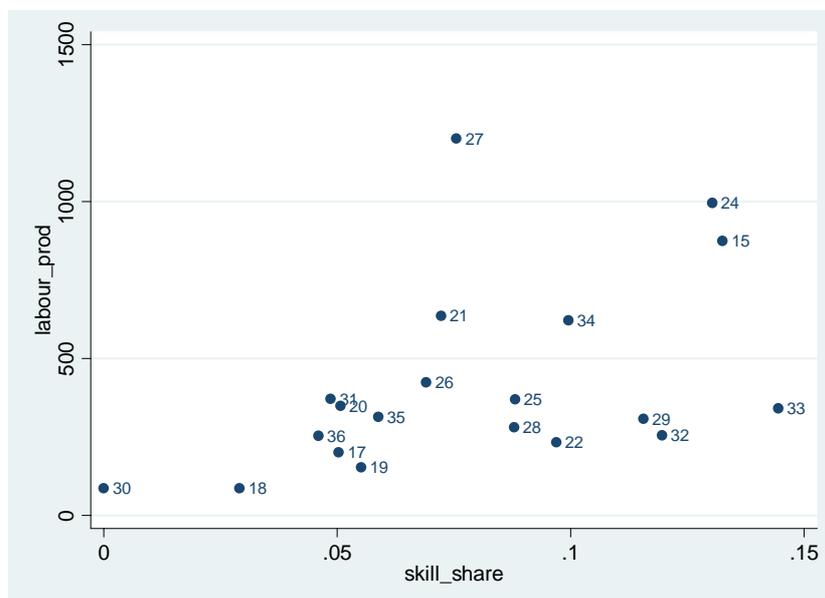


Table 10: Regressors Summary Statistics by Sector

| | Herf Index | Skill Share | Femm Share | Inv Share | AV Empl | Labour prod | Labour Prod LAG | Δ% Exp Share | Δ% Imp Share |
|-----------|-------------------|--------------------|-------------------|------------------|--------------------|---------------------|------------------------|---------------------|---------------------|
| 15 | 0.02 (0.00) | 0.14 (0.01) | 0.16 (0.03) | 0.05 (0.01) | 93.51 (7.04) | 816.09 (36.45) | 805.82 (36.71) | 0.09 (0.38) | 0.05 (0.37) |
| 17 | 0.01 (0.00) | 0.05 (0.00) | 0.39 (0.04) | 0.10 (0.02) | 90.91 (19.63) | 210.55 (17.72) | 204.63 (14.06) | 0.24 (0.45) | 0.67 (1.26) |
| 18 | 0.01 (0.00) | 0.03 (0.00) | 0.70 (0.02) | 0.08 (0.01) | 154.85 (10.27) | 87.96 (2.68) | 86.46 (3.30) | 0.48 (1.36) | 1.78 (4.03) |
| 19 | 0.03 (0.00) | 0.05 (0.01) | 0.21 (0.05) | 0.06 (0.01) | 54.89 (9.33) | 160.20 (18.56) | 162.52 (16.45) | 0.15 (0.34) | 0.43 (0.83) |
| 20 | 0.10 (0.02) | 0.06 (0.01) | 0.07 (0.02) | 0.03 (0.01) | 45.78 (8.75) | 321.57 (37.67) | 311.10 (33.44) | 0.09 (0.21) | 0.11 (0.43) |
| 21 | 0.09 (0.03) | 0.10 (0.02) | 0.15 (0.02) | 0.08 (0.04) | 89.85 (20.15) | 691.14 (52.78) | 685.47 (52.17) | 0.44 (1.19) | 0.13 (0.58) |
| 22 | 0.02 (0.00) | 0.14 (0.03) | 0.18 (0.02) | 0.08 (0.02) | 22.15 (1.88) | 236.75 (17.54) | 231.85 (7.89) | 0.15 (0.47) | 0.06 (0.20) |
| 24 | 0.21 (0.03) | 0.14 (0.01) | 0.20 (0.03) | 0.04 (0.01) | 207.71 (24.96) | 984.01 (98.05) | 978.02 (104.42) | 0.05 (0.19) | 0.07 (0.19) |
| 25 | 0.05 (0.01) | 0.09 (0.01) | 0.19 (0.02) | 0.08 (0.01) | 66.54 (13.37) | 356.72 (33.67) | 338.65 (36.32) | 0.03 (0.30) | 0.09 (0.19) |
| 26 | 0.06 (0.01) | 0.07 (0.01) | 0.07 (0.02) | 0.10 (0.02) | 81.37 (14.52) | 414.35 (37.51) | 403.33 (42.14) | 0.42 (1.20) | 0.10 (0.46) |
| 27 | 0.30 (0.23) | 0.09 (0.02) | 0.09 (0.03) | 0.03 (0.04) | 113.45 (54.74) | 1432.96 (406.72) | 1558.89 (370.21) | 0.11 (0.35) | 0.01 (0.32) |
| 28 | 0.03 (0.01) | 0.10 (0.01) | 0.10 (0.01) | 0.07 (0.03) | 49.92 (8.94) | 348.58 (66.27) | 356.88 (65.64) | 0.35 (0.74) | 0.28 (0.71) |
| 29 | 0.06 (0.01) | 0.13 (0.01) | 0.10 (0.03) | 0.05 (0.01) | 36.35 (8.62) | 290.72 (30.02) | 280.25 (25.02) | -0.07 (0.37) | -0.05 (0.20) |
| 30 | 0.62 (0.38) | 0.09 (0.12) | 0.19 (0.03) | 0.03 (0.05) | 37.64 (33.83) | 313.23 (143.62) | 301.70 (142.66) | 1.30 (1.90) | 0.30 (0.34) |
| 31 | 0.09 (0.04) | 0.07 (0.01) | 0.24 (0.05) | 0.08 (0.02) | 129.51 (40.15) | 363.38 (63.71) | 376.16 (67.51) | 0.17 (0.26) | 0.02 (0.24) |
| 32 | 0.73 (0.17) | 0.12 (0.04) | 0.31 (0.19) | 0.14 (0.04) | 624.43 (538.01) | 193.65 (32.06) | 193.10 (32.48) | 71.03 (173.83) | 0.36 (1.10) |
| 33 | 0.20 (0.04) | 0.16 (0.03) | 0.24 (0.06) | 0.08 (0.06) | 41.50 (19.49) | 262.93 (102.23) | 228.48 (87.18) | 1.52 (3.20) | 0.19 (0.28) |
| 34 | 0.11 (0.02) | 0.10 (0.01) | 0.14 (0.07) | 0.04 (0.01) | 152.76 (33.20) | 594.25 (92.02) | 582.65 (96.61) | 0.45 (1.04) | 0.16 (0.23) |
| 35 | 0.11 (0.03) | 0.06 (0.03) | 0.10 (0.04) | 0.05 (0.03) | 32.68 (8.08) | 278.07 (37.64) | 279.92 (34.59) | 3.13 (7.09) | 1.00 (1.96) |
| 36 | 0.08 (0.02) | 0.05 (0.02) | 0.16 (0.02) | 0.05 (0.03) | 46.60 (11.20) | 267.78 (54.83) | 257.25 (50.44) | 0.07 (0.58) | -0.20 (0.43) |

*** Standard Deviation in Parenthesis

*** Average values computed over the period 1996-2002

Table 12: Sectoral Level Regressions: Job Creation for Permanent Workers

| Dependent Variable: POS_perm (Job Creation Permanent Workers) | | | | | | | | |
|---|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|-------------------|-------------------|
| | 1 | 2 | 3 | 2 | 3 | 4 | 5 | 6 |
| imp_share | -0.095 (2.00)* | -0.065 (1.52) | -0.052 (1.21) | -0.090 (1.92) | -0.052 (0.84) | -0.030 (0.67) | -0.028 (0.62) | -0.016 (0.38) |
| exp_share | 0.133 (2.32)* | 0.157 (2.03)* | 0.155 (2.26)* | 0.114 (1.71) | 0.158 (2.39)* | 0.181 (2.69)** | 0.187 (2.83)** | 0.208 (2.76)** |
| Herf_index | 0.380 (2.75)** | 0.361 (2.54)* | | 0.326 (2.34)* | | -0.051 (0.55) | -0.070 (0.64) | -0.026 (0.25) |
| skill_share | -0.668 (2.08)* | | -0.640 (2.04)* | -0.661 (2.03)* | -0.641 (2.20)* | -0.729 (2.28)* | -0.732 (2.28)* | |
| Femm_share | -0.033 (0.38) | | -0.019 (0.21) | -0.028 (0.32) | -0.019 (0.27) | -0.005 (0.06) | -0.007 (0.08) | |
| inv_ca | 0.087 (0.55) | 0.103 (0.65) | 0.119 (0.80) | 0.094 (0.61) | 0.119 (0.81) | 0.180 (1.26) | 0.192 (1.28) | 0.179 (1.10) |
| AV_TotEmpl | -0.000 (2.96)* | -0.000 (3.33)** | 0.000 (3.09)** | | | -0.000 (3.05)** | -0.000 (2.15)* | -0.000 (2.35)* |
| labour_prod | -0.000 (3.93)** | -0.000 (3.65)** | -0.000 (2.98)** | -0.000 (3.71)** | -0.000 (3.08)** | | | |
| labour_prodLAG | | | | | | | 0.000 (0.37) | 0.000 (0.32) |
| Constant | 0.415 (6.03)** | 0.286 (5.41)** | 0.306 (5.52)** | 0.397 (6.01)** | 0.306 (5.56)** | 0.192 (4.35)** | 0.176 (2.94)** | 0.075 (1.71) |
| Sector | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 116 | 137 | 116 | 137 | 116 | 116 | 116 | 137 |
| R-squared | 0.96 | 0.95 | 0.96 | 0.96 | 0.56 | 0.96 | 0.96 | 0.94 |
| Heterosched: Prob>chi2 | 0.03 | 0.04 | 0.06 | 0.06 | 0.17 | 0.05 | 0.06 | 0.07 |

Absolute value of t statistics in parentheses
* significant at 5%; ** significant at 1%

Table 13: Sectoral Level Regressions: Job Destruction for Permanent Workers

| Dependent Variable: NEG_perm (Job Destruction Permanent Workers) | | | | | | | |
|---|-------------------|-------------------|------------------|-------------------|------------------|-------------------|------------------|
| | 1 | 2 | 3 | 2 | 3 | 4 | 5 |
| imp_share | -0.001 (0.02) | -0.010 (0.20) | -0.029 (0.56) | -0.001 (0.02) | -0.030 (0.58) | -0.018 (0.34) | -0.023 (0.44) |
| exp_share | 0.050 (0.82) | 0.028 (0.47) | 0.035 (0.58) | 0.050 (0.87) | 0.016 (0.29) | 0.038 (0.63) | 0.018 (0.30) |
| Herf_index | -0.250 (2.18)* | -0.140 (2.37)* | | -0.248 (2.10)* | | -0.140 (2.21)* | -0.080 (0.82) |
| skill_share | 0.361 (1.47) | | 0.343 (1.38) | 0.361 (1.48) | 0.346 (1.39) | 0.377 (1.54) | 0.387 (1.59) |
| Femm_share | 0.032 (0.54) | | 0.023 (0.38) | 0.032 (0.54) | 0.026 (0.42) | 0.025 (0.42) | 0.032 (0.53) |
| inv_ca | 0.103 (0.83) | -0.052 (0.45) | 0.082 (0.65) | 0.103 (0.84) | 0.084 (0.67) | 0.079 (0.65) | 0.042 (0.34) |
| AV_TotEmpl | 0.000 (0.02) | -0.000 (0.52) | -0.000 (0.80) | | | -0.000 (0.23) | -0.000 (0.26) |
| labour_prod | 0.000 (1.18) | 0.000 (0.48) | -0.000 (0.28) | 0.000 (1.21) | -0.000 (0.37) | | |
| labour_prodLAG | | | | | | | -0.000 (1.56) |
| Constant | -0.012 (0.21) | 0.072 (1.70) | 0.059 (1.25) | -0.012 (0.21) | 0.058 (1.23) | 0.044 (1.26) | 0.093 (1.98) |
| Sector | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 116 | 137 | 116 | 137 | 116 | 116 | 116 |
| R-squared | 0.59 | 0.52 | 0.57 | 0.59 | 0.56 | 0.58 | 0.59 |
| Heterosched: Prob>chi2 | 0.72 | 0.46 | 0.86 | 0.72 | 0.93 | 0.92 | 0.84 |

Absolute value of t statistics in parentheses
* significant at 5%; ** significant at 1%

Table 14: Regression Results: Export and Import Share Growth Rate (Permanent Workers)

| | Dependent Variable | | | | | |
|---------------------------|--------------------|-------------------|-------------------|------------------|------------------|-------------------|
| | SUM | | POS | | NEG | |
| | 1 | 2 | 3 | 4 | 5 | 6 |
| imp_shG | 0.000 (0.12) | | 0.000 (0.18) | | -0.000 (0.10) | |
| exp_shG | 0.000 (0.49) | | 0.000 (0.92) | | -0.000 (0.65) | |
| imp_shG_2LAG | | 0.001 (0.34) | | -0.000 (0.24) | | -0.001 (0.69) |
| exp_shG_2LAG | | 0.000 (0.55) | | 0.000 (0.48) | | -0.000 (0.70) |
| Constant | 0.283 (4.80)** | 0.322 (4.52)** | 0.191 (2.97)** | 0.179 (2.18)* | 0.092 (1.94) | 0.093 (4.74)** |
| Sector | Yes | Yes | Yes | Yes | Yes | Yes |
| Year | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 96 | 76 | 96 | 76 | 96 | 76 |
| R-squared | 0.79 | 0.81 | 0.50 | 0.53 | 0.65 | 0.57 |
| Heterosched: Prob>chi2 | 0.97 | 0.98 | 0.20 | 0.02 | 0.49 | 0.67 |

Absolute value of t statistics in parentheses
* significant at 5%; ** significant at 1%

Table 15: Sectoral Level Regressions: Turnover among Temporary Workers

| Dependent Variable: SUM_temp (Turnover Temporary Workers) | | | | | | | | |
|---|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|------------------|------------------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 5 | 6 |
| imp_share | -0.107 (0.27) | -0.197 (0.56) | -0.084 (0.22) | -0.116 (0.30) | -0.060 (0.16) | -0.144 (0.43) | -0.032 (0.08) | -0.103 (0.27) |
| exp_share | 0.268 (0.59) | 0.243 (0.55) | 0.279 (0.62) | 0.261 (0.59) | 0.478 (1.08) | 0.462 (1.06) | 0.159 (0.38) | 0.032 (0.08) |
| Herf_index | 0.200 (0.21) | 0.395 (0.44) | | 0.261 (0.39) | -0.406 (0.57) | -0.393 (0.58) | -0.914 (1.34) | |
| skill_share | 0.084 (0.05) | | 0.099 (0.05) | 0.093 (0.05) | -0.023 (0.01) | | 0.123 (0.07) | -0.076 (0.04) |
| Femm_share | 0.016 (0.04) | | 0.024 (0.05) | 0.012 (0.03) | -0.063 (0.14) | | -0.005 (0.01) | 0.019 (0.04) |
| inv_ca | 0.353 (0.38) | 0.244 (0.29) | 0.369 (0.41) | 0.339 (0.38) | 0.759 (0.85) | 0.609 (0.73) | 0.807 (0.88) | 0.764 (0.83) |
| AV_TotEmpl | -0.001 (2.02)* | -0.001 (2.06)* | -0.001 (2.13)* | -0.001 (2.10)* | -0.001 (2.11)* | -0.001 (2.01)* | | |
| labour_prod | 0.000 (0.09) | -0.000 (0.13) | 0.000 (0.34) | | | | | |
| labour_prodLAG | | | | | 0.001 (2.39)* | 0.001 (2.33)* | 0.001 (2.38)* | 0.001 (2.00)* |
| Constant | 0.416 (0.94) | 0.605 (1.88) | 0.359 (1.04) | 0.448 (1.72) | -0.098 (0.29) | 0.026 (0.11) | -0.090 (0.26) | 0.054 (0.16) |
| Sector | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 116 | 134 | 116 | 116 | 116 | 134 | 116 | 134 |
| R-squared | 0.48 | 0.52 | 0.48 | 0.48 | 0.52 | 0.54 | 0.49 | 0.48 |
| Heterosched: Prob>chi2 | 0.46 | 0.80 | 0.49 | 0.44 | 0.57 | 0.69 | 0.57 | 0.56 |

Absolute value of t statistics in parentheses

* significant at 5%; ** significant at 1%

Table 16: Sectoral Level Regressions: Job Creation for Temporary Workers

| Dependent Variable: POS_temp (Job Creation Temporary Workers) | | | | | | | | |
|---|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 5 | 6 |
| imp_share | -0.150 (0.73) | -0.122 (0.58) | -0.186 (1.04) | -0.170 (0.88) | -0.156 (0.82) | -0.120 (0.60) | -0.152 (0.80) | -0.185 (1.00) |
| exp_share | 0.425 (1.15) | 0.268 (0.57) | 0.407 (1.09) | 0.411 (1.07) | 0.466 (1.24) | 0.327 (0.69) | 0.427 (1.22) | 0.368 (1.13) |
| Herf_index | -0.323 (0.41) | -0.048 (0.07) | | -0.189 (0.28) | -0.360 (0.55) | -0.168 (0.31) | -0.422 (0.77) | |
| skill_share | 0.891 (0.63) | | 0.867 (0.62) | 0.910 (0.67) | 0.880 (0.64) | | 0.898 (0.66) | 0.805 (0.61) |
| Femm_share | 0.230 (0.77) | | 0.218 (0.78) | 0.221 (0.79) | 0.202 (0.71) | | 0.209 (0.76) | 0.220 (0.79) |
| inv_ca | 0.134 (0.18) | -0.823 (0.90) | 0.107 (0.15) | 0.105 (0.15) | 0.213 (0.29) | -0.728 (0.78) | 0.219 (0.30) | 0.199 (0.27) |
| AV_TotEmpl | -0.000 (0.32) | -0.000 (0.73) | -0.000 (0.70) | -0.000 (0.39) | -0.000 (0.38) | -0.000 (0.78) | | |
| labour_prod | 0.000 (0.15) | 0.000 (0.16) | -0.000 (0.05) | | | | | |
| labour_prodLAG | | | | | 0.000 (0.70) | 0.000 (0.91) | 0.000 (0.71) | 0.000 (0.39) |
| Constant | 0.045 (0.12) | 0.264 (0.86) | 0.132 (0.44) | 0.003 (0.01) | -0.021 (0.07) | 0.143 (0.61) | 0.027 (0.09) | 0.027 (0.09) |
| Sector | Yes |
| Year | Yes |
| Observations | 115 | 133 | 115 | 115 | 115 | 133 | 115 | 133 |
| R-squared | 0.26 | 0.80 | 0.27 | 0.77 | 0.26 | 0.80 | 0.26 | 0.26 |
| Heterosched: Prob>chi2 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Absolute value of t statistics in parentheses

* significant at 5%; ** significant at 1%

Table 17: Sectoral Level Regressions: Job Destruction for Temporary Workers

| Dependent Variable: NEG_temp (Job DEstruction Temporary Workers) | | | | | | | | |
|--|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|------------------|------------------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 5 | 6 |
| imp_share | 0.039 (0.14) | -0.078 (0.33) | 0.105 (0.40) | 0.055 (0.21) | 0.143 (0.54) | 0.023 (0.10) | 0.196 (0.72) | 0.125 (0.47) |
| exp_share | -0.198 (0.57) | -0.116 (0.32) | -0.161 (0.47) | -0.184 (0.55) | 0.064 (0.17) | 0.102 (0.27) | -0.164 (0.44) | -0.291 (0.83) |
| Herf_index | 0.544 (0.87) | 0.514 (0.82) | | 0.439 (1.51) | -0.473 (0.86) | -0.501 (1.11) | -0.848 (1.82) | |
| skill_share | -0.497 (0.41) | | -0.526 (0.43) | -0.535 (0.45) | -0.987 (0.85) | | -0.814 (0.68) | -0.824 (0.70) |
| Femm_share | -0.215 (0.51) | | -0.196 (0.48) | -0.209 (0.51) | -0.306 (0.86) | | -0.148 (0.36) | -0.092 (0.22) |
| inv_ca | 0.243 (0.25) | 1.197 (1.33) | 0.260 (0.27) | 0.258 (0.27) | 0.530 (0.57) | 1.448 (1.64) | 0.626 (0.67) | 0.622 (0.66) |
| AV_TotEmpl | -0.001 (2.26)* | -0.001 (2.38)* | -0.001 (2.20)* | -0.001 (2.34)* | -0.001 (2.07)* | -0.000 (2.47)* | | |
| labour_prod | -0.000 (0.22) | -0.000 (0.50) | 0.000 (0.71) | | | | | |
| labour_prodLAG | | | | | 0.001 (2.88)** | 0.001 (2.29)* | 0.001 (2.29)* | 0.001 (2.07)* |
| Constant | 0.356 (1.02) | 0.359 (1.38) | 0.214 (0.74) | 0.318 (1.37) | -0.233 (0.80) | -0.282 (1.21) | -0.363 (1.20) | -0.197 (0.69) |
| Sector | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 108 | 125 | 108 | 108 | 108 | 125 | 108 | 125 |
| R-squared | 0.26 | 0.80 | 0.27 | 0.77 | 0.26 | 0.80 | 0.89 | 0.61 |
| Heterosched: Prob>chi2 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Absolute value of t statistics in parentheses

* significant at 5%; ** significant at 1%

Table 18: Regression Results: Export and Import Share Growth Rate (Temporary Workers)

| | Dependent Variable | | | | | |
|------------------------|--------------------|------------------|------------------|------------------|--------------------|--------------------|
| | SUM | | POS | | NEG | |
| | 1 | 2 | 3 | 4 | 5 | 6 |
| Growth_imp_share | -0.004 (0.49) | | 0.014 (2.29)* | | -0.019 (5.27)** | |
| Growth_exp_share | 0.001 (2.46)* | | 0.000 (0.17) | | 0.002 (4.66)** | |
| Growth_imp_share_LAG | | 0.005 (0.76) | | -0.007 (1.07) | | 0.013 (2.09)* |
| Growth_exp_share_LAG | | -0.001 (1.33) | | -0.001 (0.99) | | -0.002 (2.90)** |
| Constant | -0.140 (0.48) | 0.021 (0.05) | -0.006 (0.03) | 0.005 (0.02) | -0.212 (0.67) | -0.509 (1.07) |
| Sector | Yes | Yes | Yes | Yes | Yes | Yes |
| Year | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 96 | 76 | 95 | 75 | 89 | 70 |
| R-squared | 0.68 | 0.96 | 0.41 | 0.49 | 0.91 | 0.92 |
| Heterosched: Prob>chi2 | 0.68 | 0.03 | 0.44 | 0.37 | 0.01 | 0.00 |

Absolute value of t statistics in parentheses
* significant at 5%; ** significant at 1%