12.

International trade and job termination in the Netherlands

Authors
Bart Loog
Wendy Smits

In this chapter we relate the probability of job termination to several international trade measures at the firm and at the sector level. The results indicate that the effects of internationalisation on the probability of experiencing job termination are relatively small. We do not find evidence that the effects of the trade variables on the probability of job termination differ systematically between employees across different provinces. However, the effects of trade measures on the probability of job termination differ for different skill levels. A higher import penetration ratio is particularly related to job losses in the lower wage categories. Also, low paid workers employed in export intensive sectors are slightly more likely to see their job end than highly paid workers.

12.1 Introduction and background

The effects of international trade on local labour markets are subject to on-going debate. Increasing international trade is expected to reduce labour demand in sectors facing international competition and increase it in exporting sectors. Trade with low income countries is expected to increase labour demand for highly skilled workers and decrease the demand for low skilled workers in the home country (Cuyvers et al., 2010).

The empirical evidence of the relation between international trade, labour demand and wages is ambiguous. Several studies find that firms engaged in international trade employ more highly educated workers and pay higher wages (Feliciano and Lipsey, 1999; Griffith and Simpson, 2003). Cuyvers et al. (2010) show that imports from low income countries reduce demand for low skilled workers but increase demand for highly skilled workers in Belgium. The effects of exports are less straightforward, however. The effects depend on the destination of exports. Lurweg and Uhde (2012) find that 'trade affects labour market outcomes in Germany, but only to a comparatively small extent'. Görg and Görlich (2012) found that German service sector workers are more likely to lose their jobs in sectors with a higher export intensity. Pryor (1999) finds no evidence that international trade has any impact on the employment of low-skilled workers in the US. Kriechel et al. (2013) study job security of employees of international traders in the Netherlands and conclude that although these employ more workers on temporary contracts and show a higher excess reallocation of workers than firms not engaged in international trade, the differences are small. The sector of industry and firm size have a much bigger impact.

Other studies show that foreign controlled enterprises employ more highly educated workers and pay higher wages (Fortanier and Korvorst, 2009; Korvorst, 2012). Furthermore, foreign controlled enterprises located in the Netherlands engage in international trade far more often than domestically controlled enterprises (Genee, Korvorst and Fortanier, 2010). In general, traders pay slightly higher wages than non-traders (Fortanier, Jaarsma and Korvorst, 2011).

The literature reveals several approaches to assess the impact of international trade on employment. First, it is possible to relate international trade to changes in net employment (Klein et al., 2002). The problem with this approach is that changes in employment hide a substantial amount of job creation and job destruction in the economy, causing workers to switch jobs or become unemployed. The second approach is to consider labour market flows, either at the firm level (job flows) or at the individual level (worker flows). The advantage of looking at worker flows is that it gives insight in the impact of international trade from the perspective of the individual workers. In this contribution we apply the second approach and relate the probability of job loss to several measures of international trade.

We investigate two measures of international trade. First, we look at the actual goods trade activities of the employers. We distinguish firms that engage in international trade and those who do not. Within the group engaging in international trade, we distinguish importers, exporters and two-way traders. Second, we calculate the export ratio and import penetration ratio as a measure of trade exposure at the industry level (2-digit SBI). Firms engaging in international trade and firms operating in trade sensitive industries are not evenly distributed across the Netherlands, so it is to be expected that labour market effects of international trade are not evenly spread either. Some regions may gain by increased international trade while others may be more vulnerable and suffer employment losses. We therefore investigate to what extent the effects of internationalisation on the probability of job loss differ per region.

This chapter is organised as follows. In section 2 we introduce the data used and cover the applied methodology. Section 3 presents the descriptive statistics. Results are presented and discussed in Section 4. Section 5 summarizes and concludes.

12.2 Data and methodology

The units of analysis in this study are private sector employees working in the Netherlands on 1 January 2008. Information on their main jobs is extracted from the Social Statistical Database (SSB). This administrative database provides us with information on jobs and wages at the individual level. For employees who had more than one job on 1 January 2008 we only consider the main job, which is the job providing the highest income. The database also includes a unique enterprise identifier, which allows us to match the vast majority of these jobs with survey information at the firm level.

The dependent variable in our analysis indicates whether or not an employee who had a job on 1 January 2008 still had that job on 31 December 2008. If the job had ended by 31 December, the individual who worked in that job did not return in our sample in later years. If the job still existed it was also included in the analysis in the following year. Note that we do not observe whether the job is ended by the worker (quit) or by the firm (lay-off), so we cannot distinguish actual job loss from voluntary worker moves, nor can we identify retirees.

In the complete database, after excluding employees in the public sector, there are about 5,066 thousand main jobs of employees in the Netherlands. About 24 percent of these jobs ended during 2008. Then 14 percent of the remaining jobs ended in 2009, and 11 percent of the jobs that continued ended in 2010. The weighted average of job ending in the database is 17 percent. For the regression analysis we start out with the complete database on 1 January 2008 of 5 million employees in main jobs, exclude all individuals working in the public sector and take a 7.5 percent sample of the remainder.[1] This set of selected individuals will be followed through time in the regression analysis.

We model the probability that an employee's job was terminated by the end of the year by a so-called discrete time logit-model. In this model every time-person combination is treated as a separate independent observation. (Allison, 1982; Yamaguchi 1991). We relate the probability of job ending to several measures of international trade, the skills level of the worker, the region of residence and interactions of these and a number control variables for employee and firm characteristics.

The first measure of international trade involvement we consider is the trade in goods at the enterprise level. For each enterprise in our data we observe whether or not it is engaged in international trade. If so we observe whether it is an

---

[1] These operations, which yield a total sample of over 800 thousand observations on which the logit estimations will be run, are necessary as the computing power of the software does not permit us to perform the analysis on the full database.

importer, an exporter, or a two-way trader. There is no information available on the trade in services at the enterprise level and we therefore restrict ourselves to the international trade in goods.

Firms that are not engaged in international trade in intermediaries or final products themselves, but who are active in a trade sensitive sector, might still be affected by changes in the world economy. As an additional measure of internationalisation, we therefore make use of the input/output tables of Statistics Netherlands to calculate the import penetration ratio of each sector on the 2-digit SBI level. We use the 'narrow' import penetration ratio proposed by Feenstra and Hanson (1999), which only takes into account the inputs used from the same sector i in which an enterprise is active. This narrow version of the ip-ratio is calculated as $IR^{j}_{jt} = I^{fj}_{jt} / (I^{fj}_{jt} + I^{dj}_{jt})$. This ratio gives the imported inputs by sector j from sector j in year t as a share of the total inputs used by sector j from sector j in year t: $I^{fj}_{jt} + I^{dj}_{jt}$, where superscripts f and d indicate foreign and domestic origin from the inputs. Next to the ip-ratio, we also include the export-ratio in our model: $ER_{jt} = E_{jt} / (E_{jt} + Y_{jt})$. The export-ratio gives the total amount of goods and services exported by sector j in year t (E_{jt}) as a share of total output produced in sector j in year t (Y_{jt}).

We do not have information on the business location of the specific establishment for which the employee works. In order to investigate to what extent the effect of internationalisation differs per region, we rely on the province of residence of the employee as a proxy. Part of the Dutch labour force lives abroad, mainly in the border area of Belgium and Germany, but we do not have any information on the country of residence to check this. In the analysis we include a separate dummy for employees living abroad.

Information on the education level is only available for young employees and for a small fraction of older employees. We include a dummy for those with missing information on educational attainment. Because the information with respect to the education level of the individuals in the database is imperfect, we also include the monthly wages, corrected for part-time work, as a proxy for skill level.

Controls included in the analyses are individual characteristics (gender, age, ethnic background and tenure) and firm characteristics (firm size, sector of industry, foreign or domestic ownership and shares of female, older (over 50 years of age), and high and low-paid employees as controls. The Appendix provides more detailed information.

12.3 Descriptive statistics

In this section we present some descriptive statistics of the data used in the regression analysis. For the descriptive analysis we used the complete 2008 database, excluding workers employed in the public sector.

Table 12.3.1 presents the number and percentage of employees working for an importer, an exporter and a two-way trader.[2] We see that almost two thirds of all employees work in a firm engaged in international trade. The vast majority (44.5 percent) is employed by a two-way trader. Relatively few workers are employed at an exporter. The table also reveals that 37.4 percent of the employees outside the public sector work for a firm that is not engaged in international trade.

12.3.1 Number and share of employees working at importing and exporting enterprises, two-way traders and non-traders

	N	%
Importers	814,576	16.1
Exporters	101,701	2.0
Two-way trader	2,255,342	44.5
Non-trader	1,894,663	37.4

In Table 12.3.2 we present the percentages discussed in Table 12.3.1 for each of the provinces. The highest share of employees working for importers is found in Limburg and Noord-Holland (18.5 and 17.9 percent respectively), whereas in Overijssel relatively many employees (2.4 percent) work for a firm only engaged in exporting. The share working for two-way traders is highest in Limburg (50.5 percent) and lowest in Friesland (37.7 percent).

[2] The figures presented here differ from figures published in earlier versions of the Internationalisation Monitor. In the current chapter we only include employees' main job in the analysis.

12.3.2. Share of employees working at importing and exporting enterprises, two-way traders and non-traders, 2008 by province of residence

	Importer	Exporter	Two-way trader	Non-trader
	%			
Drenthe	14.4	2.0	44.3	39.3
Flevoland	16.3	2.2	45.7	35.8
Friesland	16.2	1.8	37.7	44.3
Gelderland	14.8	2.3	44.0	38.9
Groningen	14.8	1.5	43.6	40.1
Limburg	18.5	2.1	50.5	28.9
Noord-Brabant	14.5	2.2	49.0	34.3
Noord-Holland	17.9	1.6	42.7	37.8
Overijssel	15.6	2.4	44.8	37.2
Utrecht	15.9	1.9	42.2	40.0
Zeeland	17.7	1.5	47.1	33.7
Zuid-Holland	16.3	2.0	43.0	38.7

In Table 12.3.3 we present two measures of internationalisation at the sector level. For the country as a whole as well as for each province we calculated the share of people employed in a sector (2-digit SBI) with an above average import penetration or export ratio. Especially in Noord-Brabant many employees work in sectors with an above average import penetration ratio (34.3 percent). This percentage is about a fifth smaller in Groningen (26.6 percent). Relatively many employees in Limburg work in sectors with above average export ratios.

12.3.3 Share of employees working in an industry with an above average import penetration or export ratio, 2008 by province of residence

	Import penetration ratio (IR) above average	Export ratio (ER) above average
	%	
Drenthe	29.2	37.1
Flevoland	33.2	36.6
Friesland	30.1	36.1
Gelderland	32.0	37.3
Groningen	26.6	35.6
Limburg	31.6	40.8
Noord-Brabant	34.3	40.1
Noord-Holland	31.6	35.6
Overijssel	32.9	37.2
Utrecht	29.5	34.2
Zeeland	30.9	39.9
Zuid-Holland	28.9	36.0
Netherlands (total)	31.1	37.0

12.4 Regression results

Table 12.4.1 displays the results of the estimation of the probability of job termination. This first model only includes individual and firm characteristics. Its shows that, relative to workers educated at the intermediate level, the probability of an employees' job ending during the year is lower for more highly educated workers and higher for less educated workers. The estimated odds ratio (henceforth OR) of 1.2 indicates that, keeping other background characteristics unchanged, the probability of experiencing a job termination is approximately 1.2 times higher for less educated employees than for employees with intermediate educational attainment.[3] Similarly, the OR of 0.8 for more highly educated employees indicates that the probability on having a job ended is lower than for the reference category. Workers in the lower wage categories face a significantly lower probability of job termination during the year than workers in the higher wage categories. For those employees earning between 5 and 10 thousand euros a month the probability of a job ending is about twice as high as for those in the reference category. Perhaps this result reflects higher voluntary job mobility of better paid workers rather than a higher probability of becoming unemployed (i.e. job loss).

We find some differences in the probability of job termination between employees living in different provinces. In Overijssel and Zeeland employees face a lower probability of job ending than in Utrecht. For employees living in Groningen the probability is significantly higher. It is highest for workers living abroad, for whom the probability is about 30 percent higher (OR = 1.3) than for employees living in Utrecht.

Almost **45%** of Dutch employees works for two-way traders

---

[3] Given the skewed distribution of the dependent variable in the current analysis, 17 percent 'ones' versus 83 percent 'zeros', it is convenient to interpret the estimates of the odds ratio like this.

12.4.1 Probability of experiencing a job ending[a]

	Model 1	Model 2	Model 3	Model 4
	odds ratio's			
Low education	1.175***	1.175***	1.177***	1.176***
High education	0.780***	0.780***	0.787***	0.787***
Education unknown	0.679***	0.679***	0.679***	0.679***
Salary < €1,000	0.714***	0.714***	0.715***	0.716***
€1,000 ≤ Salary < €2,000	0.736***	0.736***	0.737***	0.737***
€3,000 ≤ Salary < €4,000	1.285***	1.285***	1.288***	1.288***
€4,000 ≤ Salary < €5,000	1.622***	1.622***	1.619***	1.619***
€5,000 ≤ Salary < €10,000	2.003***	2.002***	2.000***	1.999***
Salary ≥ €10,000	3.740***	3.739***	3.745***	3.743***
Groningen	1.068***	1.068***	1.074***	1.074***
Friesland	0.968	0.968	0.973	0.974
Drenthe	1.025	1.025	1.031	1.031
Overijssel	0.941***	0.941***	0.949***	0.949***
Flevoland	1.033	1.033	1.038	1.038
Gelderland	0.976	0.976	0.982	0.981
Noord-Holland	0.985	0.985	0.986	0.987
Zuid-Holland	0.990	0.990	0.992	0.992
Zeeland	0.946**	0.946**	0.956	0.955*
Noord-Brabant	0.981	0.981	0.991	0.990
Limburg	1.017	1.018	1.029	1.028
Lives abroad	1.305***	1.305***	1.312***	1.312***
Province unknown	1.511	1.510	1.503	1.502
Importer		0.994		0.991
Exporter		0.955**		0.966
Two-way trader		1.002		1.026***
Import penetration ratio			1.000**	1.000*
Export ratio			0.995***	0.995***
Constant	0.260***	0.261***	0.273***	0.273***
Individual characteristics	Included	Included	Included	Included
Enterprise characteristics	Included	Included	Included	Included
Number of observations	821,360	821,360	820,582	820,582
R^2 (Nagelkerke)	0.21	0.21	0.21	0.21

[a] The asterisks ***, ** and * indicate significance at the 1-, 5- and 10-percent level. Odds ratio's are reported. In all regressions we include dummies to control for year-specific effects on the probability of a job ending. We use the following reference groups: Intermediate education; Salary between €2,000 and €3,000 per month; Province of Utrecht; Non-trader.

The probability of job termination by the end of the year is about 5 percent lower for employees working for exporters (OR = 0.955) than for employees in firms that do not trade internationally (Model 2 in Table 12.4.1). For people employed at two-way traders and firms that are only engaged in importing, the probability is not significantly different from non-traders. The import penetration ratio has a statistically significant effect on the probability of job termination during the year (Model 3). However, the effect is economically small, as indicated by the OR which is only marginally larger than 1.[4] The export ratio is negatively related to the probability of job ending. However, the size of the OR again indicates this effect is economically insignificant. The differences in the probability of a job ending between skills levels and between regions do not alter once trade variables are included in the analysis, suggesting that highly skilled individuals are not concentrated specifically in sectors where the import penetration ratio is relatively high (or low). Also, it suggests that the differences between regions presented earlier are not explained by differences in the import penetration and export ratios across these regions. Once we control for the import penetration rate and the export intensity rate of the sector of industry (Model 4), there is an effect of trade involvement of the firm: employees of two-way traders have a higher probability of job termination. The effect for people employed by exporters turned just insignificant (p-value = 0.13), which is possibly due to correlation between the export-ratio and the exporter dummy.

In the last four models (Models 5 to 8) we investigate to what extent the measures of internationalisation effect different skill levels and different regions. In Model 5 (Table 12.4.2) we interact the import-penetration ratio (IR) and export ratio (ER) with the monthly income dummies and we find that effect of the trade sensitivity of the sector differs between wage categories. A higher import penetration ratio is related to job ending for workers of the lower wage categories. Low paid workers employed in export-intensive sectors have a higher chance of job termination than highly paid workers. The effect of the import penetration ratio on the probability of a job ending also differs for different skill levels. While the probability of facing a job ending for the reference group does not seem to be affected by a change in the import penetration ratio (IR), a higher IR is associated with a higher probability of experiencing a job termination for the lowest paid employees. A ten-percentage point increase in the import penetration ratio above the average is associated with an increase in the probability of facing a job ending of at most 5 percentage points. In Model 6 (Table 12.4.3) we interact the same measure of international orientation of the sector with region dummies. The results indicate that the effect

---

[4] An increase in the IR of 10 percentage points above the average reduces the chance of job ending by at most one-fifth of a percentage point, depending on the values of the other explanatory variables.

of the import penetration ratio on the probability of job ending is insignificantly different from the reference category (Utrecht) for all provinces, except for employees living in Drenthe, where a higher IR is associated with a slightly lower probability of a job ending (OR = 0.995). This effect is negligible, however.

12.4.2 Probability of experiencing a job ending[a]

	Model 5
	odds ratio's
Import penetration ratio (IR)	1.000
IR*Salary < €1,000	1.011***
IR*€1,000 ≤ Salary < €2,000	1.002***
IR*€3,000 ≤ Salary < €4,000	0.999**
IR*€4,000 ≤ Salary < €5,000	0.999**
IR*€5,000 ≤ Salary < €10,000	0.998***
IR*Salary ≥ €10,000	1.000
Export ratio (ER)	0.995***
ER*Salary < €1,000	1.005***
ER*€1,000 ≤ Salary < €2,000	1.004***
ER*€3,000 ≤ Salary < €4,000	0.998***
ER*€4,000 ≤ Salary < €5,000	0.999
ER*€5,000 ≤ Salary < €10,000	1.001
ER*Salary ≥ €10,000	1.000
Constant	0.271***
Individual characteristics	Included
Enterprise characteristics	Included
Number of observations	820,582
R^2 (Nagelkerke)	0.21

[a] The asterisks ***, ** and * indicate significance at the 1-, 5- and 10-percent level. Odds ratio's are reported. In all regressions we include dummies to control for year-specific effects on the probability of a job ending. We use the following reference groups: Intermediate education; Salary between €2,000 and €3,000 per month; Province of Utrecht; Non-trader.

12.4.3 Probability of experiencing a job ending[a]

	Model 6
	odds ratio's
Import penetration ratio (IR)	1.000
IR*Groningen	1.000
IR*Friesland	1.002
IR*Drenthe	0.998**
IR*Overijssel	1.000
IR*Flevoland	1.000
IR*Gelderland	1.000
IR*Noord-Holland	1.000
IR*Zuid-Holland	1.000
IR*Zeeland	1.000
IR*Noord-Brabant	1.000
IR*Limburg	1.000
IR*Lives abroad	0.998*
IR*Province unknown	1.004
Export ratio (ER)	0.993***
ER*Groningen	1.002
ER*Friesland	1.001
ER*Drenthe	1.007***
ER*Overijssel	1.003**
ER*Flevoland	0.999
ER*Gelderland	1.003**
ER*Noord-Holland	0.999
ER*Zuid-Holland	1.001
ER*Zeeland	1.002
ER*Noord-Brabant	1.005***
ER*Limburg	1.003*
ER*Lives abroad	1.001
ER*Province unknown	0.998
Constant	0.279***
Individual characteristics	Included
Enterprise characteristics	Included
Number of observations	820,582
R^2 (Nagelkerke)	0.21

[a] The asterisks ***, ** and * indicate significance at the 1-, 5- and 10-percent level. Odds ratio's are reported. In all regressions we include dummies to control for year-specific effects on the probability of a job ending. We use the following reference groups: Intermediate education; Salary between €2,000 and €3,000 per month; Province of Utrecht; Non-trader.

In Model 7 (Table 12.4.4) we interact the income dummies with trade variables at the firm level. The effect of working for a firm engaged in international trade differs between low and highly paid workers. The lowest paid workers have a greater chance of job termination in a firm that imports, exports or does both, relative to those in the reference group with an income of 2 to 3 thousand euros per month working for such firms. Especially low paid workers employed at two-way traders face a higher probability of a job ending, about 1.5 times as large as people earning 2 to 3 thousand euros per month employed by two-way traders. People with a higher income than the reference group also face a higher probability of job ending. The highest income group working at two-way traders ends a job 1.4 times more often than those in the reference category. In Model 8 we perform the same analysis as in Model 7, but instead of interacting the trade variables with the income dummies, we interact them with the set of region dummies. The results indicate that the effects of working at an importer are different in Drenthe and Zuid-Holland than in the rest of the country. In these provinces the probability of facing a job ending is relatively lower when working for an importer than when working for a non-trader. The effect of working for an exporter does not differ between provinces. That is, the effect of working for an exporter on facing job termination is insignificant for all provinces. Finally, the effect of working at a two-way trader positively affects the probability of a job ending. However, this is not the case for those provinces of which the interaction term is shown in Table 12.4.5.

12.4.4   Probability of experiencing a job ending[a]

	Model 7
	odds ratio's
Low education	1.174***
High education	0.777***
Education unknown	0.678***
Salary < €1k	0.593***
€1k ≤ Salary < €2k	0.684***
€3k ≤ Salary < €4k	1.271***
€4k ≤ Salary < €5k	1.527***
€5k ≤ Salary < €10k	1.687***
Salary ≥ €10k	2.975***
Groningen	1.071***
Friesland	0.971***
Drenthe	1.029
Overijssel	0.946***
Flevoland	1.035
Gelderland	0.979
Noord-Holland	0.985
Zuid-Holland	0.991

12.4.4 Probability of experiencing a job ending[a] (end)

	Model 7
Zeeland	0.948**
Noord-Brabant	0.983
Limburg	1.021
Lives abroad	1.302***
Province unknown	1.503
Two-way trader	0.921***
Two-way*Salary < €1k	1.571***
Two-way*€1k ≤ Salary < €2k	1.122***
Two-way*€3k ≤ Salary < €4k	1.003
Two-way*€4k ≤ Salary < €5k	1.080***
Two-way*€5k ≤ Salary < €10k	1.303***
Two-way*Salary ≥ €10k	1.418***
Exporter	0.871***
Exporter*Salary < €1k	1.356***
Exporter*€1k ≤ Salary < €2k	1.338***
Exporter*€3k ≤ Salary < €4k	1.029
Exporter*€4k ≤ Salary < €5k	1.092
Exporter*€5k ≤ Salary < €10k	1.073
Exporter*Salary ≥ €10k	1.014
Importer	0.906***
Importer*Salary < €1k	1.227***
Importer*€1k ≤ Salary < €2k	1.110***
Importer*€3k ≤ Salary < €4k	1.082***
Importer*€4k ≤ Salary < €5k	1.177***
Importer*€5k ≤ Salary < €10k	1.285***
Importer*Salary ≥ €10k	1.340***
Constant	0.272***
Individual characteristics	Included
Enterprise characteristics	Included
Number of observation	820,582
R^2 (Nagelkerke)	0.21

[a] The asterisks ***, ** and * indicate significance at the 1-, 5- and 10-percent level. Odds ratio's are reported. Interaction effects with province of residence are only presented when significant at the 10-percent level.

12.4.5 Probability of experiencing a job ending[a]

	Model 8
	odds ratio's
Low education	1.174***
High education	0.780***
Education unknown	0.679***
Salary < €1,000	0.714***
€1,000 ≤ Salary < €2,000	0.736***
€3,000 ≤ Salary < €4,000	1.286***
€4,000 ≤ Salary < €5,000	1.623***
€5,000 ≤ Salary < €10,000	2.003***
Salary ≥ €10,000	3.743***
Groningen	1.123***
Friesland	1.022
Drenthe	1.090**
Overijssel	0.977
Flevoland	1.071*
Gelderland	0.998
Noord-Holland	1.045
Zuid-Holland	1.069***
Zeeland	0.978
Noord-Brabant	1.004
Limburg	1.078**
Lives abroad	1.471***
Importer	1.051
Importer*Drenthe	0.872*
Importer*Zuid-Holland	0.902**
Importer*Lives abroad	0.848*
Exporter	0.950
Two-way trader	1.096***
Two-way*Friesland	0.919*
Two-way*Drenthe	0.902*
Two-way*Gelderland	0.941*
Two-way*Noord-Holland	0.891***
Two-way*Zuid-Holland	0.866***
Two-way*Limburg	0.899**
Two-way*Lives abroad	0.798***
Constant	0.248***
Individual characteristics	Included
Enterprise characteristics	Included
Number of observation	820,582
R^2 (Nagelkerke)	0.21

[a] The asterisks ***, ** and * indicate significance at the 1-, 5- and 10-percent level. Odds ratio's are reported. Interaction effects with province of residence are only presented when significant at the 10-percent level. In all regressions we include dummies to control for year-specific effects on the probability of a job ending. We use the following reference groups: Intermediate education; Salary between €2,000 and €3,000 per month; Province of Utrecht; Non-trader.

12.5 Conclusion

In this chapter we relate several measures of internationalisation at the firm and at the sector level to the probability of a job ending. We also investigate to what extent the effects of these international trade measures differ across provinces and individuals with different skill levels.

A job termination is defined as starting a year as an employee, and ending that year without or with a different job. At the firm level we measure whether or not an enterprise is engaged in international trade in goods. If so we distinguish between enterprises that only engage in importing goods ('Importers'), only engage in exporting goods ('Exporters') and enterprises that engage in both ('Two-way traders'). At the sector of industry level we calculate the share of the intermediate inputs used in the production process in a certain sector that is imported ('import penetration ratio') and the share of the output of a sector that is exported ('export ratio').

The job termination probability for individuals working at a two-way trader is less than three percent larger than for people working for a firm that is not engaged in international trade. Individuals employed for exporters or importers do not face a higher probability of job termination. The effects of internationalisation of the sector of industry on the probability of experiencing a job termination are also slight. A ten percentage point increase in the import penetration ratio on the sector level above the mean is associated with an increase of less than one percentage point in the probability of experiencing a job termination. An increase in the export ratio of a sector is associated with a lower probability of experiencing a job termination. An increase in the export ratio of ten percentage points above the average reduces the probability of a job termination by less than three percent, compared to the reference group consisting of employees at enterprises not engaging in the international goods trade.

We found no evidence that the effects of the trade variables included in the analysis presented here differ systematically between employees across different provinces. We did, however, find that the effects of trade measures on the probability of job termination differ for different skill levels, as proxied by the monthly income. A higher import penetration ratio particularly is related to job ending for workers of the lower wage categories. Also, low paid workers employed in export-intensive sectors have a slightly higher chance to see their job end than highly paid workers.

Appendix

Apart from several measures capturing the extent of globalisation of the sector and enterprise an individual works, we control for individual and enterprise-specific background characteristics. At the individual level we control for the following background characteristics:

- *Age*. In the analysis we distinguish five age categories and include dummy variables to control for the effect of age on the probability of a job ending: 15–24; 25–34; 35–44 (reference category); 45–54; 55–65.
- *Gender*.
- *Ethnicity.* We include two dummy variables in the regression indicating whether or not an individual is a western or non-western migrant. An individual is viewed as a migrant if at least one of the parents was born outside the Netherlands.
- *Monthly income.* From the SSB we are supplied with an estimate of the gross monthly income belonging to an individual's main job. In order to make this income measure between individuals we standardize it by multiplying the estimated monthly income by one over the part-time factor of the job it belongs to. That is, for an individual earning €2,000 gross per month in a part-time job consisting of a half full-time equivalent, we multiply this individual's income by 1/0.5. In our estimations we make use of seven income categories: €1,000 or less; €1,000 – €2,000; €2,000 – €3,000 (reference category); €4,000 – €5,000; €5,000 – €10,000; €10,000 and more.
- *Education level.* High (hbo; university education); intermediate (havo years 4 or 5; vwo years 4, 5 or 6; mbo diploma levels 2, 3 and 4,)
- *Tenure.* We measure the number of years an individual is working in a job and add this as a control variable.
- *Province.* We control for the province of residence.

We include the following employer characteristics in the analysis:

- *Number of employees.* We control for the number of employees in an enterprise. We distinguish three categories: less than 50 employees (reference category); 50–250 employees; 250 employees or more.
- *Share of female employees.* The share of positions/jobs at an enterprise filled by female employees.
- *Share of older employees.* The share of positions/jobs at an enterprise filled by employees aged 50 and over.
- *Share of low and high-paid employees.* All jobs at companies in the Netherlands are sorted (ascending) on the basis of the annual pre-tax income and are divided low, middle and high-income jobs. Jobs belonging to the first 30 percentiles of the distribution are defined as low-income jobs, while jobs

belonging to the last 20 percentiles of the distribution are defined as high-income.

- *Sector.* We use information on the sector (1-digit SBI) to which an enterprise belongs.
- *UCI.* We have information on whether the ultimate controlling institute an enterprise belongs to is based inside or outside the Netherlands. In 2008 the ultimate controlling institute of 97 percent of the enterprises (and 56.1 percent of the individuals in our dataset) is unknown. It is assumed that the ultimate controlling institute for these enterprises is situated in the Netherlands.