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THE IMPACTS OF SOCIO-POLITICAL CRISES IN 2002 AND 2009 ON THE LABOUR MARKET IN MADAGASCAR

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Abstract

Madagascar has experienced four socio-political crises since 1960, the two most recent being in 2002 and 2009. These crises have affected the economy and particularly the labour market, and have thus also affected poverty levels. This paper uses data from the city of Antananarivo to examine the impacts of the two most recent crises on labour market outcomes. Both crises had a larger effect on those most marginalised in the labour market namely women, the youth, and the low-skilled. These crises also had a particular impact on employment in the EPZ. In 2002, two out of three people who had lost jobs were women and in 2010 this figure rose to nine out of ten. Low-skilled workers, specifically individuals with low education had lost the most jobs after each crisis. Firms in EPZ were primarily affected by job losses over the periods 2009-2010 and 2001-2002. The informal sector was the only one which experienced net job creation, as a significant number of those who had lost formal sector jobs transitioned into the informal sector. These results indicate that crises of this nature impact the most vulnerable, and provide further motivation for efforts to resolve these crises as quickly as possible.

1. INTRODUCTION

In recent years Madagascar has experience two political crises, namely the 2002 and 2009 crises, which have had profound economic consequences. In the 2009 crisis, GDP declined by 3.7% despite pre-crises annual growth rates of 5.1% to 7.1% between 2005 and 2008, and poverty increased sharply from 69% in 2005 to 77% in 2010 (INSTAT, DSM, 2010). This sharp decrease in poverty resulted in a significant increase in the vulnerable population (World Bank, 2011).

The labour market has also been negatively affected by these crises. Following the 2009 crisis the unemployment rate rose from 2.8% to 3.8% between 2005 and 2008 (INSTAT, DSM, 2011) and there was a massive informalisation of economic activities, as well as an increase in under-employment (DIAL, Instat, 2010). Firm creation, registered at INSTAT, fell by 30% in 2009, and as a result of the crisis, Madagascar was suspended from the AGOA programme.

Thus, this study seeks to evaluate the effects of deep political crises on the labour market in the city of Antananarivo. The study adopts an empirical approach and relies primarily on data from a series of surveys on employment in the agglomeration of Antananarivo (2001-2010). We specifically analyse the labour supply in Antananarivo: the dynamics of the main indicators of labour markets with particular emphasis on the informal sector, informal employment, and jobs in EPZ firms. We also identify how the crisis has affected the most vulnerable groups of the workforce, including women, young persons, and low-skilled workers.

This analysis of Antananarivo is interesting for several reasons. Firstly, the survey data currently available for employment covers only this location. This data provides information on all activities including those concerning the informal sector and employment in the EPZs. Thus they allow for the study of adjustment approaches adopted by enterprises in response to socio-political crises, as well as mobility between the formal and the informal sector. This is particularly interesting given the flexibility of the labour market in Antananarivo. Secondly, most firms in EPZ, the majority of which are in the textile sector, are located in the city of Antananarivo. They are among those that have been hit the hardest by the latest crisis because, inter alia, the exclusion of Madagascar from the list of countries eligible for AGOA (African Growth Opportunity Act) program, which included Madagascar since March 2001. Finally, Antananarivo attracts a large number of job seekers from across Madagascar as most job opportunities are located within this city.

2. SOCIO-POLITICAL CRISES IN MADAGASCAR

Since independence in 1960, Madagascar has experienced four socio-political crises (1971, 1991, 2002 and 2009). These crises were characterized by a popular uprising and a slowdown in economic activities such as work stoppages, and ended in the fall of each established regime.

The first crisis occurred in 1972. It began with a strike of medical students in January 1972 and ended with a popular uprising in May 1972, followed by the transfer of power to a military directorate. The crisis mainly affected the administrative system and although the economic consequences were limited, the country suffered a decline in GDP of 1.3% in 1972 and 2.6% in 1973, and only recovered economically in 1974.

The crisis of 1991 lasted five months. It began in May when popular meetings turned into a general strike, which ultimately led to a shut-down of the administrative system that affected economic activities. People demanded a revision of the Constitution, as well as the President's resignation. The crisis continued after the establishment of the transitional government in October 1991 and led to a fall in GDP by 6.3%.

Contestation of the results of the presidential election triggered the 2002 crisis. This crisis lasted seven months with daily demonstrations and work stoppages. In order to isolate Antananarivo, the centre of the dispute, infrastructure such as bridges and towers were destroyed, and blockades were set up especially on the RN2 road linking the Capital and the city of Toamasina, the first major port of Madagascar. The traffic of persons, but mainly of goods (fuel, medicines, etc.) was significantly disrupted, penalizing people and firms located in the city of Antananarivo. The crisis ended in July 2002 after the exile of the former President; as a result of this crisis, GDP fell by 12.7%.

The fourth crisis began in January 2009. Despite the change of government which took place in March 2009 the crisis continued for over three years. Instability, the suspension of foreign aid, and the long duration of the crisis meant that the economy contracted by 4.1% in 2009.

Table 1 : Evolution of GDP growth before and at the beginning of each crisis

PIB	**1970**	**1971**	**1972**	**1973**		**1989**	**1990**	**1991**	**1992**
Primary sector	Nd	Nd	Nd	Nd		5,2%	2,1%	0,5%	1,7%
Secondary sector	Nd	Nd	Nd	Nd		1,2%	-0,6 %	-0,4%	-1,1%
Tertiary sector	nd	Nd	Nd	Nd		4,1%	3,9	-7,7%	1,1%
Total	5,3%	3,9%	-1,3%	-2,6%		4,1%	3,1%	-6,3%	1,2%
PIB	**2000**	**2001**	**2002**	**2003**		**2007**	**2008**	**2009**	**2010**
Primary sector	1,0%	4,0%	-1,3%	1,3%		2,2%	2,9%	8,5%	-3,3%
Secondary sector	7,1%	7,6%	-20,8%	14,6%		7,0%	3,6%	-7,8%	0,2%
Tertiary sector	5,0%	6,1%	-15,0%	10,6%		7,8%	8,2%	-7,5%	1,7%
Total	**4,7%**	**6,0%**	**-12,7%**	**9,8%**		**6,3%**	**7,1%**	**-4,1%**	**+0,5%**

Sources : INSTAT DSY.

Despite some specific characteristics, these crises share some commonalities. All political crises have occurred while the economy was beginning a path of sustained growth: the annual growth rate had averaged 5% between 1968 and 1971, 3% between 1986 and 1990, 5% between 1997 and 2000, and 6% between 2004 and 2008. The negative impacts of the crisis have been pervasive but have especially affected the secondary and the tertiary sectors. The decreases in the secondary sector (0.4% in 1991, 20.8% in 2002 and 7.8% in 2009) were mainly the result of work stoppages (during the crises of 1991 and 2002), the cancellation of orders (especially in 2002 and 2009) and the reduction in domestic demand due to the loss of purchasing power. The textile industry, especially the firms operating in the EPZ, had been particularly negatively affected in 2009. The tertiary sector, the largest sector of the Malagasy economy, also experienced significant contractions: -7.7% in 1991, -15% in 2002 and -7.5% in 2009. This is largely due to lower transport activities, tourism and construction.

The effects of these crises on the living conditions of urban households are indisputable for various reasons. Firstly, the popular uprisings that accompany these crises occurred in large cities, especially in the capital. Economic infrastructure and companies affected by the crisis were found mainly in cities and in the agglomeration of Antananarivo. Secondly, such crises are often accompanied by rising prices, primarily affecting the urban households most dependent on the money market. These facts suggest that urban households are most likely to be affected by these crises. Nevertheless, there are indications that rural households are not spared. The incidence of rural poverty has increased by 9 percentage points between 2001 and 2002, and by 8 percentage points between 2005 and 2010.

3. DATA AND METHODOLOGY

3.1 DATA

The data used in this paper is obtained from various Labour Force Surveys. In particular, data from the EE2006 and EE2010 surveys are utilized to assess the impact of the crisis in 2009, and information from the EE2001 and EE2002 survey data for the 2002 crisis. It covers the agglomeration of Antananarivo and its immediate surroundings. The sample contains 3000 households and is statistically representative of the population.

The questionnaire consists of two forms: a form for household demographics and habitat, and an individual questionnaire administered to household members aged 10 and older which captures labour market information. The survey thus provides information on labour supply in the city such as the characteristics of the workforce, the employment structure, and the situation of labour market conditions and activities.

Although there is a panel dimension to these surveys (2006 and 2010) there are concerns about the quality and statistical representivity. We therefore use the retrospective data collected from households to create a pseudo-panel.

Two methodological approaches are used. The first uses descriptive statistics, and the second is the analysis of transitions using econometric models. Using the respondent's labour market status in t_0 (the year before, or at the beginning of the crisis), we can classify people and their transitions into two broad initial categories from which they transitioned into various possible labour market states in t_1 (the survey information after the crises):

Employed in t_0:

- ♣ who kept exactly the same job before and after the crisis;
- ♣ who are in a different job in t_1
  - ● in the same industry;
  - ● in a different industry;
- ♣ who have become inactive / unemployed in t_1.

Unemployed in t_0:

- ♣ who remained unemployed in t_1 (voluntary or involuntary)
- ♣ who are in employment in t_1.

Given this classification, we estimate two models:

- A multinomial logit model to estimate the probabilities of an employed person in t_0 to transition into one of the three labour market states in t_1, with the reference group being people who remained employed in the same job and industry.
- A multinomial logit model to estimate the probabilities of an unemployed person in t_0 to transition into one of the three labour market states in t_1, with the reference group remaining unemployed in t_1.

These models attempt to establish correlations between individual characteristics and transitions from one employment state to another. Independent variables include standard individual characteristics - gender, age, education level, status of household head, and household size. In the first model, we add several job characteristics for the employed in t_0. We are particularly interested in the associations between individual characteristics and the probability of losing or finding a job during times of crisis.

We retain four sectors in this analysis: the public sector, the informal sector, the EPZ and the formal private sector outside the EPZ. The public sector consists of public administration and public enterprises. The informal sector is the set of production units that do not have a statistical number, or, in the case of employers and self-employed, who do not keep accounts.

4. DESCRIPTIVE STATISTICS

The impact of the crisis on the labour market of Antananarivo

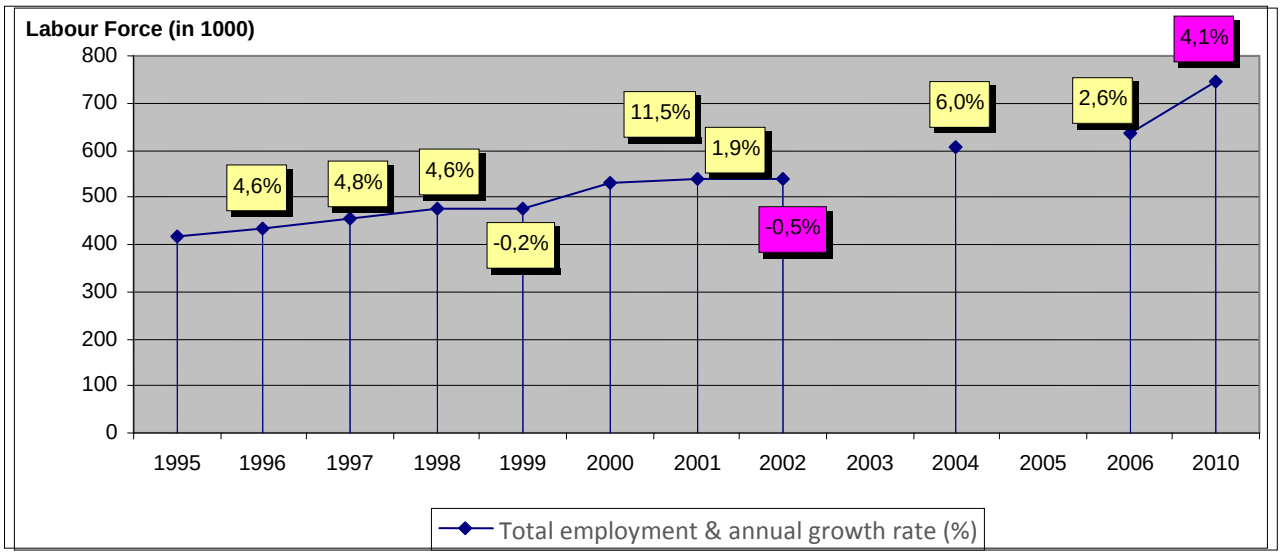
We investigate the impact of the crisis in four areas: working time; the adjustment of income; employment; and, unemployment with the length of unemployment duration.

In 2002 the number of employed people aged 10 and older, decreased from 540,200 to 537,700 individuals, showing a decrease of 0.5% per year. At an aggregate level, this decline affected women more than men, for whom the evolution of the employed population is estimated at -3% and +1% respectively.

This slight decline in 2002 was not experienced equally by all sectors and types of activity. The public sector and the informal sector did not seem to suffer from the crisis. On the contrary, employment in these sectors grew by 5.0% and 12% in 2002 respectively. By comparison, employment in private firms both outside EPZs and within the EPZs declined by 5% and 61%.

We find that most of the decrease in EPZ jobs happened in the textiles and clothing industry. Proportionally, this reduction in employment in EPZ has affected both men (-64%) and women (-59%). In terms of numbers, women have lost twice as many jobs (22,300) than men (11 000). Compared to the socio-professional categories, it turns out that executives are not spared as their employment fell by 64% (against 60% for employees and workers). However, executives had lost 3400 jobs in 2002 while the employees and workers have lost 29,800 jobs. It seems that EPZ firms have not applied any selection in their decisions. Apparently, these reductions come more from closure rather than just a simple adjustment. Moreover, according to the UNDP (2002), some EPZ firms had relocated in 2002 due to facing challenges brought by the crisis.

Figure 1: Evolution of the employed population between 1995 and 2010



Sources : INSTAT DSM, MADIO, IRD DIAL. Enquêtes emploi : EE2001 EE2002 EE2006 EE2010. Our own calculations.

Despite the 2009 crisis, it seems that there was no decline in overall employment in the agglomeration of Antananarivo in 2010, as the number of employed people aged 10 and older increased from 636,100 to 746,400 individuals (an increase of 17.3% in 4 years, or 4.1% per year). This evolution of the employed labour force is not far from that of the 1995-2001 period (4.5%), as is illustrated in figure 1. In other words, the crisis of 2009 does not seem to have reduced or at least not affected the long term trend of employment.

The job losses which occurred during this period were mostly in the clothing and textile firms in the EPZs. Women bore the brunt of these job losses with female employment falling by 38.0% compared to only 12.6% for men. The less skilled individuals were also hit proportionally harder as 32.3% of the workers lost jobs compared to only 5% of the executives. In 2002 and 2010 firm responses in the EPZ were different. In 2010 there was no work stoppage, no blocking of the administrative system or economic system, however Madagascar was suspended from AGOA. Despite the closure of some firms, there was also the creation of new firms during this time: 9 in 2009 and 13 in 2010 (MEEI, 2011). It seems that in 2010 layoffs were conducted primarily at the expense of the less skilled to increase productivity.

Table 1: Evolution of employment by sector

Sector	2001 (a)	2002 (b)	Variation (b-a)		2006 (a)	2010 (b)	Variation (b-a)
Public sector	57 600	60 600	3 000		56400	58100	1 700
Formal private enterprises, non-EPZ	140 400	133 800	-6 600		159700	167200	7 500
Formal private enterprises, EPZ	54 900	21 600	-33 300		51200	35600	- 15 600
Informal sector	287 300	321 700	34 400		368800	485500	116 700

Total	540 200	537 700	-2 500		**636 100**	**746 400**	**110 300**

Sources : INSTAT DSM, MADIO, IRD DIAL. Enquêtes emploi : EE2001 EE2002 EE2006 EE2010. Our own calculations.

Finally, as in 2002, the crisis of 2009 did not change the structure of activities by industry. The weight of the garment industry, and textiles declined in 2010 (12.8% in 2009 to 8.6% in 2010) in favour of certain activities such as trade. But the crisis of 2009 did not induce a reallocation of activities in 2010.

The employment survey data from 2001 to 2010 shows that after each crisis, the volume of working hours per week declined in all industries by varying amounts (see Table 2). In 2010, the greatest reductions in working time were in industries such as chemicals, textiles, and food. Working hours per week, per employee, declined by between 5 and 6 hours. The adjustment in the service sector was weaker but was nevertheless substantial. Across types of workers, it was the informal sector workers, and the self-employed, who most adjusted their working hours, followed by general workers. Hours of work for executives did not change.

In 2002, there was also a reduction in the number of working hours in the city of Antananarivo, but to a lesser extent. As with 2010, reductions in working hours were largest in the industrial sector. However, the reduction in the service sector was much less pronounced than in 2010.

Comparing the various sectors, the 2002 situation is quite different from that of 2010. First, in 2002, it is the EPZs that experienced the greatest decline in working hours (-3h per week). Whilst the fall is estimated at only 1 hour a week for the informal sector, it reaches 3 hours in 2010. The work schedule did not change in the formal private sector outside of the EPZs and increased in the public sector (5 hrs per week). Finally, by occupational group, the effects of the crisis are more homogeneous in 2002 than in 2010.

Table 2: The reduction of working time after each crisis according to industry group

Industry Type	2001 (a)	2002 (b)	Variation (b-a)		2006 (a)	2010 (b)	Variation (b-a)
Agriculture	35,0	30,4	-4,6		32,2	28,7	-3,5
Food Industry	46,4	40,3	-6,1		41,3	36,7	-4,6
Other Industry	41,1	40,7	-0,4		44,3	41,2	-3,1
Other Service	39,9	39,2	-0,7		44,2	41,4	-2,8
Btp	45,8	45,2	-0,6		45,8	44,9	-0,9
Chemistry	44,0	43,0	-1,0		43,6	37,7	-5,9
Commerce	44,8	46,0	1,2		48,2	46,4	-1,8
Clothing and textiles	45,4	38,1	-7,2		47,3	42,4	-4,9
Public Administration	42,9	43,7	0,8		46,3	44,6	-1,7
Transport	52,6	52,7	0,1		54,6	50,3	-4,3
Total	**43,3**	**41,8**	-1,5		**45,6**	**42,7**	**-2,9**

Sources : INSTAT DSM, MADIO, IRD DIAL. Enquêtes emploi : EE2001 EE2002 EE2006 EE2010. Our owwn calculations.

Wages

The political crises also affected earnings. Between 2001 and 2002 real average monthly income fell 6%, and by 14% between 2006 and 2010 while the minimum wage rose annually by about 10%. These declines have affected all industries with a few exceptions.

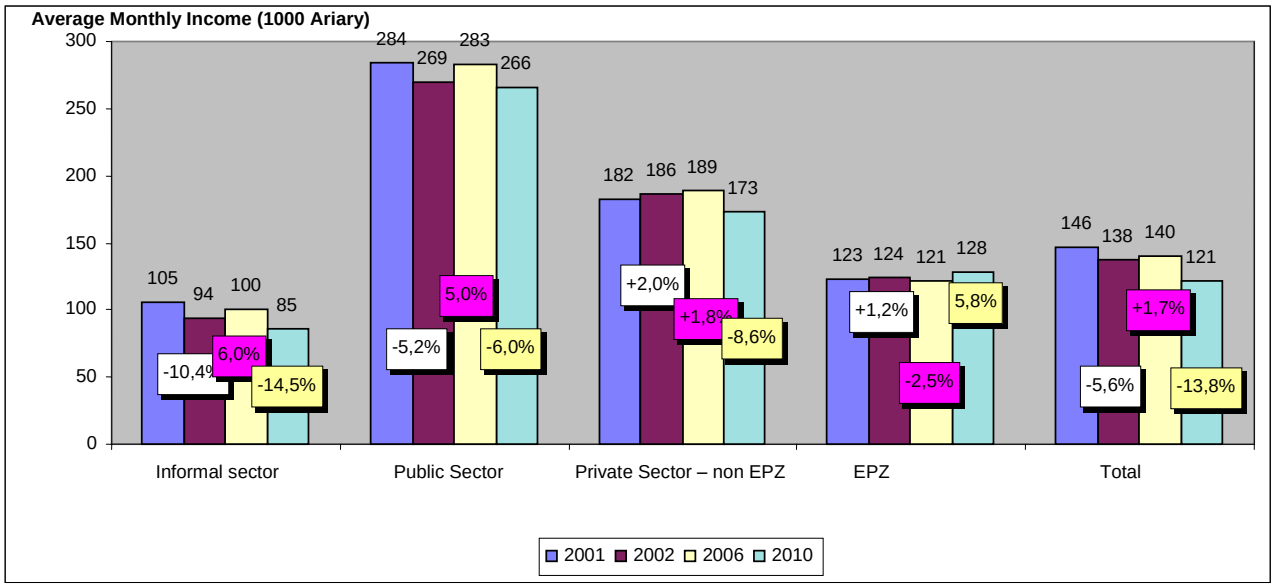
In 2002, agriculture stands out with a significant decrease of 32% of its average income. Declines were also important in the construction industry (18%) as well as clothing and textiles (16%). They are more moderate in commerce (7%), food (6%) and for civil servants (3%). In 2010, lower average incomes also varied across industries: agriculture still comes first with 43% followed by transport (23%) and the food industry (20%). The decrease in trade is 15% and only 4% in clothing and textiles.

This disparity in the response of companies is seen again when one aggregates according to their institutional sector, which suggests coping strategies for different classes of companies. In both 2002 and 2010, the largest decrease is observed from informal sector enterprises (10% in 2002 and 15% in 2010) while the slowdown in real income is more moderate in the public sector (5% in 2002 and 6% in 2010). For formal private enterprises outside the EPZ the outcome is more mixed; these companies suffered a decline in their average income in 2010 (7%), while experiencing an increase (2%) in 2002.

Finally, the average income has increased in both free enterprises in 2002 (1%) and 2010 (6%), perhaps due to the minimum wage increase. For 2002, the increase mainly favoured executives whose monthly income rose 10%. That of employees and workers was virtually flat (+1%). In 2010, the situation has reversed since the monthly salary of corporate executives in EPZs declined by 23% while employees and workers have benefited from a rise in real terms by 9%.

Figure 2 : Evolution of average monthly income by sector between 2001 and 2010

(MGA 1000, at 2010 price)



Sources : INSTAT DSM, MADIO, IRD DIAL. Enquêtes emploi : EE2001 EE2002 EE2006 EE2010. Our own calculations.

During and after the crises, working time and earnings both declined; but what happened to average hourly earnings? The hourly labour cost declined on average by 8% in 2010 and 2.2% in 2002; these falls were seen in almost all industries. However average hourly income still grew in some industries. In 2002, unit labour costs rose in the chemical industry (25%),the food industry (9%), and in the transport industry (5%). In 2010, growth was observed in construction (11%), in textiles (7%) and for civil servants (6%).

Note that those industries that have experienced increases in their unit labour costs are often the ones where there was an increase in real average income. This is the case in 2010 for construction and civil servants. It is the same for EPZ firms, strongly dominated by the textile sector.

Although unit labour costs rose in the EPZs in both 2002 and 2010, the situations appear differently depending on the socio-professional category. In 2002, the increase of cost per unit is observed at the same time among executives (14.8%), and among employees and workers (12.9%). However, in 2010, only employees and workers have benefited from the increase (11.2%) since the unit cost of executives shrank by 21.3% in 2010.

Table 3 : The reduction in unit costs (hourly wage in 2010 prices) in response to crisis

Industry Type	2001 (a)	2002 (b)	Variation 2002-2001 (%)		2006 (a)	2010 (b)	Variation 2010-2006 (%)
Agriculture	435	339	-22,0%		602	382	-37%
Food industry	580	630	+8,6%		574	515	-10%
Other Industry	922	834	-9,5%		761	716	-6%
Other service	865	845	-2,2%		725	642	-11%
Btp	881	731	-17,0%		820	910	+11%
Chemistry	945	1182	+25,0%		1 395	878	-37%
Commerce	685	619	-9,6%		610	537	-12%
Clothing and textiles	558	556	-0,4%		531	569	+7%
Function	1443	1369	-5,2%		1 328	1 402	+6%
Transport	972	1015	+4,5%		922	775	-16%
Total	784	767	-2,2%		715	659	-8%

Sources : INSTAT DSM, MADIO, IRD DIAL. Enquêtes emploi : EE2001 EE2002 EE2006 EE2010. Our own calculations.

At this stage of the analysis, we can say that when facing political crises that have slowed economic activity, different firms have responded differently. Some have adjusted both salary and working hours, while other firms, for instance in the EPZs, have adjusted only their workforce. These behaviours can be explained, amongst others, by the intensity of the effect of the crisis on firms.

The total income distributed by each sector to all of these employees gives another indication of the effect of these crises. In 2002, the overall income distribution in the agglomeration of Antananarivo fell by 6% in real terms. By sector of activity, income distributed by firms of the EPZ fell sharply (-60%). Those in formal

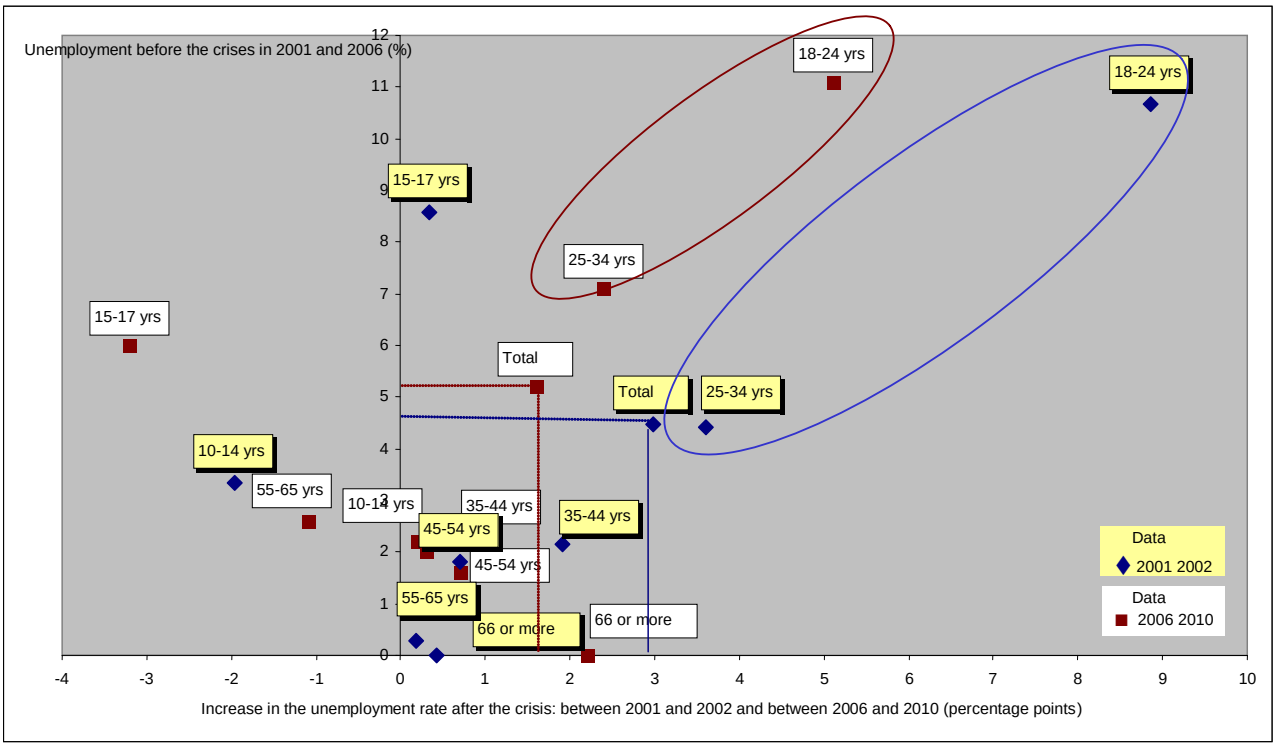
private companies outside the EPZ and public sector declined, but only slightly (-3% and -1%). However, income in the informal sector had stagnated in 2002.

Between 2006 and 2010, income in the agglomeration of Antananarivo grew by 21% in real terms. This increase in income is explained by the increase of income paid in the public sector (34%) and especially that of the informal sector (56%). As in 2002, the income distributed by firms in EPZs had fallen in real terms (-26%).

These figures appear to reinforce the idea that jobs in EPZ firms have suffered the most from the effects of the 2002 and 2009 crises. In 2010 several EPZ firms were affected by the suspension of Madagascar in the AGOA. Figures on exports reflect this reduced activity: a 70% decline in 2002, 22% in 2009 and 11% in 2010 (Central Bank, 2011).

While overall employment did not decline in 2010, some industries did cut jobs. Between 2006 and 2010 the unemployment rate rose by 1.4 percentage points and the number of unemployed rose from 34,800 to 54,000. The increase in the number of the unemployed led to a fall in the average duration of unemployment from 23.1 months to 11.4 months. In 2002 the response was similar – the unemployment rate increased from 4.5% to 7.5%.

Figure 3 : Unemployment rate in 2001 (resp. in 2006) et increase of unemployment rate (in percentage points) between 2001 and 2002 (resp. between 2006 and 2010), par age group



Sources : INSTAT DSM, MADIO, IRD DIAL. Enquêtes emploi : EE2001 EE2002 EE2006 EE2010. Our own calculations. Mode de lecture : le taux de chômage des 18-24 ans s'élève à 11,1% en 2006 et a augmenté de 5,1 points entre 2006 et 2010.Par contre, le taux de chômage des 55-65 ans s'élève à 2,6% et a baissé de -1,1 points entre 2006 et 2010.

In Antananarivo the unemployed consist primarily of young people aged 18-34 and the crises exacerbated this. This age group constituted 91% of the 19,200 newly unemployed in 2010, and 81% of the newly unemployed in 2002.

Mobility and transitions

The data in the previous section indicates that the crisis impacted more severely on certain groups – women, the youth, the lower-skilled, and those working for firms in the EPZ. To analyse this further we examine trajectories of individuals from 2000 to 2001 and 2002, as well as from 2008 to 2009, and 2010 using retrospective data. For each individual, we know their employment status at the various years with at least two distinct states: employed or broadly unemployment[1]. We can further distinguish employed persons according to informal employment, public employment, or employed formally by private firms inside or outside the EPZ.

The use of retrospective data on the trajectories confirms job loss between 2001 and 2002 (already observed during the dynamic analysis in the previous chapter). Of the employed in 2001, 9.4% are unemployed in 2002 compared to 2.9% of the 2000 employed in 2001.

Table 4: Transition matrices 2000-2001 and 2001 2002 : frequency and row percent (%)

Status 2001 / Status 2000	**Unemployed ; Inactive[1]**	Employed	Unemployed	**Total**
Unemployed ; inactive	160700 *(91,3%)*	15200 *(8,7%)*	0 *(0%)*	175900 *(100,0%)*
Employed	14500 *(2,9%)*	490800 *(97,1%)*	0 *(0%)*	505300 *(100,0%)*
Unemployed	0 *(0%)*	21600 *(71,1%)*	8700 *(28,9%)*	30400 *(100,0%)*
Total	175200 *(24,6%)*	527600 *(74,1%)*	8800 *(1,2%)*	711600 *(100,0%)*

2002 / 2001	**Unemployed ; Inactive[1]**	Employed	**Total**
Unemployed ; inactive	158300 *(90,3%)*	16900 *(9,7%)*	175200 *(100,0%)*
Employed	49700 *(9,4%)*	477900 *(90,6%)*	527600 *(100,0%)*
Unemployed	4200 *(48,2%)*	4600 *(51,8%)*	8800 *(100,0%)*
Total	212200 *(29,8%)*	499400 *(70,2%)*	711600 *(100,0%)*

Sources : INSTAT DSM, MADIO, IRD DIAL. Enquêtes emploi : EE2002 Nos propres calculs.

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Similarly, the approach taken here identifies changes in the labour market before (2008), at the beginning (2009) and after a year of crisis (2010), which the 2006 to 2010 dynamic approach investigated earlier.

1 It is not always possible to differentiate between unemployment and non-economically active for the years 2008 and 2009, which is why we combine them in a single category called "broadly unemployed"

Between 2009 and 2010 there was more mobility between states than over the period 2008-2009. In particular, there were proportionally more job losses in 2009-2010 (6.6%) than in 2008-2009 (4.0%).

Table 5 : Transition matrices 2008-2009 and 2009 2010 : frequency and row percent (%)

Status 2009 / Status 2008	Unemployed ; inactive*	Employed	Total		2010 / 2009	Unemployed ; inactive*	Employed	Total
Unemployed ; inactive	216800 *(90,2%)*	23500 *(9,8%)*	240300 *(100,0%)*		Unemployed ; inactive	219000 *(89,3%)*	26300 *(10,7%)*	245300 *(100,0%)*
Employed	28500 *(4,0%)*	681500 *(96,0%)*	710000 *(100,0%)*		Employed	47000 *(6,6%)*	670300 *(93,5%)*	717300 *(100,0%)*
Unemployed	0 *(0,0%)*	12300 *(100,0%)*	12300 *(100,0%)*		Unemployed			
Total	245300 *(25,5%)*	717300 *(74,5%)*	962600 *(100,0%)*		**Total**	266000 *(27,6%)*	696600 *(72,4%)*	962600 *(100,0%)*

Sources : INSTAT DSM, MADIO, IRD DIAL. Enquêtes emploi : EE2010. Our own calculations.

*Il n'est pas toujours possible de distinguer les chômeurs des autres inactifs pour les années 2008 et 2009, raison pour laquelle on les mets dans une seule catégorie. Pour le statut 2008, 1,3% de la population n'ont pas de statut (classé ici dans la catégorie Inconnu) car il est impossible de définir leur statut d'activité en 2008 avec les informations dont on dispose.

Table 6 shows that the contribution to job loss is significantly higher for women than for men. Almost two thirds of the newly unemployed were women in 2002, while women constituted 86% of the newly unemployed in 2010. The less skilled workers, specifically individuals with low levels of education, lost jobs more frequently than others after each crisis. Indeed, in 2002, 30.8% and 49.4% of the jobs lost were individuals with primary or college level of schooling respectively. These two groups experienced similar job losses in 2010, with 51.7% and 44.0% respectively. However, workers at the university level are almost unaffected and even experienced net job creation in 2010.

All age groups, from young to old, suffered from the loss of employment. It seems that the most important loss concerns individuals aged 18 to 34. This group lost a total of 19,000 jobs or a contribution of 57.9% (25.6% and 32.3%) to the net change in employment from 2002. In 2010, the 25 to 44 age group are the most affected with a contribution of 62.3% (22.7% and 39.6%).

Table 6 : Decomposition of job loss : frequency and contribution according to socio-demographic characteristics of employed

Characteristics of people employed	2 001 (a)	2 002 (b)	Net Variation (b-a)	**Contribution**		2 009 (a)	2 010 (b)	Net Variation (b-a)	**Contribution**
Total	527600	494800	-32800	100%		717 300	696 600	-20700	100%
Gender									
Male	277000	265000	-12000	36,6%		362 300	359 400	-2900	14,0%
Female	250600	229800	-20800	63,4%		355 000	337 200	-17800	86,0%

Education									
Primary	184400	174300	-10100	30,8%		250 000	239 300	-10700	51,7%
College	168300	152100	-16200	49,4%		213 300	204 200	-9100	44,0%
High School	107700	101600	-6100	18,6%		160 500	158 500	-2000	9,7%
University	67200	66800	-400	1,2%		93 500	94 600	1100	- 5,3%
Age classes									
18-24 years	89600	81200	-8400	25,6%		126 100	124 200	-1900	9,2%
25-34 years	149200	138600	-10600	32,3%		197 700	193 000	-4700	22,7%
35-44 years	145700	138900	-6900	21,0%		186 500	178 300	-8200	39,6%
45-54 years	109300	106300	-3000	9,2%		145 800	143 200	-2600	12,6%
55-65 years	33800	29900	-3900	11,9%		61 200	57 900	-3300	15,9%

Sources : INSTAT DSM, MADIO, IRD DIAL. Enquêtes emploi : EE2002 EE2010. Our own calculations.

Job losses were highest among the employees and workers category. They lost 41,100 jobs in 2002 and 28,000 in 2010; this accounts for 125.3% in 2002 and 135.3% in 2010 in the total variation of employment. Compared with that devastation, loss of employment for executives is insignificant. These results confirm the previous analysis that concluded that less skilled workers bear the brunt of these crises. Self-employment grew in both 2002 and 2010, 9800 and 8600 new jobs respectively. This may be due to some people who were previous in wage employment entering this sector.

Analysis by sector (table 7) reveals that firms in EPZs experienced most job losses over the period 2009-2010 (21,000 jobs lost in all) and between 2001 and 2002 (33,900 jobs lost). These are followed by the formal private sector firms outside the EPZ (3,600 job losses in 2010 and 8,400 in 2002). Since employees of EPZ firms are mostly women with only primary school or college education, the results of the analysis by sector confirm the earlier results.

Table 2 : Decomposition of job loss : frequency and contribution according to activity sector of employed

Characteristics of people employed	2 001 (a)	2 002 (b)	Net Variation (b-a)	Contribution		2 009 (a)	2 010 (b)	Net Variation (b-a)	Contribution
Total	527600	494800	-32800	100%		717 300	696 600	-20700	100,0%
Status									
Managerial staff	36000	34500	-1500	4,6%		49 800	48 500	-1300	6,3%
Employees and workers	252700	211600	-41100	125,3%		291 600	263 600	-28000	135,3%
Independent	238900	248700	9800	-29,9%		375 900	384 500	8600	- 41,5%
Sector									
Informal	275700	287100	11300	-34,5%		434 600	439 300	4700	-22,7%
EPZ	55300	21400	-33900	+103,4%		56 600	35 600	-21000	101,4%
Formal private non-EPZ	135100	126700	-8400	+25,6%		167 500	163 900	-3600	17,4%
Public	61500	59700	-1800	+5,5%		58 600	57 700	-900	4,3%

Sources : INSTAT DSM, MADIO, IRD DIAL. Enquêtes emploi : EE2002 EE2010. Our own calculations.

The inter-sectoral transition matrix (table 8) illustrates transitions by the 18 to 65 age groups between 2001 and 2002, and between 2009 and 2010. We consider five sectors (informal, inside of the free zone, outside of the free zone, the formal private and public) and the inactive / unemployed.

Table 3 : Mobility between sectors in 2001 2002 and in 2009 et 2010

(before and after each crisis)

	2001 – 2002						2009 – 2010					
After / Before	**Inactive**	**Informal sector**	**Private sector (without EPZ)**	**Public**	**Export processing zone**	**Total**	**Inactive**	**Informal sector**	**Private sector (outside EPZ)**	**Public**	**Export processing zone**	**Total**
Inactive	**158300** ***(90,3%)***	9600 *(5,5%)*	6000 *(3,4%)*	1000 *(0,6%)*	300 *(0,2%)*	175300 *(100%)*	**219000 (89,3%)**	14300 (5,8%)	8400 (3,4%)	2000 (0,8%)	1600 (0,7%)	245300 (100%)
Informal sector	11900 *(4,3%)*	**259000** ***(93,9%)***	3400 *(1,3%)*	800 *(0,3%)*	500 *(0,2%)*	275700 *(100%)*	19000 (4,4%)	**409000 (94,1%)**	4700 (1,1%)	1900 (0,4%)	0 (0%)	434600 (100%)
Private sector (outside EPZ)	13000 *(9,6%)*	6400 *(4,7%)*	**115000** ***(85,1%)***	500 *(0,4%)*	200 *(0,2%)*	135100 *(100%)*	9300 (5,6%)	7400 (4,4%)	**148300 (88,5%)**	1900 (1,1%)	600 (0,4%)	167500 (100%)
Public	3700 *(6,0%)*	500 *(0,8%)*	400 *(0,6%)*	**57000** ***(92,7%)***	0 *(0%)*	61500 *(100%)*	5300 (9,0%)	800 (1,4%)	600 (1,0%)	**51900 (88,6%)**	0 (0%)	58600 (100%)
Export Processing Zone	21000 *(38,0%)*	11500 *(20,9%)*	2000 *(3,5%)*	500 *(0,9%)*	**20300** ***(36,7%)***	55300 *(100%)*	13400 (23,7%)	7800 (13,8%)	1900 (3,4%)	0 (0%)	**33500 (59,2%)**	56600 (100%)
Total	**208000** ***(29,6%)***	**287100** ***(40,8%)***	**126700** ***(18,0%)***	**59700** ***(8,5%)***	**21400** ***(3,1%)***	**702900** ***(100%)***	**266000 (27,6%)**	**439300 (45,6%)**	**163900 (17,0%)**	**57700 (6,0%)**	**35600 (3,7%)**	**962600 (100%)**

Sources : INSTAT DSM, MADIO, IRD DIAL. Enquêtes emploi : EE2002 EE2010. Nos propres calculs.

The diagonal elements indicate no transitions. These are above 80% in all categories, in both years, except for those employed in the EPZ. In 2002 only 37% of those employed in the EPZ remained employed in the same sector the following year. Most of those transitioning out of the EPZ ended up unemployed (almost 40%) or in the informal sector (21%). This pattern is also present for 2009/10 transitions.

Table 4 : Reasons for job loss between 2001-2002 and 2009-2010

	2001 2002				2009 2010			
After crisis / Sector Before crisis	**Job loss involuntary**		**Job loss voluntary**	**Total**	**Job loss involuntary**		**Job loss voluntary**	**Total**
	Retirement	**Dismissal, company closure, etc..**			**Retirement**	**Dismissal, company closure, etc..**		
Informal	4,3%	69,0%	26,7%	100%	11,2%	36,2%	52,6%	100%
Private formal sector	13,0%	68,6%	18,4%	100%	1,0%	50,8%	48,2%	100%
Public	*69,7%*	23,5%	6,8%	100%	47,3%	14,7%	38,0%	100%
EPZ	*1,7%*	95,7%	2,6%	100%	2,6%	40,1%	57,3%	100%
Total	**10,3%**	**76,8%**	**12,9%**	**100%**	**10,8%**	37,8%	51,4%	**100%**

Sources : INSTAT DSM, MADIO, IRD DIAL. Enquêtes emploi : EE2002 EE2010. Our own calculations.

In 2001/2 the transition out of EPZ employment was almost all involuntary. However, for the 2009/10 period 57% of job losses in the EPZ were voluntary compared to 40% for involuntary.

This approach to sectoral mobility masks some information since it does not show within-sector churning. The table below shows that for those employed in the EPZ in 2001 and 2009, a relatively small proportion found another job, either in another sector or within the same sector.

Table10 : Mobility of employed before and after crisis

	2001 2002					2009 2010				
Status after crisis / Sector before crisis	Keep the job in 2002	Who changed job in 2002		Lose job	Total	Keep the job in 2010	Who changed job in 2010		Lose job	Total
		In the same sector	In another sector				In the same sector	In another sector		
Informal sector	245800 *(89,2%)*	**13200 *(4,8%)***	4800 *(1,7%)*	11900 *(4,3%)*	275700 *(100,0%)*	389800 *(89,7%)*	19100 *(4,4%)*	6600 *(1,5%)*	19000 *(4,4%)*	434600 *(100,0%)*
Private formal sector	109900 *(81,3%)*	5800 *(4,3%)*	**6400 *(4,7%)***	1300 *(9,6%)*	135100 *(100,0%)*	141800 *(84,7%)*	9000 *(5,4%)*	7400 *(4,4%)*	9300 *(5,6%)*	167500 *(100,0%)*
Public	56100 *(91,3%)*	1200 *(2,0%)*	500 *(0,8%)*	**3700 *(6,0%)***	61500 *(100,0%)*	51400 *(87,7%)*	1200 *(2,0%)*	800 *(1,3%)*	5200 *(9,0%)*	58600 *(100,0%)*
EPZ	18100 *(32,7%)*	4700 *(8,4%)*	11500 *(20,9%)*	21000 *(38,0%)*	55300 (100,0%)	33300 *(58,9%)*	2000 *(3,6%)*	7900 *(13,9%)*	13400 *(23,6%)*	56600 *(100,0%)*
Total	**429900 *(81,5%)***	**24800 *(4,7%)***	**23200 *(4,4%)***	**49700 *(9,4%)***	**527600 *(100,0%)***	**616400 *(85,9%)***	**31300 *(4,4%)***	**22600 *(3,2%)***	**47000 *(7,0%)***	**717300 *(100,0%)***

Sources : INSTAT DSM, MADIO, IRD DIAL. Enquêtes emploi : EE2002 EE2010. Our own calculations.

These results show that employment in the EPZ was most affected by the crises. Given that these types of enterprises are important sources of employment for women, and given the general vulnerability of women in the labour market (Pnud, 2003), it is useful to disaggregate mobility by gender (Table 11). This shows that in general, mobility is lower in 2010 than in 2002, for both women and men but that women have lower mobility compared to men. Job insecurity for both genders is the highest in the EPZs. In 2002 neither of the genders were spared: one third were able to keep their jobs, nearly a third became inactive and the other third were able to find another job. However, in 2010, it seems that women are more severely affected by the crisis than men as 70% of the men were able to keep their jobs compared to only 50% of the women. At the same time, 28.4% of women working in the free zone became unemployed in 2010 compared to 13.4% of men.

Table 5 : Mobility of employed before and after crisis: by gender

Status after crisis / Sector before crisis	2001 2002					2009 2010				
	Keep the job in 2002	Who changed job in 2002		Lose job	Total	Keep the job in 2010	Who changed job in 2010		Lose job	Total
		In the same sector	In another sector				In the same sector	In another sector		
MEN										
Informal sector	*118300 (90,5%)*	***5700 (4,4%)***	*3200 (2,4%)*	*3500 (2,7%)*	*130700 (100,0%)*	*190400 (92,4%)*	*7200 (3,5%)*	*4700 (2,3%)*	*3800 (1,8%)*	*206100 (100,0%)*
Private formal sector	*72200 (83,0%)*	*4000 (4,6%)*	***4400 (5,1%)***	*6400 (7,4%)*	*87000 (100,0%)*	*88300 (87,3%)*	*4800 (4,7%)*	*4700 (4,6%)*	*3300 (3,3%)*	*101100 (100,0%)*
Public	*37400 (89,5%)*	*1200 (2,9%)*	*300 (0,7%)*	***2900 (6,9%)***	*41800 (100,0%)*	*32300 (87,1%)*	*900 (2,4%)*	*300 (0,8%)*	*3600 (9,7%)*	*37100 (100,0%)*
EPZ	*5500 (30,9%)*	*1800 (10,3%)*	*4200 (24,0%)*	*6100 (34,9%)*	17500 (100,0%)	*12700 (70,9%)*	*1500 (8,4%)*	*1300 (7,3%)*	*2400 (13,4%)*	*17900 (100,0%)*
Total	***233300 (84,2%)***	***12700 (4,6%)***	***12100 (4,4%)***	***18900 (6,8%)***	***277000 (100,0%)***	***323700 (89,4%)***	***14400 (4,0%)***	***11000 (3,0%)***	***13100 (3,6%)***	***362200 (100,0%)***
WOMEN										
Informal sector	*127500 (87,9%)*	***7500 (5,2%)***	*1600 (1,1%)*	*8400 (5,8%)*	*145000 (100,0%)*	*199300 (87,2%)*	*12000 (5,3%)*	*1900 (0,8%)*	*15300 (6,7%)*	*228500 (100,0%)*
Private formal sector	*37700 (78,4%)*	*1800 (3,7%)*	***1900 (4,0%)***	*6700 (13,9%)*	*48100 (100,0%)*	*53500 (80,6%)*	*4200 (6,3%)*	*2700 (4,1%)*	*6000 (9,0%)*	*66400 (100,0%)*
Public	*18600 (94,9%)*	*0 (0%)*	*200 (1,0%)*	***800 (4,1%)***	*19600 (100,0%)*	*19200 (89,3%)*	*300 (1,4%)*	*400 (1,9%)*	*1600 (7,4%)*	*21500 (100,0%)*
EPZ	*12800 (33,8%)*	*2800 (7,4%)*	*7400 (19,5%)*	*14900 (39,3%)*	37900 (100,0%)	*20700 (53,5%)*	*500 (1,3%)*	*6500 (16,8%)*	*11000 (28,4%)*	*38700 (100,0%)*
Total	***196600 (78,5%)***	***12100 (4,8%)***	***11100 (4,4%)***	***30800 (12,3%)***	***250600 (100,0%)***	***292700 (82,4%)***	***17000 (4,8%)***	***11500 (3,2%)***	***33900 (9,5%)***	***355000 (100,0%)***

Sources : INSTAT DSM, MADIO, IRD DIAL. Enquêtes emploi : EE2002 EE2010. Our own calculations.

In summation, this section analyses the labour market in terms of trajectory of the labour force comprised of 18 to 65 year old individuals, during the 2002 and 2009 crises based on retrospective individual information. It also examines mobility between sectors, in particular the mobility of the formal / informal sector. The analysis of entry and exit into the labour market shows greater mobility and job loss in times of crisis, the loss is greater in 2002 than in 2010. The proportion of workers who become inactive after the 2002 crisis is greater than that of 2009 (9.4% and 6.6% respectively). The 2002 crisis resulted in job losses estimated to be around 32,800 for Antananarivo against the 20,700 jobs lost in 2010.

Women, who are often victims of gender discrimination in the labour market, seem even more vulnerable in times of crisis than men. Contribution to job loss is significantly higher for women than for men. All age groups, from young to old, suffered from the loss of jobs, but it seems that the loss was the highest among 18 to 34 year olds in 2002.

Low-skilled workers, specifically individuals with low education, lost the most jobs after each crisis. In agreement with this result, the analysis by socio-professional category shows the strong contribution of employees and workers in job loss.

Firms in EPZs experienced the most job losses over the period 2009-2010 and between 2001 and 2002. The informal sector is the only one that experienced a net job creation after both crises.

While around 80% of workers were able to keep their exact same jobs, only 40% of the workers in the EPZs remained in the same job. Despite this apparent stability, mobility of the labour force is not negligible in 2002 and 2010, particularly in terms of numbers, between 2001 and 2002, the situation affects 93,200

individuals. The movement of the population is slightly more intense between 2009 and 2010 where 100,900 people have changed sectors.

Individuals that are employed in EPZ are the first to feel a strong inter-sectoral mobility by working in the informal sector or becoming economically inactive / unemployed. The mobility rate is also high in the formal private sector outside the EPZ but very far from that of inside the EPZ. Finally, the informal sector, and to a lesser extent the public sector are the ones that have the least movement. These two sectors seem to be closed; informal workers are rarely in the formal sector (private or public), and public sector workers tend to remain in the public sector.

When considering the gender disparity, the mobility table by gender shows that women are more mobile than men, as women were more likely to lose their jobs and had to move. This overall result is also valid in the informal sector, into the private formal sector (excluding free zone) and in the EPZ. However, the difference is not very important except for in the free zone in 2010.

Econometric estimates

In order to investigate the individual characteristics associated with labour force transitions in more detail we estimate a number of econometric models. Initially, we consider individuals employed before each crisis and then estimate the probability of losing or changing jobs. In a second step, we consider individuals who were unemployed before each crisis. Here we test the probability of finding a job in times of crisis knowing that one was unemployed the year before. These conditional probabilities are of analytical interest because they indicate whether certain features induce a propensity to lose or to find jobs.

First, we chose to model the transitions between the situation before the crisis and the situation after the crisis of employed persons. The dependent variable corresponds to the three states of employment: keep one's job, find another job and not find a job. In other words, individuals who could not keep their jobs are split into two categories: those who were able to find another job and those who have become inactive. The estimated model is a multinomial logit, so that the same variable may have a different impact depending on the type of transition. In this model, the reference category is the same: remaining in the same job before and after the crisis.

Table 6 : Choice of the models

After crisis / Before	Employed		Unemployed, inactive*
	Logit multinomial		
Employed before the crisis	Staying employed after the crisis without changing jobs Reference group	Finding employment after the crisis with or without change of sector	Lose one's job

The estimated probability of becoming unemployed in 2002 and 2010 are presented in Table 13.

Table 13 : Marginal effects (multinomial logit) : Probability of becoming inactive i.e. to lose a job

(Reference group: keep the same job between t_0 and t_1)

Year t	2001	2002	2006	2010	2010
Gender : Male	0,001	-0,013*	-0,022***	-0,006	-0,006
Ref : Female					
Education Level:					
Uneducated and Primary	-0,019***	-0,003	-0,016**	-0,01**	-0,01**
College	-0,005	0,009	-0,01	-0,009*	-0,01**
High School	-0,017***	0,016*	-0,008	-0,011**	-0,011**
Ref : University					
Age					
18-24 years	-0,015**	-0,024***	-0,009	-0,011**	-0,009*
25-34 years	-0,029***	-0,042***	-0,028***	-0,019***	-0,02***
35- 44 years	-0,046***	-0,05***	-0,036***	-0,034***	-0,034***
45-54 years	-0,033***	-0,043***	-0,034***	-0,026***	-0,026***
Ref : 55- 65 years.					
Marital Status					
Married	0,004	0,007	0,004	-0,027***	-0,028***
Widowed or Divorced	0,01	0,016	-0,004	-0,008	-0,008
Ref : Single					
Status in household:					
Household head	-0,03***	-0,03***	-0,019**	-0,007	-0,008
Joint	0,023*	-0,002	0,006	0,021*	0,023**
Ref : Other					
Household size					
1-2	0,006	-0,002	0,028***	0,01	0,009
2-4	-0,005	-0,011**	0,004	-0,006*	-0,005
REf : 5 or more					
Originally from Antananarivo (yes, no)	-0,019***	0,007	-0,008	-0,003	-0,003
CSP int_0					
Cadre	0,011	0,022	0,018	0,026*	0,038**
Employee or worker	0,032***	0,036***	0,022***	0,035***	0,042***
Ref : Self-employed					
Years of experience					
0 - 2 years	0,023***	0,015**	0,024***	0,015***	0,015***
3 - 5 years	-0,002	-0,01*	-0,003	-0,006	-0,007
Ref : 6 years or more					
Sector in t_0					
Informal	-0,006	0,001	0,004	-0,011	-0,013*
EPZ	-0,003	0,109***	0,021	0,029**	0,02*
Formal Private excluding EPZ	0,004	0,027**	0,005	-0,001	-0,002
Ref : Public					
Undergo pressure on the labour market	0,044***	0,105***	0,061***	0,059***	0,052***
Affected by the crisis					0,024***
No. of observations total	5198	5114	5081	5232	5232
Pseudo R^2	0.1125	0.2226	0.1342	0.1714	0.2025
Log likelihood	-2592.2998	-2587.2609	-2265.5989	-2313.8931	-2226.9254

Sources : INSTAT DSM, MADIO, IRD DIAL. Enquêtes emploi : EE2001 EE2002 EE2006 EE2010. Our own calculations.

Gender has no effect on job loss in 2010 (and 2001), which is not the case in 2002 (and 2006) where men have 1.3% less likelihood of losing their jobs than women. Household heads (most of whom are men) seemed less vulnerable in 2001, 2002 and 2006 than other household members while spouses (usually women) are at higher risk of job loss in 2010%. In 2010, job loss is positively associated with qualifications. The estimation results indicate that age is associated with losing a job, as older people are more vulnerable.

Both in 2002 and in 2010 outside of crisis periods (2001 and 2006), seniors still have higher probability than other age groups of losing their jobs. Lastly, migration has no effect on the probability of job loss, except in 2001.

In terms of job characteristics; occupational status and work experience are key to the transition into employment during crises or outside of crises. Employees and workers always have more risk of losing their jobs than the self-employed. According to the marginal effects, this risk of job loss is higher in times of crisis.

In 2010, the risk expands to executives. For the year 2010, executives, and employees and workers have a higher probability than the self-employed of losing their jobs. In addition, individuals with low work experience are the people most threatened by job losses.

The estimation results show how susceptible firms in EPZ are to shock induced by crises. Indeed, only in 2002 and 2010, the effect of the institutional sector is significant. Employees of EPZ are more likely to lose their jobs in 2002 and 2010. The staff of the formal private sector (excluding EPZ) are in the same situation in 2002, for whom the probability of job loss is 2.7% more than for the public sector staff.

Finally, people claiming to have been affected by the crisis in 2010 are more at risk of job loss than the others. This confirms the fact that the socio-political crisis has really affected the labour market.

In order to elucidate the strange influence of human capital on job loss, we run the model again on actives in the formal sector which includes the public sector, the EPZ and the formal private sector outside the EPZ.[2] The results are presented in Table 14 below.

The main results are as follows. Men are better protected against job loss than women in the formal sector. The level of education does not affect the loss of formal employment in 2010. In contrast, moderately skilled people (college and high school level) are most at risk of job loss in 2002 than people with university level education.

Moreover, the estimates confirm that workers are more vulnerable than the self-employed in 2002 and 2010. Finally, experience has no influence on the loss of employment in the formal sector, and those affected by the crisis are more likely to become inactive. The econometric results confirm that the socio-political crisis has affected the formal sector workers in Antananarivo.

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2 The informal sector is not discussed here because the next chapter will be devoted entirely to the determinants of informal sector

Table 14 : Marginal effects (logit multinomial) : Probability to lose a job for employed in formal sector ***(Reference group: keep the same job between t_0 and t_1)***

Year t	2001	2002	2006	2010	2010
	9	9	9	9	9
Gender : Male Ref : Female	0	-0,043***	-0,038***	-0,027**	-0,019*
Education Level: Uneducated and Primary College High School Ref : University	 -0,032*** -0,012 -0,022**	 0,021 0,046** 0,052***	 0,006 0,002 -0,008	 0,011 0,003 -0,003	 0,004 -0,005 -0,005
Age 18-24 years 25-34 years 35- 44 years 45-54 years Ref : 55- 65 years.	 -0,036*** -0,061*** -0,084*** -0,061***	 -0,023 -0,052*** -0,09*** -0,087***	 -0,017 -0,038*** -0,049*** -0,055***	 -0,031*** -0,041*** -0,075*** -0,057***	 -0,031*** -0,047*** -0,075*** -0,053***
Marital Status Married Widowed or Divorced Ref : Single	 0,015 0,038	 0,021 0,038	 0,011 -0,022	 -0,057** -0,026**	 -0,065*** -0,026***
Status in household: Household head Joint Ref : Other	 -0,045*** 0,008	 -0,064*** -0,021	 -0,039*** -0,019	 -0,013 0,019	 -0,012 0,029
Household size 1-2 2-4 Ref : 5 or more	 0,004 -0,006	 -0,003 -0,017*	 0,044** 0,004	 0,024 -0,009	 0,02 -0,004
Originally from Antananarivo (yes, no)	-0,031***	0,017*	-0,016*	-0,013	-0,011
CSP in t_0 Cadre Employee or worker Ref : Self-employed	 0,007 0,037***	 0,016 0,044***	 0,032 0,029**	 0,038 0,045***	 0,058* 0,05***
Years of experience 0 - 2 years 3 - 5 years Ref : 6 years or more	 0,041*** 0,004	 0,024 -0,02*	 0,026** -0,009	 0,02 -0,013	 0,019 -0,011
Undergo pressure on the labour market	0,045***	0,188***	0,085***	0,12***	0,089***
Affected by the crisis			0	0	0,103***
No. of observations total	2599	2492	2379	2300	2300
Pseudo R^2	0.1139	0.2366	0.1754	0.1687	0.2062
Log likelihood	-1408.086	-1534.5145	-1120.8786	-1314.6754	-1255.4236

Sources : INSTAT DSM, MADIO, IRD DIAL. Enquêtes emploi : EE2002 EE2010. Our own calculations.

Transition matrices have shown how the employees of enterprises in the EPZ have been affected by the crisis. Our first econometric estimates have confirmed this vulnerability to the crisis. What are the factors affecting the loss of employment for staff of the free zone?

Gender is not associated with job loss in the EPZ. Across all the years, except 2002 (the first crisis year considered), education level is not related to exit from a job, however in 2002 those people with low qualifications were less at risk of job loss than the people at the university level. In 2001, 2006, and 2010, age affects job loss; results show the vulnerability of seniors, who have a higher probability than other age groups of losing their jobs. But, it seems this is not the case in 2002 where age has no effect on job loss.

Table 15 : Marginal effects (logit multinomial) : Probability to lose a job for employed in EPZ

(Reference group : keep the same job between t_0 and t_1)

Year t	2001	2002	2006	2010	2010
Gender : Male Ref : Female	0,024	-0,042	-0,019	-0,008	0,014
Education Level: Uneducated and Primary College Ref : High school or University	 -0,05 0,007	 -0,181*** -0,123**	 0,097 0,043	 0,007 -0,029	 -0,012 -0,051
Age 18-24 years 25-34 years 35- 44 years Ref : 45 - 65 years.	 -0,061*** -0,096** -0,09***	 0,14 0,052 -0,156	 -0,101*** -0,107* -0,119***	 -0,155*** -0,214*** -0,207***	 -0,145 -0,15 -0,18
Marital Status Married Widowed or Divorced Ref : Single	 0,044 0,14	 -0,031 -0,038	 0,012 -0,017	 -0,062 -0,067	 -0,066 -0,064
Status in household: Household head Joint Ref : Other	 -0,081 0,021	 -0,206*** 0,07	 -0,127*** -0,029	 -0,141*** -0,049	 -0,129** -0,016
Household size 1-2 2-4 REf : 5 or more	 -0,036 -0,008	 0,021 -0,071	 0,009 -0,023	 0,008 -0,01	 0,013 0,007
Originally from Antananarivo (yes, no)	-0,067	0,018	-0,003	0,059	0,077**
CSP in t_0 Employee or worker Ref : Cadre	 0,043	 0,119	 -0,114	 0,088*	 0,055
Years of experience 0 - 2 years 3 - 5 years Ref : 6 years or more	 0,057 0,03	 -0,035 -0,135*	 0,081 0,019	 0,069 0,024	 0,08 0,031
Undergo pressure on the labour market	0,061	0,446***	0,206***	0,28***	0,228***
Affected by the crisis					0,161***
No. of observations total	483	505	492	417	417
Pseudo R^2	0.1470	0.2312	0.1941	0.2146	0.2805
Log likelihood	-306.16935	-493.35135	-359.36072	-338.59479	-310.17854

Sources : INSTAT DSM, MADIO, IRD DIAL. Enquêtes emploi : EE2002 EE2010. Our own calculations.

Table 16 shows the estimation results for men and women separately. During the 2002 crisis, the educational level is not associated with the probability of job loss for either men or women. In 2010, the effect was marginally significant for both sexes. Women at the primary level have slightly less risk of job loss than women at the university level (1.8% probability less). Similarly, men who reached the high school level have slightly less chance of losing their jobs than men at university level (around 1% probability less).

Men (except in 2001) and women aged 55 to 65 are always more vulnerable than other age groups. These are still less likely to lose their jobs. The differences between the probabilities of job loss for different age groups are less important in men than in women. In other words, it seems that it is women aged 55 to 65 who are most vulnerable. Finally, it was during the 2002 crisis that the marginal effects are highest.

Marital status has different effects for both sexes. For men, being a couple is significant only for 2010, while for women it is so for the years 2001, 2002 and 2006. Also, being a couple is positively associated with the risk of job loss for women, however, for men, it is negative. Finally, for both men and women, being a household head is associated with a lower risk of job loss in 2002 and migration has little impact on job loss especially in times of crisis.

Regarding the professional category, it is confirmed that the male and female employees with low education are more vulnerable to job loss than the self employed during or outside times of crisis (2001 and 2006). For men only 2001 is an exception. This probability of job loss is more important in times of crisis (2002 and 2010) and also greater for women than for men. For the latter, men's vulnerability to job loss extends to executives during times of crisis: 2002 and 2010. The risk of job loss is even greater among managers in times of crisis.

The effect of work experience is different but again significant for both sexes. Whatever the year, women with low work experience (0-2 years) appear more vulnerable to job loss, while men between 3 and 5 years of experience have less risk of job loss during crisis.

For the sector of activity, the results are not significant or they are only weakly significant outside the crisis periods: 2001 and 2006. This is not the case in 2002 and 2010 where the differences between sectors and between men and women appear. During these periods, men working in the EPZ appear more vulnerable to job loss than men working in the public sector in 2002, and to a lesser extent in 2010. In contrast, men in the informal sector are better protected against job loss in 2010. Conversely, for women, in the 2002 crisis the difference between the segments is most striking. Women working in the informal sector had a higher risk of job loss than women in the public sector in 2002. But surprisingly, in this year, the probability of job loss is lower in the EPZ and the public sector. During the 2010 crisis, the vulnerability of women working in the zone appears low.

Table16 : Marginal effects (multinomial logit) : Probability to lose a job by sex *(Reference group: keep the same job between t_0 and t_1)*

Année t	2001	2002	2006	2010	2010	2001	2002	2006	2010	2010
	Men					Women				
Education Level:										
Uneducated and Primary	-0,008	0,002	-0,008*	-0,003	-0,002	-0,029***	-0,008	-0,023	-0,018*	-0,019*
College	-0,002	0,012	-0,007	-0,004	-0,004	-0,008	0,011	-0,008	-0,015	-0,017*
High School	0	0,014	-0,004	-0,008*	-0,007	-0,037***	0,023	-0,01	-0,012	-0,013
Ref : University										
Age										
18-24 years	-0,019	-0,017**	-0,013***	-0,01**	-0,007	-0,051***	-0,067***	0,006	-0,013	-0,012
25-34 years	-0,027	-0,031***	-0,021***	-0,016***	-0,015***	-0,061***	-0,086***	-0,035**	-0,024***	-0,025***
35- 44 years	-0,03	-0,036***	-0,018***	-0,026***	-0,025***	#VALEUR!	-0,089***	-0,057***	-0,046***	-0,046***
45-54 years	-0,019	-0,033***	-0,015***	-0,015***	-0,014***	-0,061***	-0,077***	-0,058***	-0,04***	-0,04***
Ref : 55- 65 years.										
Marital Status										
Married	-0,02	0,002	-0,003	-0,022**	-0,02*	0,047***	0,033**	0,04**	-0,013	-0,014
Widowed or Divorced	0,003	0,001	-0,006	-0,008	-0,006	0,008	0,025	-0,011	-0,011	-0,012
Ref : Single										
Status in household:										
Household head	-0,027	-0,026**	-0,023**	-0,008	-0,01	-0,011	-0,031**	0,006	0,002	0,003
Joint						-0,004	-0,026	-0,012	0,013	0,015
Ref : Other										
Household size										
1-2	0,006	-0,006	0,028**	0,012	0,012	0	0,002	0,015	0,003	0,002
2-4	-0,005	-0,009*	0,007	-0,003	-0,002	-0,005	-0,013	-0,002	-0,01	-0,009
Ref : 5 or more										
Originally from Antananarivo (yes, no)	-0,013	0,007	-0,011**	-0,003	-0,005	-0,023**	0,009	0,002	-0,003	-0,001
CSP in t_0										
Cadre	0,027	0,06**	0,008	0,029	0,043*	0,005	-0,016	0,03	0,021	0,035
Employee or worker	0,036	0,034***	0,017***	0,023***	0,029***	0,037***	0,05***	0,031**	0,053***	0,061***
Ref : Self-employed										
Years of experience										
0 - 2 years	0,009	0,007	0,011*	0,006	0,005	0,041***	0,022*	0,04***	0,024**	0,024**
3 - 5 years	-0,002	-0,011*	-0,005	-0,009**	-0,009**	0,001	-0,009	-0,001	-0,004	-0,004
Ref : 6 years or more										
Sector in t_0										
Informal	-0,01	-0,01	-0,003	-0,011*	-0,014**	0,02	0,182***	0,03	-0,001	-0,001
EPZ	-0,005	0,062**	0,011	0,028*	0,018	0,025	-0,038***	0,064	0,049*	0,039
Formal Private excluding EPZ	-0,006	0,004	-0,002	-0,005	-0,006	0,048*	-0,041***	0,037	0,012	0,012
Ref : Public										
Undergo pressure on the labour market	0,028	0,056***	0,03***	0,024***	0,017***	0,067***	-0,044***	0,097***	0,109***	0,101***

Affected by the crisis					0,022***						0,027***
No. of observations total	2740	2685	2639	2668	2668		2458	2429	2442	2564	2564
Pseudo R^2	0.1251	0.2034	0.1455	0.1603	0.1998		0.1298	0.2566	0.1330	0.1970	0.2235
Log likelihood	-1285.311	-1255.545	-983.375	-1084.987	-1033.99		-1252.053	-1282.482	-1238.332	-1193.84	-1154.474

Sources : INSTAT DSM, MADIO, IRD DIAL. Enquêtes emploi : EE2002 EE2010. Our own calculations.

Finding another job

The estimated probabilities of finding a job in the same sector, or in a different sector in 2002 and 2010, conditional of being employed in 2001 and 2009 are presented in Table 17. In both cases, people claiming to have been affected by the crisis in 2010 have a lower probability of finding a job.

It seems that neither gender nor the level of education has an influence on the probability of finding employment in the same sector regardless of the year. However, in 2010, being the head of a household increases the probability of finding a job in the same sector by approximately 2%. Similarly, in 2010, the youngest (18 to 24) age category have a 10% to 15% higher probability of finding a job in the same sector compared to older people. Medium-skilled or low-skilled workers are most likely to remain in the same industry, as are people whose last job tenure varies from 0 to 2 years. These situations are valid not only for the 2002 and 2010 crises, but also outside of the crises in 2001 and 2006.

Regardless of the year (2001, 2002, 2006 or 2010), it appears that informal sector workers are more likely to stay in their own sector than the public sector workers. For workers in the EPZ firms, the estimation results show that they are more likely to stay in the same area than workers in the public sector in 2001, 2002 and 2006. Finally, the fact of working in the formal private outside of EPZs induces a greater probability of remaining in this sector in 2001 and 2002.

For the years 2001, 2006 and 2010, gender has no influence on whether or not people find a job in a sector other than that in which they have previously worked. Yet in 2002, we see that being a man increases the probability of finding a job in another sector. In contrast to finding a job in the same sector, the level of education is a key factor while age is not. Indeed, in 2002 and 2010 people at the primary level at most and individuals at the secondary first cycle level (or college) are more likely to find employment in another sector than people at university level.

The estimates indicate that workers with lower work experience are more likely to find jobs in another sector than people with higher experience, but this is most likely driven by switches in informal employment.

Finally, in 2002 and 2010, workers in the EPZ are more likely to work in another sector than the public sector employees: 17.4% more likely in 2002 and 5.8% more likely in 2010. Formal private sector workers (excluding EPZ) also have higher probabilities of working in another sector that the public sector employed in 2001, 2002 and 2010.

Table 7 : Marginal effects: probability to find a job in the same sector or to find a job in another sector. ***(Reference group: keep the same between job t_0 and t_1)***

year	2001	2002	2006	2010	2010	2001	2002	2006	2010	2010
	Find a job in the same sector as in t_0					Find a job in another sector as in t_0				
Gender : Male	0,002	0,011	-0,005	-0,007	-0,005	0,007	0,011**	0,005	0,002	0,001
Ref : Female										
Education Level:										
Uneducated and Primary	0,017	-0,002	0,011	0,011	0,008	0,011	0,018*	0,014	0,019**	0,014*
College	0,005	0,002	0	0,005	0,005	0,003	0,016*	0,01	0,025**	0,021***
High School	-0,009	-0,005	-0,004	-0,001	0	0,001	0,019*	0,013	0,018*	0,014*
Ref : University										
Age:										
18-24 years	0,06	0,044	0,073*	0,146**	0,103**	0,045	0,009	0,031	0,007	0,007
25-34 years	0,048*	0,008	0,043*	0,062**	0,047**	0,03	0,009	0,014	0,007	0,008
35- 44 years	0,054*	0,008	0,024	0,059**	0,044**	0,025	0	0,004	-0,001	0,001
45-54 years	0,023	0,004	0,026	0,036	0,025	-0,004	-0,004	-0,003	0,004	0,004
Ref : 55- 65 years.										
Marital Status:										
Married	-0,001	0,019**	-0,004	-0,007	-0,004	0,014***	0,001	0,012**	0,004	0,004
Widowed or Divorced	0,019	0,047*	-0,005	0,001	0,002	0,039**	0,009	0,034**	0,02	0,016
Ref : Single										
Status in household:										
Household head	0,001	-0,015	0,003	0,021**	0,018***	-0,008	-0,006	-0,014**	0,002	0,003
Joint	-0,009	-0,004	-0,012	0,003	0,002	-0,007	0,004	-0,011*	0,003	0,001
Ref : Other										
Household size										
1-2	0,005	0,001	-0,005	-0,001	-0,001	0,006	0,004	0,008	0,001	0,001
2-4	0,004	-0,001	0,001	0,001	0	0,001	-0,004	-0,002	-0,002	-0,002
Ref : 5 or more										
Originally from Antananarivo (yes, no)	-0,006	-0,005	-0,01**	-0,02***	-0,015***	0,002	0,001	-0,007	-0,001	-0,001
CSP in t_0										
Cadre	0,038*	0,02	0,03	0,034	0,012	-0,016***	-0,003	0	0,02	0,007
Employee or worker	0,025***	0,034***	0,027***	0,031***	0,014***	0,009**	0,009*	0,001	0,016***	0,007*
Ref : Self-employed										
Years of experience										
0 - 2 years	0,064***	0,02**	0,012*	0,02***	0,014***	0,019***	0,017***	0,004	0,02***	0,016***
3 - 5 years	0,031***	0,005	0,006	0,004	0,004	0,013**	0,007	-0,002	0,006	0,005
Ref : 6 years or more										
Sector in t_0										
Informal	0,054***	0,043***	0,041***	0,02*	0,017**	0,014	0,009	0,02	-0,006	-0,003
EPZ	0,073**	0,083**	0,072*	0,018	0,023	0,012	0,174***	0,08	0,058**	0,058**
Formal Private excluding EPZ	0,067***	0,035**	0,033*	0,009	0,009	0,023*	0,04**	0,034	0,017*	0,015*

Ref : Public										
Undergo pressure on the labour market	0,015**	0,048***	0,031***	0,013**	0,013***	0,012***	0,035***	0,017***	0,013***	0,014***
Affected by the crisis				0	-0,04***					-0,022***
No. of observations total	5198,00	5114,00	5081	5232	5232	5198	5114	5081	5232	5232
Pseudo R^2	0.1125	0.2226	0.1342	0.1714	0.2025	0.1125	0.2226	0.1342	0.1714	0.2025
Log likelihood	-2592.2998	-2587.2609	-2265.5989	-2313.8931	-2226.9254	-2592.2998	-2587.2609	-2265.5989	-2313.8931	-2226.9254

Sources : INSTAT DSM, MADIO, IRD DIAL. Enquêtes emploi : EE2001 EE2002 EE2006 EE2010. Our own calculations.

Transition into employment from inactivity/unemployment

To investigate transitions from inactivity we use a multinomial logit model. The base category is individuals who remain inactive in t_0 and t_1, by choice. The results of the multinomial logit model present the probability of remaining inactive despite the desire to work and the probability of finding a job. The reference group contains individuals who are inactive by choice; the results are in Table 18 below.

Again, we see that gender is not significant in the model. By contrast, status in the household is significant in 2001, 2002 and 2006. Spouses are less likely to remain inactive especially in 2001 and 2002. The education level also affects the probability of remaining unemployed in 2006 and 2010. People with lower qualifications are more likely to remain inactive in 2010 than the qualified ones. Indeed, the probability of remaining inactive despite the desire to work is higher by almost 14% for individuals at the primary level compared to those of higher levels.

The crisis of 2010 showed a greater vulnerability of young people and their difficult integration into the labour market, which is not the case in 2002. Indeed, in 2010, for young people aged 18-24, the probability of remaining inactive despite the desire to work is higher by almost 25% compared to individuals of 55-65 years of age. Similarly, for young people aged 25-34, the probability of remaining inactive despite the desire to work is higher by almost 17% compared to those of 55-65 years of age.

Having already worked has a negative influence on the result of those remaining inactive.

Table 18 : Marginal effects (multinomial logit) : probability to find a job or to remain unemployed

Reference group : remaining unemployed in t_1 (voluntary)

	2001	2002	2006	2010		2001	2002	2006	2010
	To keep inactive remain desire to work					To find a job			
Gender : Male	0,067	-0,046	0,049	0,021		0,042	0,011	0,018	-0,001
Ref : Female									
Education Level:									
Uneducated and Primary	0,078	0,022	-0,007	0,139***		0,16***	0,041	0,046	0,006
College	0,036	0,012	-0,105*	0,076*		0,15***	-0,035	0,055*	0,045*
High School	0,057	-0,06	-0,138***	0,004		0,013	-0,023	-0,007	-0,036*
Ref : University									
Age									
18-24 years	0,09	-0,071	-0,027	0,245***		0,366***	0,273***	0,413***	0,125***
25-34 years	0,042	-0,177	-0,138	0,168**		0,416***	0,437***	0,518***	0,22***
35- 44 years	-0,107	-0,235*	-0,282	0,041		0,477***	0,448***	0,563***	0,156*
45-54 years	-0,066	-0,147	-0,232	0,034		0,262*	0,278*	0,453*	0,053
Ref : 55- 65 years.									
Marital Status									
Married	-0,088	-0,175**	-0,092	-0,133**		0,067	0,011	0,048	-0,001
Widowed or Divorced	-0,307***	-0,306***	-0,24**	-0,223***		0,055	-0,03	-0,007	0,034
Ref : Single									
Status in household:									
Household head	-0,174***	0,132**	0,01	-0,06		0,103*	0,073	0,148**	0,084*
Joint	-0,37***	-0,217***	-0,171*	-0,036		-0,049	-0,006	0,005	-0,045
Ref : Other									
Household size									
1-2	0,108	0,073	0,122**	0,06		-0,046	-0,005	-0,038*	-0,066***
2-4	0,034	0,015	0,012	0,042		0,024	0,032	-0,027	-0,027
Ref : 5 or more									
Originally from Antananarivo (yes, no)	0,004	0,039	0,023	0,013		-0,012	0,009	-0,012	-0,009
Undergo pressure on the labour market	0,772***	0,771***	0,748***	0,492***		-0,104***	-0,09***	-0,087***	-0,032**
Having worked? (yes, no)	-0,302***	-0,531***	-0,369***	-0,09**		0,006	0,07**	0,04*	-0,002
No of observations total	1797	1765	1684	1744		1797	1765	1684	1744
Pseudo R^2	0.4133	0.3881	0.4039	0.1901		0.4133	0.3881	0.4039	0.1901
Log likelihood	-1037.1419	-1005.6338	-921.34495	-1353.5963		-1037.1419	-1005.6338	-921.34495	-1353.5963

Sources : INSTAT DSM, MADIO, IRD DIAL. Enquêtes emploi : EE2001 EE2002 EE2006 EE2010. Our own calculations.

The fact that gender has no effect on finding a job is confirmed; this variable is not significant, neither in 2002 nor 2010. As for the status in the household, being a household head positively influences the probability of finding a job in 2006 and 2010 where it is weakly significant.

Results on the level of education have changed as they are more mitigated. It now appears that education has no influence on job search in 2002, if this is the case in 2001. In 2006 and 2010, people with college level education are more likely to find a job (5.5% and 4.5% more probability) than those with a university level. On the other hand, individuals who carried out studies to a high school level are less likely to find a job than those having attended university in 2010.

Concerning the effect of age on job search, the results show that young people are more likely to find work than seniors: a higher probability of 12.5% in 2010 and 27.3% in 2002 for 18-24 year olds. Similarly, they experience a higher probability of 22% in 2010 and 43.7% in 2002 compared to 25-34 years.

Finally, people who have encountered problems on the labour market are less likely to find work, and having already worked increases the likelihood of finding work in 2002 and 2006.

4. CONCLUSIONS AND POLICY RECOMMENDATIONS

Since independence Madagascar has experienced four socio-political crises, all which have disrupted the economy significantly. The two most recent crises were in 2002 and 2009. This paper examined the impact of these two most recent crises on outcomes in the labour market using household data. It seems that the impact of the 2002 crisis was more severe in Antananarivo than the 2009 crisis. The proportion of workers who become inactive after the 2002 crisis is greater than that of 2009 (9.4% and 6.6% respectively). The 2002 crisis resulted in job losses estimated to 32,800 for the 18 to 65 year olds of Antananarivo against the 20,700 jobs lost in 2010.

Both crises also had had larger effects on the most marginalised in the labour market – women, youth and the low-skilled; and impacted particularly on employment in the EPZ. In 2002, two out of three people who lost jobs were women which increased to nine out of ten in 2010. All age groups, from young to old, suffered from the loss of jobs due to socio-political crises, but it also seems that the loss was the highest among 18 to 34 year olds in 2002 (19.000 jobs).

Low-skilled workers, specifically individuals with low education lost the most jobs after each crisis. In agreement with this result, the analysis by socio-professional category shows the strong contribution of employees and workers in job loss. They lost 41,100 jobs in 2002 and 28,000 in 2010 which brings their contributions to very high rates: 125.3% in 2002 and 135.3% in 2010.

Firms in the EPZ were the primary victims of job loss over the period 2009-2010 (21,000 jobs lost in all) between 2001 and 2002 (33,900 jobs lost) as well. The informal sector is the only one who has experienced a net job creation (4,700 jobs created in 2010 and 11,300 in 2002) after crises.

These results indicate that socio-political crises have particularly damaging effects on those who are already vulnerable in the labour market. This suggests that policies to support these people during periods of instability are important. One way to do this would be programmes to provide temporary work or income during these periods. The challenge with this type of approach is that if it is administered by government, then during these periods when government administration is disrupted, these programmes would be disrupted too. In this case these types of programmes may be better delivered by NGOs. The broader policy conclusion however, is that in order to lessen the impacts of these types of crises on the most vulnerable, it is important to resolve these crises as quickly as possible. Rapid resolution is likely to mean that the lasting impact of the disruption is smaller.

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6. APPENDIX

Table appendix8 : Structure of GDP

	2003	2004	2005	2006	2007	2008	2009	2010
Primary Sector	**32,7%**	**32,0%**	**31,4%**	**30,5%**	**29,5%**	**23,3%**	**26,8%**	**25,8%**
Secondary Sector	**11,6%**	**11,8%**	**11,6%**	**11,4%**	**11,6%**	**14,6%**	**13,7%**	**13,3%**
Secondary Sector outside of EPZs	***10,2%***	***10,1%***	***10,0%***	***9,9%***	***10,2%***			
Agriculture	0,3%	0,3%	0,3%	0,2%	0,2%			
Energy	1,4%	1,4%	1,4%	1,4%	1,4%			
Food Industry	2,2%	2,1%	2,0%	1,9%	2,0%			
Beverage Industry	2,2%	2,2%	2,1%	2,1%	2,2%			
Industrial Free Zone (ZFI)	***1,4%***	***1,7%***	***1,6%***	***1,5%***	***1,4%***			
Tertiary Sector	**47,4%**	**47,7%**	**48,4%**	**49,5%**	**50,3%**	**53,3%**	**51,0%**	**50,6%**
Expenses not allocated	-2,3%	-2,3%	-2,4%	-2,6%	-2,6%	-0,7%	-0,9%	-0,9%
Indirect Taxes	10,6%	10,8%	11,0%	11,1%	11,2%	9,5%	9,4%	10,1%
PIB	**100,0%**	**100,0%**	**100,0%**	**100,0%**	**100,0%**	**100,0%**	**100,0%**	**100,0%**

Sources : INSTAT DSY. Nos propres calculs.

Table appendix 9 : Distribution of employment by activity group before and after each crisis

Industry Type	2001 (a)	2002 (b)		2006 (a)	2010 (b)
Agriculture	5,0%	5,8%		5,3%	6,5%
Food Industry	2,5%	2,9%		2,7%	2,9%
Other industries	9,8%	8,9%		7,1%	7,1%
Other services	25,9%	28,9%		31,1%	31,1%
Btp	5,3%	5,6%		5,6%	6,4%
Chemistry	0,5%	0,3%		0,4%	0,2%
Commerce	23,2%	24,5%		24,7%	26,9%
Confection, textile	16,8%	11,1%		12,8%	8,6%
Fonction	5,1%	5,8%		5,1%	4,5%
Transport	5,8%	6,2%		5,1%	5,8%
Total	100%	100%		100%	100%

Sources : INSTAT DSM, MADIO, IRD DIAL. Enquêtes emploi : EE2001 EE2002 EE2006 EE2010. Our own calculations.