

Export Processing Zones in Madagascar: the impact of the dismantling of clothing quotas on employment and labour standards

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ABSTRACT

The success of Export Processing Zones (EPZs) or the Zone Franche in Madagascar is, with the exception of Mauritius, an isolated and unrecognized case in Africa. The Zone Franche has had a highly significant macroeconomic impact in terms of exports and jobs. Madagascar became the number two clothing exporter in sub-Saharan Africa. At its peak in 2004, the Zone Franche employed 100,000 employees. The final phase-out of the Multi-Fibre Arrangements in 2005 has had a negative impact on the Zone Franche. The export and employment growth has come to a halt. Our econometric estimates, based on first-hand data, show that average wages in the Zone Franche have become lower than in the formal industrial sector, other things being equal; labor standards are higher than average but are progressively being reduced in a context of increased international competition. As the example of Madagascar shows, EPZs can no longer be placed at the core of development and employment policies in Africa since the end of clothing quotas, although no alternative strategy has emerged yet.

Key Words : Export processing zones, employment, wages, labour standards, Madagascar.

RESUMÉ

Le succès de la Zone franche malgache est un cas méconnu et unique en Afrique sub-saharienne, si on excepte l'île Maurice. La Zone franche a eu un impact macro-économique important en termes d'exportations et d'emplois. Madagascar est ainsi devenu le deuxième exportateur de produits de l'habillement en Afrique sub-saharienne. A son maximum en 2004, la Zone franche comptait 100.000 employés. Le démantèlement final des quotas imposés dans le cadre des Accords Multi-Fibres depuis le début de 2005 a eu un impact négatif sur la Zone franche. La croissance des exportations et de l'emploi s'est interrompue. Nos estimations économétriques, basées sur des données individuelles auprès des ménages de première main, montre que les salaires dans la Zone franche sont devenus inférieurs à leur niveau dans le reste du secteur industriel formel, toutes choses égales par ailleurs. Par ailleurs, les normes de travail hors salaires restent meilleures mais cet avantage est en réduction progressive, dans un contexte de concurrence internationale accrue. Comme le montre l'exemple de Madagascar, les zones franches d'exportation ne peuvent plus être mises au centre d'une stratégie de développement et d'emploi en Afrique depuis la fin des quotas textiles, bien qu'aucune alternative n'ait encore émergé.

Mots clés : zones franches ; emploi ; salaires ; normes de travail ; Madagascar.

JEL Code : E24 ; F16 ; J32 ; J81 ; O55

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1. INTRODUCTION

According to the International Labour Organization, total employment in exporting processing zones (EPZs) worldwide amounted to 13 million employees in 2002, excluding China (ILO, 2003). These EPZs are mostly established in developing countries. They are generally specialised in the production of labour-intensive consumer goods, mainly clothing. As it is pointed out by Jayanthakumaran (2003), over the last decades until 2005, investment in these zones has served to circumvent textile quotas imposed to the Asian exports by the Multi-Fibre Arrangements (MFAs).

Most of the economic debate on EPZs focuses on the question of wages and labour standards. Indeed, the main motivation for investing in EPZs is to minimise the costs of producing labour-intensive consumer goods, thanks to tax exemptions associated with low wages. Because of these characteristics, they have often been accused (especially by labour unions) of being “sweatshops” overexploiting a low-paid unskilled labour force and eventually encouraging a “race to the bottom” in terms of wages and labour standards.

Many studies have compared wages paid by the EPZs with the rest of the economy. They all agree that the situation varies enormously from one country and sector to the next. Limiting the study to the textile and clothing sector, Romero (1995) and Kusago and Tzannatos (1998) consider that there are no significant differences between the wages paid in Asian EPZs and those paid by other companies in the same sector. Economic literature on the subject suggests that, since most of the labour is female, the low average wages can be explained by low skills and the wage discrimination generally suffered by women, without EPZs appearing to practise a systematic policy of specific remuneration for given jobs (Madani, 1999). However, it should be noted that none of the abovementioned studies is based on individual wage data, but on average sector wages.¹

Since the abovementioned studies agree that EPZs do not practise specific wage discrimination, their poor image in terms of labour issues stems mainly from the fact that working conditions are generally deemed harder than in the other economic sectors and that EPZs are often accused of violating core labour standards (ILO, 2003; ICFTU, 2003): labour legislation is not applied as strictly as elsewhere, and sometimes not at all; working hours are longer and the pace of work is faster; trade unions are often forbidden or at least discouraged; gender discriminations are worse than in the rest of the economy, etc.

Madagascar is the only example, alongside Mauritius (and very recently Kenya but on a smaller scale), of significant EPZ success in sub-Saharan Africa where all other free zone initiatives have failed despite numerous attempts. The example of Mauritius is well known, but not so the Malagasy EPZs otherwise known as the *Zone Franche*.² Yet the *Zone Franche* has developed quite remarkably in just one decade: it has gained considerable ground in terms of exports and formal employment, making a significant contribution to the economic upturn observed since the mid-1990s.

The objective of this article is to determine whether the characteristics of wages and labour standards generally observed in the rest of the world hold in the case of the Malagasy *Zone Franche*. Our study draws on some national statistical sources with no other equivalent in sub-Saharan Africa: labour force surveys (LFSs) conducted annually at the authors’ initiative since 1995 in the Malagasy capital, where most *Zone Franche* companies are established. To our knowledge, this is the first study to make an

¹ The only econometric studies based on individual establishment data (Lipsev & Sjöholm, 2003) and matched data (Martins, 2004) concern remuneration paid by all foreign firms (rather than just EPZs) compared with that paid by domestic firms. These studies posit that foreign firms pay more, other things being equal, but that this premium falls substantially when the manpower’s heterogeneity and the firms’ individual characteristics are taken into account.

² For example, the World Bank working paper on EPZs in Africa published by Watson (2001) does not even mention them. A British government white paper published in 2004 even states that “[excepting Mauritius] other African countries such as Zimbabwe, Senegal, Madagascar and Cameroon have failed to benefit substantially from EPZs” (HM Treasury & DTI, 2004).

assessment of the impact on African labour markets of the dismantling of international clothing quotas, using econometric estimates based on individual wage data³.

In Section 2, we describe the *Zone Franche*'s booming growth up to 2005 (temporarily interrupted by the political crisis in 2002) and its difficulties since the end of the MFAs, and assess its contribution to export and employment performances. Section 3 looks at the *Zone Franche*'s impact on earned income using estimated earnings equations to compare wages paid in *Zone Franche* companies with other sectors of the economy. Section 4 compares *Zone Franche* working conditions and other labour standards with other companies. Section 5 concludes.

2. THE IMPACT ON EMPLOYMENT AND EXPORT PERFORMANCE

The introduction of a special scheme for free zone companies in Madagascar in 1990 followed the decision to opt for an export-led growth strategy under the structural adjustment policies adopted in the late 1980s in compliance with Bretton Woods Institution recommendations. Generous tax breaks, combined with low wages and trade preferences granted on the US and EU markets, have triggered a strong and continuous growth of the Malagasy *Zone Franche*. According to the *Zone Franche* association, there were 180 firms in business with over 100,000 employees at the end of 2004. However, this boom has been interrupted by the final dismantling of the quotas on clothing products since the beginning of 2005.

2.1. A combination of tax breaks, low labour costs and trade preferences

The law passed in 1991 defined the scheme's scope and the tax incentives granted *Zone Franche* companies, which are under no obligation to set up in specific zones. Companies wishing to be part of the free zone scheme must intend to export at least 95% of their production. Companies providing services to the *Zone Franche* can also benefit from the free zone scheme.

Zone Franche companies are exempt from all duties and taxes on exports and imports alike. As regards domestic tax, they are exempt from excise taxes, but have been liable for Value Added Tax (VAT) on imported inputs since 1997, although this can be refunded at a later date against proof of export. This measure was introduced to curb tax evasion and prevent companies supplying the local market from setting up as *Zone Franche* companies. The *Zone Franche* scheme grants total exemption from profits tax for a grace period of two years for labour-intensive farming and fishing companies and four years for industrial and service companies. These companies are liable for a fixed rate of 10% thereafter, which is far lower than the general rate of 35%. They are also eligible for profits tax breaks equal to 75% of the cost of new investments. Last but not least, *Zone Franche* companies are granted special access to foreign currency and total freedom for capital transfers.

The success of the *Zone Franche* was initially due to French investors attracted by a French-speaking environment, where a large number of their compatriots had already set up business (Madagascar has the largest French community in sub-Saharan Africa). Yet investors gradually became more diverse. No recent precise breakdown of the country origin of investors is available. Most of them are French, Mauritian (Madagascar's next door neighbours) or Asian⁴.

Investors sought primarily to take advantage of low labour costs in Madagascar. Cadot and Nasir (2001) report that the monthly wage for an unskilled textile industry machine operator is less than one-third of the equivalent wage in Mauritius, around half that in China and only about 60% of the average wage in India. Although labour productivity is apparently much lower in Madagascar than in

³ Our paper draws on Cling, Razafindrakoto, Roubaud (2005), which covers the period 1995-2001. The analyses made in this previous paper have been completely updated. They take into account recent developments such as the end of apparel quotas and the results of some econometric estimates, based on more recent data (4 more years). The latter are largely different and bring substantially new conclusions.

⁴ Gibbon (2003) holds that ownership in the EPZs was mainly Mauritian. However, his observation is not backed up by quantitative data.

Mauritius or China (and equal to that in India), unit production costs are among the lowest in the world and lower than in the other three countries.

As many Asian countries had already saturated their quotas, the choice of Madagascar also helped circumvent the textile quotas imposed by the developed countries under the MFAs. Hence the Central Bank of Madagascar (2002) reported that clothing accounted for 90% of the *Zone Franche*'s production in 2001. Madagascar enjoys duty-free and quota-free access to the European and American markets:

- Madagascar has been AGOA (African Growth and Opportunity Act) eligible since 2001. Starting in 1997-1998, investments were made in the *Zone Franche* in anticipation of AGOA (Gibbon, 2003). Yet although AGOA authorises duty-free access to the American market for the products it covers, it imposes restrictive conditions in terms of inputs ("third-party fabric provision"), which must come either from the United States or other countries benefiting from the agreement. However, Madagascar was granted a dispensation for its clothing sector to use inputs from other countries. In 2004, this was extended through to the end of 2007;
- Madagascar also benefits from tax-free access to the European market under the terms of the Cotonou Agreement signed between the EU and the ACP (Africa-Caribbean-Pacific) States and, since 1999, under the "Everything But Arms" (EBA) initiative covering all LDCs (Least Developed Countries). The rules of origin are particularly strict under these agreements too, especially as regards the EBA.

Clothing exports are concentrated on the American and European markets, which are the top two markets worldwide for these products. Yet although trade preferences played an important role in the success of the *Zone Franche*, they would not have been taken up had it not been for the tax breaks granted under the EPZ scheme. EPZ managers interviewed by several surveys clearly state that they would not have invested in Madagascar had it not been for these advantages (Cadot and Nasir, 2001; Razafindrakoto and Roubaud, 2002)⁵.

2.2. A remarkable export growth

Starting from negligible amounts at the beginning of the 1990s, growth in *Zone Franche* exports has been remarkable⁶ (Graph 1). Sales to the American market, which were marginal until 2000, have driven growth the next few years due to AGOA. In 2006, the EU and the USA absorbed half of the exports each. The share of the *Zone Franche* in total exports rose steadily to reach nearly 50% in 2005-2006, a proportion unequalled in any other Least Developed Country (LDC).

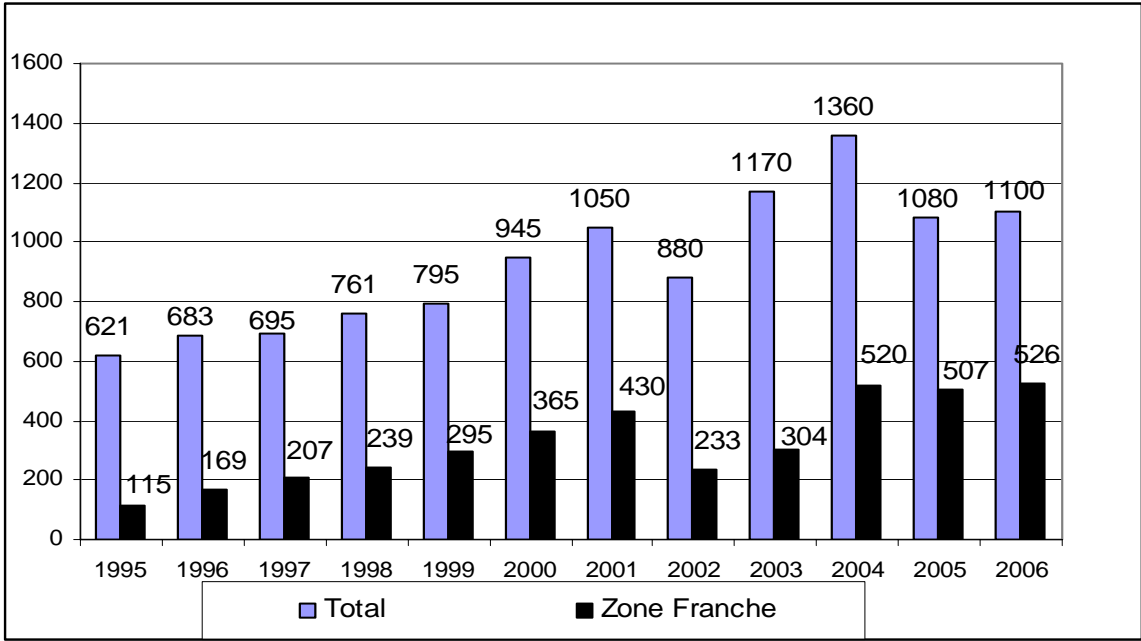
The *Zone Franche* accounted for most of the boom in Madagascar's goods exports from 1995 to 2006. The *Zone Franche* made Madagascar the only successful African new exporter of manufactured goods, excepting Lesotho, in the last decade. The breakdown of exports consequently changed considerably (Cling, Razafindrakoto and Roubaud, 2005). At the beginning of the 1990s, Madagascar exported almost exclusively agricultural products (mainly coffee, vanilla, cloves and shrimps). Yet the share of these products subsequently fell to less than half of total exports. The share of manufactured products, on the other hand, was negligible, but grew steadily to half of total exports. This growth concerned mainly exports of clothing products, i.e. exports from the *Zone Franche*. Although the total amount (500 million dollars in 2006) might seem relatively modest by world standards, Madagascar became in 2001 the number two African clothing exporter in sub-Saharan Africa behind Mauritius.

⁵ The answers given by *Zone Franche* company heads interviewed for the 1998 industrial survey show that 66% of *Zone Franche* companies, accounting for 87% of exports, would not have been created had it not been for the special scheme (Razafindrakoto & Roubaud, 2002).

⁶ National customs data are very erratic and not reliable to measure the value of Malagasy exports (Cling, Razafindrakoto, Roubaud, 2005). Therefore, we use instead an indirect estimate based on imports from Madagascar (the "mirror-data" method), as most studies on African foreign trade do. Malagasy total goods exports are measured through total world imports from Madagascar. As the United States and the European Union are its main markets, we use US and EU apparel import data as mirror-data for *Zone Franche* exports. The mirror-data do not explicitly identify exports from the *Zone Franche*. Given that nearly all apparel exports come from the *Zone Franche* and that most of its firms are specialised in clothing, it can be assumed that total apparel exports are roughly equivalent to total *Zone Franche* exports.

The Malagasy economy was hard hit by the 2002 political crisis, which took a heavy toll on *Zone Franche* companies. Missed contract deadlines due to the crisis prompted international buyers to cancel their orders and, given the political instability, turn to more reliable suppliers. The foreign trade figures show the *Zone Franche's* extreme vulnerability to the crisis and its remarkable responsiveness once the crisis was over. Total clothing exports were practically halved in 2002. Yet exports shot back up in 2003 and had already topped their pre-crisis level in 2004. But some companies that had shifted their textile production facilities to Madagascar for export to the US or the EU did not return after the crisis.

Graph 1: Malagasy exports (1995-2006)
(In millions of dollars)



Source: International Trade Centre PC-TAS database for total exports; Otxea and Eurostat for *Zone franche* exports (clothing products).

As shown in graph 1, the *Zone Franche* export growth has come to a halt in 2005, since the end of the quotas imposed to Asian exports of clothing products. This evolution is far from being unique: although the USA and the EU have almost immediately imposed some new temporary quotas on China's exports of textile & clothing products until the end of 2008, the latter have kept booming, while exports from most other developing countries have stagnated or decreased. This is especially the case for all major African exporters such as Mauritius, Madagascar, Lesotho and Kenya (Table 1).

Table 1 : Clothing exports of major African exports compared to selected Asian countries (2003-2006)
(Unit: millions dollars)

| | 2003 | 2004 | 2005 | 2006 | 2006/2004 (%) |
|--------------|---------------|---------------|---------------|---------------|---------------|
| Mauritius | | | | | |
| Total | 896 | 865 | 712 | 721 | -16,6 |
| - EU | 627 | 638 | 555 | 602 | |
| - USA | 269 | 227 | 167 | 119 | |
| Madagascar | | | | | |
| Total | 347 | 520 | 506 | 526 | 1,2 |
| EU | 151 | 197 | 229 | 288 | |
| USA | 196 | 323 | 277 | 238 | |
| Lesotho | | | | | |
| Total | 394 | 457 | 392 | 388 | -15,1 |
| - EU | 1 | 1 | 1 | 1 | |
| - USA | 393 | 456 | 391 | 387 | |
| Kenya | | | | | |
| Total | 192 | 280 | 278 | 265 | -5,4 |
| - EU | 4 | 3 | 7 | 1 | |
| - USA | 188 | 277 | 271 | 264 | |
| China | | | | | |
| Total | 13,970 | 18,288 | 45,365 | 49,981 | 173,3 |
| - EU | 12,361 | 13,730 | 22,960 | 22,974 | |
| - USA | 11,609 | 14,558 | 22,405 | 27,067 | |
| Vietnam | | | | | |
| Total | 3,115 | 3,478 | 3,793 | 4,611 | 32,6 |
| - EU | 631 | 758 | 912 | 1,215 | |
| - USA | 2,484 | 2,720 | 2,881 | 3,396 | |
| Cambodia | | | | | |
| Total | 1,726 | 2,085 | 2,319 | 2,841 | 36,3 |
| - EU | 475 | 643 | 592 | 690 | |
| - USA | 1,251 | 1,442 | 1,727 | 2,151 | |

Source: Otxea (US) and Eurostat (EU). Total means the sum of total exports to the EU and the US.

2.3. A major contribution to job creations

The LFSs used in this study correspond to the first phase of the *I-2-3 survey* of the labour market, the informal sector and consumption conducted in a number of developing countries in Africa and Latin America (Razafindrakoto and Roubaud, 2003). This system of household surveys was introduced in Madagascar for the first time in 1995 (Rakotomanana, Ramilison and Roubaud, 2003). The National Statistical Office has repeated the operation every year since then. The sample, drawn from a stratified two-stage area-based survey plan, is representative of all ordinary households in the Malagasy capital. In each household, all individuals aged ten and over, i.e. all individuals of working age as defined by the official nomenclature, were asked about their labour market participation. The definitions used (employment, unemployment, etc.) respected the international standards recommended by the ILO. Furthermore, in addition to the general LFS purpose of analyzing the labour market dynamic, one of the strong points of the Malagasy survey is that the questionnaire included a specific question to single out employment in the *Zone Franche* (Razafindrakoto and Roubaud, 1997).

The LFSs confirm the *Zone Franche's* exceptional buoyancy in recent years. From 1995 to 2004 (that is until the end of the international quotas on textile & clothing), the rate of job creation in the *Zone Franche* was almost four times higher than in Antananarivo's labour market as a whole. The average annual employment growth rate stood at 15% compared with nearly 4% for the market as a whole (Table 2). This is by far the best performance, all sectors considered. Even though the informal sector is the main job provider, it is way behind in this respect. Over the period 1995-2001 (before the political crisis), the *Zone Franche's* contribution to job creation was as strong as that of the informal

sector. The contribution is still significant on the period 1995-2004: of a total 195,000 new jobs, 65% could be attributed to the informal sector whereas the *Zone Franche* generated 62% of the new jobs in the formal sector, tripling its share of total employment from an initial 3% to 9% in 2005. In the formal private sector, nearly one-third of all employees worked in the *Zone Franche* in 2004 compared with barely one in ten in 1995. In the same year, there were more women employed in the *Zone Franche* than in the rest of the formal private sector.

Table 2: Change in the employment breakdown by institutional sector in Antananarivo (1995-2006) (%)

| | Growth period: 1995-2001 | | | | Crisis period: 2001-2002 | | Recovery period: 2002-2004 | |
|--------------------------------|----------------------------|--------------|-----------|-------|--------------------------|-----------|----------------------------|-----------|
| | Average annual growth rate | Contribution | Structure | | Growth rate | Structure | Growth rate | Structure |
| INSTITUTIONAL SECTOR | 1995/2001 | 1995/2001 | 1995 | 2001 | 2001/2002 | 2002 | 2002/2004 | 2004 |
| Public administrations | -1.4 | -3 | 11.6 | 8.1 | 2.3 | 8.3 | 11.0 | 8.3 |
| Public companies | 4.1 | 2 | 2.7 | 2.6 | 7.1 | 2.8 | -12.4 | 2.2 |
| Formal private companies | 9.1 | 61 | 26.7 | 34.61 | -20.0 | 33.0 | 25.9 | 30.0 |
| - of which <i>Zone Franche</i> | 27.2 | 34 | 3.1 | 10.2 | -60.0 | 4.1 | 146.5 | 9.0 |
| Informal private companies | 3.1 | 38 | 57.6 | 53.1 | 12.2 | 59.9 | 9.7 | 58.4 |
| Total | 4.5 | 100 | 100 | 100 | -0.4 | 100 | 12.3 | 100 |

| | Growth period: 1995-2004 | | | | End of quotas: 2004-2006 | |
|--------------------------------|----------------------------|--------------|-----------|------|--------------------------|-----------|
| | Average annual growth rate | Contribution | Structure | | Growth rate | Structure |
| INSTITUTIONAL SECTOR | 1995/2004 | 1995/2004 | 1995 | 2004 | 2004/2006 | 2006 |
| Public administrations | 0.4 | 1 | 11.6 | 8.3 | -3.9 | 7.5 |
| Public companies | 1.8 | 1 | 2.7 | 2.2 | -39.1 | 1.3 |
| Formal private companies | 5.0 | 37 | 28.1 | 30.0 | 10.3 | 31.4 |
| - of which <i>Zone Franche</i> | 15.4 | 22 | 3.1 | 9.0 | -6.0 | 8.0 |
| Informal private companies | 4.0 | 65 | 57.6 | 58.4 | 4.5 | 58.0 |
| Total | 3.8 | 100 | 100 | 100 | 2.6 | 100 |

Source: 1-2-3 Surveys, phase I (employment) 1995-2006, INSTAT/MADIO, authors' calculations.

As with the foreign trade statistics, the employment data highlight that the *Zone Franche* was extremely vulnerable to the political crisis in 2002. Employment fell by 60% wiping out in one fell swoop the huge progress made in previous years. The informal sector acted as a safety net for employees who had been made redundant and for new arrivals. The number of jobs in this sector grew by 12%. As it is the case for exports, employment in the *Zone Franche* quickly recovered and in 2004 almost reached its pre-crisis level. Between 2004 and 2006, employment decreased by 6%.

3. REMUNERATION IN THE ZONE FRANCHE

The comparison of wages paid across all sectors of activity made in this section shows that wages in the *Zone Franche* are lower than in the rest of the economy, especially compared with the formal industrial sector. In order to go further and to check structural effects due to the composition of the labour force, we estimate some econometric wage equations.

3.1. Wages in the Zone Franche are lower on average

The LFS data clearly show the structural weakness of wages in the *Zone Franche*. Not only was the average monthly wage 34% lower than that paid by other types of industrial companies in 2006, but it was also one of the lowest on the market: compared with the average earnings for gainfully employed

workers in all sectors of the economy, the gap amounted to 9% in 2006. Only the informal sector paid its workers less. These findings are somewhat tempered if we compare median monthly wages (which have the advantage of being less sensitive to extreme values): the median monthly wage in the *Zone Franche* was equivalent to that for all gainfully employed workers together, but was still lower than that found in other industrial firms⁷.

Zone Franche companies appear to have granted more generous wage raises than others from 1995 to 2006. Whereas the purchasing power of monthly earnings grew an average 4.0% per year for all gainfully employed workers, the rate was 5.3% in the *Zone Franche*. Yet this positive finding is partly due to increasingly long working hours, which tended to raise monthly earnings compared with other sectors: in 2006, *Zone Franche* employees worked eight hours longer on average per week than their counterparts in the non-*Zone Franche* private industrial companies (54 hours and 46 hours per week respectively). Hence, the diagnosis is reversed when comparing hourly earnings. Although growth in real median hourly earnings per *Zone Franche* worker is appreciable (2.4% per year), it is among the lowest when compared with the labour market as a whole, where it comes to 3.2% per year. Furthermore, real wages (hourly wages as well as monthly earnings) in the *Zone Franche* have decreased in 2006 after the dismantling of quotas.

However, these differences in average and median earnings are misleading for two reasons. Firstly, the remuneration taken into account does not include benefits, in money or in kind (bonuses, paid holidays and miscellaneous benefits). These benefits are added to basic earnings to form total earnings. Secondly, as shown in Table 3, job characteristics and wages are not identical across sectors. Some characteristics weigh negatively on *Zone Franche* earnings, such as the low percentages of managerial staff, the lack of seniority and professional experience, and the preponderance of female staff. All of these characteristics are common to most EPZs worldwide (Madani, 1999). In 2006, women represented nearly 70% of the labour employed by the *Zone Franche* as opposed to 47% in formal industrial jobs outside the *Zone Franche*.⁸ Yet other characteristics work in favour of earnings in the *Zone Franche*. For example, there is the rate of trade union presence, which is almost as high as in the public sector and double the rate observed for the rest of the industrial sector (this characteristic can be linked, in particular, to the large average size of *Zone Franche* companies compared with other industrial companies).

Table 3: Labour force characteristics in the Zone Franche compared with the other sectors (Antananarivo), 2006

| | Public sector | Formal private sector | Of which: Industrial (excl. EPZ) | Of which: EPZ | Informal sector | Total |
|-------------------------------------|---------------|-----------------------|----------------------------------|---------------|-----------------|-------|
| Monthly income (USD) | 95 | 57 | 61 | 40 | 33 | 46 |
| Hours worked per week | 44.0 | 48.0 | 47.5 | 53.9 | 44.0 | 45.6 |
| % women | 35.5 | 43.9 | 31.8 | 70.5 | 50.6 | 47.0 |
| % managerial staff | 34.5 | 11.4 | 10.8 | 6.8 | 0.2 | 7.0 |
| % trade union presence | 44.4 | 25.0 | 26.4 | 54.6 | 0.2 | 12.4 |
| Years of schooling | 11.8 | 9.2 | 9.0 | 7.6 | 6.2 | 7.8 |
| Potential experience | 26.2 | 19.1 | 20.0 | 16.1 | 22.6 | 21.8 |
| Seniority | 11.9 | 5.7 | 6.3 | 3.8 | 7.7 | 7.4 |
| Size of company (% >=100 employees) | 100 | 36.8 | 30.8 | 87.5 | 0 | 20.9 |

Source: 1-2-3 Survey, Phase 1, 2006, DIAL/INSTAT, authors' calculations.

⁷ Enterprise surveys confirm this finding. Average gross remuneration for employees in the *Zone Franche* is about one-third lower than that for employees working in the formal industrial sector as a whole (MADIO, 1999). Even if we only take into account permanent workers, the vast majority of the *Zone Franche* companies are less generous, with differences of 15% to 20% depending on the year.

⁸ The proportion of women fell significantly compared with 1995, when they accounted for nearly 84% of labour. This trend has been observed in many countries. Nonetheless, Glick & Roubaud (2004) consider that this is not due to a shift towards male-oriented skills as in export processing manufacturing in other countries. *Zone Franche* workers' mean years of schooling actually fell from 1995 to 2001.

3.2. All other things being equal, wages are lower than in the rest of the industrial sector

Fine-tuning our calculations entails checking all these “structural effects” to measure earnings levels, all other things being equal, i.e. for comparable jobs and human capital assets. These estimates are made first for basic earnings and then for total job earnings. In both cases, we compare the positive or negative premium earned by *Zone Franche* employees with the labour force as a whole and with employees in the non-*Zone Franche* formal private industrial sector. We estimate extended Mincerian earnings functions for each year from 1995 to 2006 to explain the level of hourly earnings (both basic earnings and total earnings)⁹.

$$\text{Log } W_{it} = a_t + b_t \text{GEN}_i + c_t \text{SCO}_{it} + d_t \text{EXP}_{it} + e_t \text{S}_{it} + f_t \text{S}_{it}^2 + g_t \text{SEC}_{it} + \text{DUMMY EPZ} + \varepsilon_{it} \quad (1)$$

Dependent variables are the usual explanatory factors: gender (GEN), number of years of schooling (SCO) and potential professional experience (EXP). We also include seniority (S) and seniority squared (S²) in the explanatory variables.¹⁰ Socio-economic group (SEC) broken down into nine groups (including six categories of wage earners) is alternatively included and excluded from the regressions to take account of its potential endogeneity. Lastly, we introduce a dummy *Zone Franche* variable (DUMMY EPZ) to estimate the earnings premium associated with this sector. Each of these estimations is made first for all gainfully employed workers and then for wage earners (excluding non-wage earners such as the self-employed) in the formal industrial sector with apparently comparable working conditions. We carry out both OLS estimates and Heckman estimates selection-corrected for participation and sector choice (*Zone Franche* vs. non-*Zone Franche*). Yet as the results are very similar and the database does not provide any credible instruments for correcting potential selection biases, we only present the OLS estimates here.

At the same time, we estimate a global model using stacked data from 1995 to 2006. The dependent variable is real hourly earnings at 1995 prices¹¹ and dummies are introduced for each year (DATE):

$$\text{Log } W_{it} = a + b \text{GEN}_i + c \text{SCO}_{it} + d \text{EXP}_{it} + e \text{S}_{it} + f \text{S}_{it}^2 + g \sum \text{SEC}_{it} + h_t \sum \text{DATE}_t + \text{DUMMY EPZ} + \varepsilon_{it} \quad (2)$$

Table 4 presents the results of estimates of the real hourly wage in the formal industrial sector using stacked data, excluding bonuses (models 1 and 2) and including bonuses (models 3 and 4), and excluding socio-economic group (models 1 and 3) and including socio-economic group (models 2 and 4). The quality of the regressions is good and in keeping with international literature on the subject (R² from 0.35 to 0.43), and the coefficients for the four chosen models are close to and comply with the theory. Remuneration, regardless of whether the different types of bonuses are taken into account, is a growing function of the level of education, seniority and professional experience. For example, each additional year of schooling is equivalent to a net wage increase of approximately 10% when the socio-economic group is not taken into account, whereas benefits from seniority and professional experience are less marked (around 2% and 1% respectively).

⁹ The basic wage is just one element of remuneration, albeit the largest. The growing competition faced by *Zone Franche* companies has prompted them to favour more individualised wage policies and productivity incentives, by offering productivity bonuses and profit-sharing schemes. The different variable components of remuneration are far from negligible since they represent 11% to 22% of basic wages depending on the year. Yet these variable components are not found exclusively in the *Zone Franche*. All types of companies offer them, with the notable exception of the informal sector. The public sector (administration and public companies) is extremely generous in this respect. Ultimately, the estimates (not presented here) regarding the basic wage alone are very similar to those based on total earnings.

¹⁰ We also tested for non-linearities on the return on education and professional experience by including years of schooling and professional experience squared in the independent variables. However, the coefficients were found not significant.

¹¹ Using the consumer price index for the capital as deflator (base 100 in 1995).

Table 4: Equation of Zone Franche hourly wages/rest of the formal industrial sector (1995-2006)

| | Wages (excluding bonuses) | | | | Wages (including bonuses) | | | |
|--------------------------|---------------------------|----------------|---------------|---------------|---------------------------|---------------|--------------|---------------|
| | Model 1 | | Model 2 | | Model 3 | | Model 4 | |
| | Intercept | -1.560 | (44.77) | -1.470 | (41.68) | -1.551 | (42.38) | -1.468 |
| Sex (Male=1) | 0.123 | (8.74) | 0.109 | (8.26) | 0.129 | (8.75) | 0.114 | (8.26) |
| Years of schooling | 0.095 | (47.16) | 0.066 | (31.26) | 0.097 | (46.04) | 0.067 | (30.13) |
| Seniority | 0.018 | (6.58) | 0.017 | (6.61) | 0.026 | (8.89) | 0.025 | (8.97) |
| Seniority squared | -0.0003 | (3.15) | -0.0003 | (3.38) | -0.0004 | (4.68) | -0.0005 | (4.96) |
| Experience | 0.011 | (13.00) | 0.008 | (10.43) | 0.011 | (12.66) | 0.008 | (10.08) |
| Year: | | | | | | | | |
| 1995 | -0.452 | (15.06) | -0.398 | (13.98) | -0.422 | (13.39) | -0.360 | (12.04) |
| 1996 | -0.264 | (8.99) | -0.195 | (7.01) | -0.216 | (7.02) | -0.138 | (4.73) |
| 1997 | -0.161 | (5.56) | -0.122 | (4.47) | -0.077 | (2.54) | -0.034 | (1.18) |
| 1998 | -0.102 | (3.56) | -0.050 | (1.83) | -0.047 | (1.58) | 0.013 | (0.47) |
| 1999 | -0.040 | (1.43) | -0.003 | (0.10) | 0.028 | (0.94) | 0.070 | (2.52) |
| 2000 | 0.016 | (0.60) | 0.021 | (0.83) | 0.062 | (2.16) | 0.068 | (2.53) |
| 2001 | 0.037 | (1.36) | 0.023 | (0.90) | 0.085 | (2.97) | 0.070 | (2.63) |
| 2002 | 0.003 | (0.10) | 0.003 | (0.09) | 0.020 | (0.58) | 0.014 | (0.43) |
| 2004 | 0.009 | (0.33) | 0.002 | (0.09) | 0.025 | (0.83) | 0.016 | (0.59) |
| 2006 | - | | - | | - | | - | |
| Socio-economic group: | | | | | | | | |
| Senior managers | | | 1.352 | (26.33) | | | 1.391 | (25.79) |
| Middle manager | | | 0.566 | (18.95) | | | 0.614 | (19.58) |
| Empl., skilled workers | | | 0.195 | (10.14) | | | 0.227 | (11.23) |
| Empl., unskilled workers | | | 0.0879 | (4.33) | | | 0.100 | (4.58) |
| Laborers | | | - | | | | - | |
| Dummy EPZ (=1) | -0.028 | (-1.84) | -0.029 | (2.06) | -0.010 | (0.65) | 0.022 | (1.24) |
| Number of observations | 6 352 | | 6 352 | | 6 352 | | 6 352 | |
| R-squared | 0.35 | | 0.43 | | 0.35 | | 0.43 | |

Source: 1-2-3 Surveys, Phase 1, 1995-2006, INSTAT/MADIO, authors' calculations.

In brackets, the absolute value of the t-statistics

Reading: In model 1, a man's average hourly wage exceeds that of a woman by 13.1% (coefficient 0.123) all other things being equal.

Growth in average hourly wages is not due solely to improved skills over the period, as is shown by the significant positive trend of the year dummies¹². Madagascar also experienced unprecedented dynamic endogenous urban growth (Razafindrakoto and Roubaud, 2000). The hourly wage is also closely correlated with position in the company, in keeping with a strict wage scale ranging from senior management to unskilled workers. When the socio-economic group is taken into account, it partially absorbs the return to human capital, highlighting the two-stage mechanism whereby the latter is beneficial to employees: firstly, by giving them access to more highly skilled jobs and secondly, by giving them additional income in a given job. Hence the return on education is reduced by approximately one-third (from 10% to 7%) when the socio-economic group is included in the equation. Finally, women appear to be subject to a form of wage discrimination, earning between 10% to 15% less in the industry. Nicita, Razzaz (2003) observed an even higher level of discrimination in the Malagasy textile industry (whose coverage is similar to, but not exactly the same as the *Zone Franche*) using the same kind of wage equations.

As regards our variable of interest, the *Zone Franche* dummy is significant in the models estimated with wages excluding bonuses (1 and 2). But the wage premium is very small on average for the whole period (3%) and becomes even negative in recent years, as we will see below (3.3).

- Whereas *Zone Franche* employees were paid nearly 30% lower hourly wages on average than their counterparts in the non-*Zone Franche* private formal industrial sector over the 1995-2006

¹² An improvement in skills, that is a significant increase in the average number of years of schooling, is observed from 1995 to 2001. But the significant coefficient of the year dummies shows that other factors (especially the improvement in macroeconomic conditions) also contributed to the sharp increase in real wages. The level of the t-statistics suggests a significant positive trend over time. This can be formally tested for all models by introducing a time trend in place of the time dummies. The results confirm the existence of a systematic and significant positive time trend (at the 1% level in all cases), varying from 6% to 7.5% depending on the different specifications.

period, most of this gap can be attributed to labour force composition differences between the two sectors. Table 5 presents the results of the same estimates for all gainfully employed (wage and non-wage) workers. In this case, we refer to earnings rather than wages since some workers are non-wage workers. The quality of the adjustments is slightly better than for the estimates commented on above, for relatively similar results. Gender discrimination is the most notable exception: it is approximately twice as high in the economy as a whole as those estimated for formal industry. This result can be attributed mainly to the presence of the informal sector, where highly significant differences between men and women are found. The return on human capital is higher than that observed in the model limited to the industrial sector, whereas the time trend is flatter. In the models including socio-economic group, we find the same wage scale as observed earlier, with non-wage groups being inserted into the scale¹³. Hence, employers' earnings appear to be lower than senior managers' earnings, but higher than middle managers' earnings, whereas self-employed workers earn the same as unskilled employees, with apprentices and family workers coming last.

Table 5: Equation of hourly earnings in Zone Franche/rest of labor market (1995-2006)

| | Earnings (excluding bonuses) | | | | Earnings (including bonuses) | | | |
|--------------------------|------------------------------|---------------|--------------|---------------|------------------------------|---------------|--------------|---------------|
| | Model 1 | | Model 2 | | Model 3 | | Model 4 | |
| Intercept | -2.149 | (129.54) | -1.093 | (35.49) | -2.116 | (127.21) | -0.944 | (30.51) |
| Sex (Man=1) | 0.257 | (35.21) | 0.225 | (31.81) | 0.256 | (34.95) | 0.216 | (30.38) |
| Years of schooling | 0.136 | (153.52) | 0.103 | (99.81) | 0.137 | (155.19) | 0.102 | (98.31) |
| Seniority | 0.028 | (27.69) | 0.022 | (21.89) | 0.030 | (29.54) | 0.024 | (23.76) |
| Seniority squared | -0.0006 | (19.86) | -0.0004 | (16.70) | -0.0006 | (20.71) | -0.0005 | (17.59) |
| Experience | 0.013 | (37.89) | 0.010 | (27.92) | 0.013 | (35.19) | -0.009 | (26.13) |
| Year: | | | | | | | | |
| 1995 | -0.300 | (18.31) | -0.270 | (17.12) | -0.236 | (14.36) | -0.212 | (13.37) |
| 1996 | -0.284 | (17.57) | -0.267 | (17.24) | -0.252 | (15.58) | -0.236 | (15.20) |
| 1997 | -0.185 | (11.59) | -0.190 | (12.38) | -0.134 | (8.38) | -0.141 | (9.14) |
| 1998 | -0.093 | (5.82) | -0.084 | (5.47) | -0.054 | (3.40) | -0.049 | (3.15) |
| 1999 | -0.024 | (1.46) | -0.010 | (0.66) | -0.009 | (0.58) | -0.019 | (1.23) |
| 2000 | -0.038 | (2.38) | -0.026 | (1.71) | -0.077 | (4.80) | -0.065 | (4.23) |
| 2001 | 0.092 | (5.68) | 0.071 | (4.55) | 0.121 | (7.45) | 0.099 | (6.37) |
| 2002 | 0.032 | (1.97) | 0.034 | (2.18) | 0.039 | (2.36) | 0.044 | (2.77) |
| 2004 | 0.017 | (1.04) | 0.012 | (0.74) | 0.034 | (2.08) | 0.031 | (1.96) |
| 2006 | - | | - | | - | | - | |
| Socio-economic group: | | | | | | | | |
| Senior managers | | | - | | | | - | |
| Middle managers | | | -0.258 | (10.33) | | | -0.264 | (10.49) |
| Empl., skilled workers | | | -0.539 | (23.83) | | | -0.590 | (25.99) |
| Empl., unskilled workers | | | -0.746 | (30.43) | | | -0.820 | (33.30) |
| Laborers | | | -1.111 | (44.60) | | | -1.145 | (45.76) |
| Employers | | | -0.140 | (5.39) | | | -0.294 | (11.26) |
| Self-employed | | | -0.668 | (28.80) | | | -0.828 | (35.57) |
| Fam. help & Apprent. | | | -1.005 | (27.06) | | | -1.132 | (30.34) |
| Dummy EPZ (=1) | 0.106 | (7.26) | 0.034 | (2.29) | 0.146 | (9.98) | 0.033 | (2.24) |
| Number of observations | 50,010 | | 50,010 | | 50,010 | | 50,010 | |
| R-square | 0.40 | | 0.45 | | 0.40 | | 0.45 | |

Source: 1-2-3 Survey, Phase 1, 1995-2006, INSTAT/MADIO, authors' calculations. Note: idem Table 4.

However, contrary to the estimates for the formal industrial sector alone, employees in the *Zone Franche* always have a significant premium varying from 3% to 16% depending on the model. Introducing the socio-economic group into the regression sharply reduces the earnings premium secured by *Zone Franche* employees, by nearly two-thirds in the model excluding bonuses and by nearly three-quarters in the model including all remuneration elements. For an equivalent level of human capital, *Zone Franche* employees have lower level jobs. This phenomenon can be partly explained by the specific labour organization (low percentage of managerial staff and little job

¹³ Note that, contrary to wages, earned income for non-wage groups includes returns on both human and physical capital. Although not directly estimated in the equation, the return on physical capital is partly captured by the socio-economic group (employer versus self-employed worker).

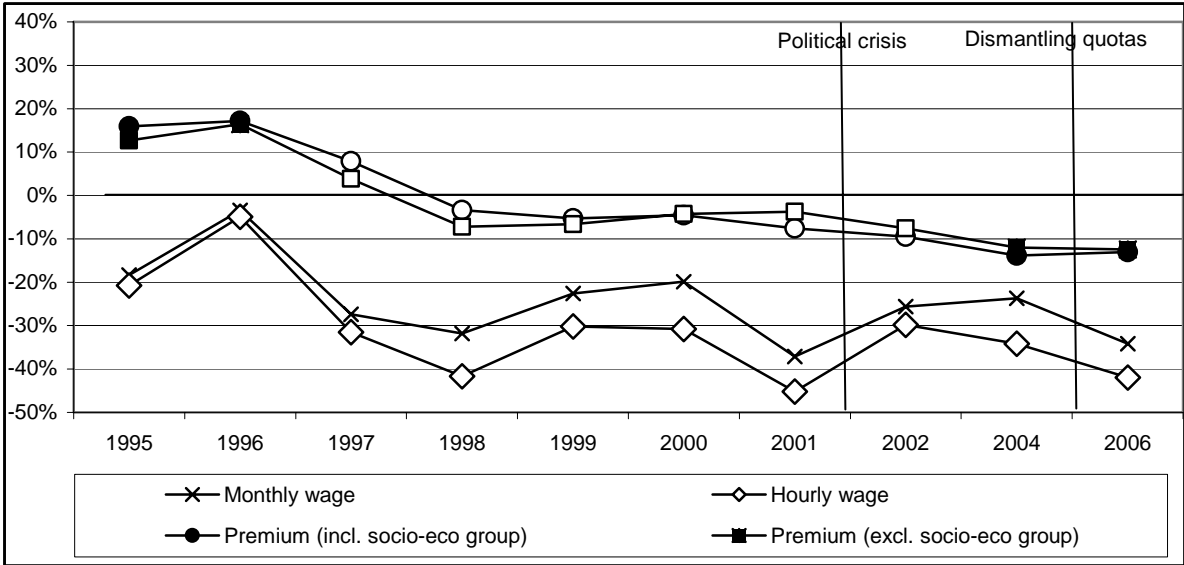
differentiation). It could also be due to a deliberate policy by employers to hire over-qualified workers. Estimates broken down by the different institutional sectors¹⁴ show that the premium for *Zone Franche* workers is always significantly lower than for workers in the public sector (administration and public enterprises) and higher than in the informal sector, and is not significantly different from that secured by other employees in the formal private sector.

3.3. The wage gap is increasing

By studying the time curve for the premium for *Zone Franche* workers, we can go beyond the average effects for the period as a whole (Graphs 2 and 3). The comparison of wages in the formal industrial sector shows that the average income gap widens, particularly as regards hourly wages, to the detriment of *Zone Franche* employees. Hourly wages (excluding bonuses) posted a 40% difference in 2006, that is twice as much as in 1995 (21%; they were even similar in both sectors in 1996). The premium curve also fell from significant and positive in the first two years (1995 and 1996) to significant and negative as of 2004. Starting from a positive premium of around 15% at the beginning of the period (depending on whether we take into account the socio-economic group or not), we obtain a negative premium of approximately the same value at the end of the period.

Compared with all gainfully employed workers on the labour market, we also note a drop in relative earnings for *Zone Franche* workers, with an even greater loss of ground for hourly earnings, as the increase in hours worked concerned essentially the *Zone Franche*. Although it decreased considerably compared with the beginning of the period, the premium was still positive in 2006 for the model excluding socio-economic group. As regards the model including socio-economic group, the premium was no longer significant after 1998 and even became negative since 2001.

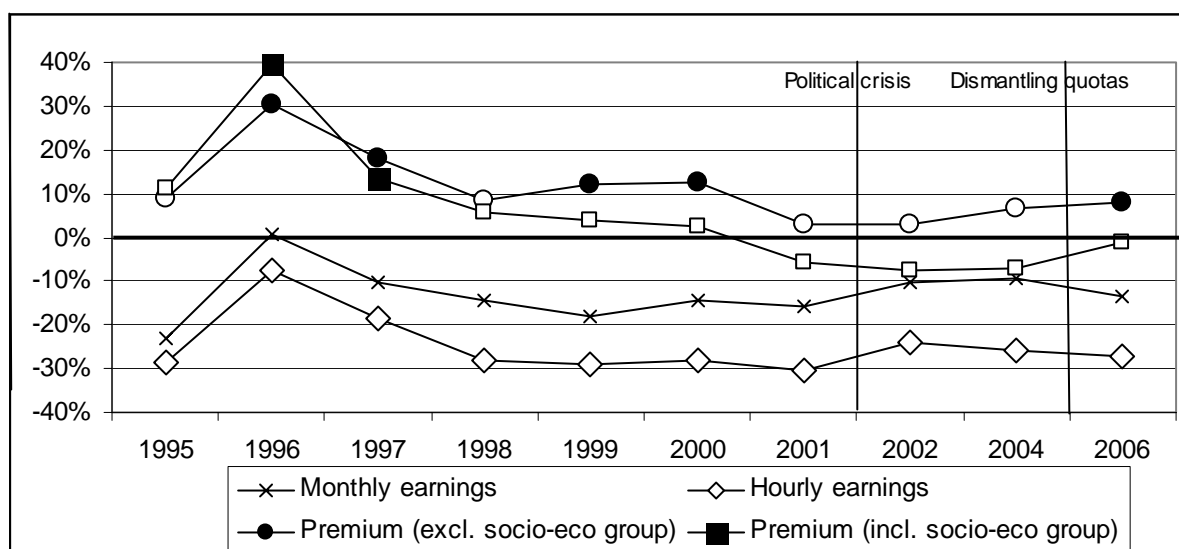
Graph 2: Change in relative wages and wage premium in the Zone Franche from 1995 to 2006: Zone Franche vs. non-Zone Franche formal industrial private sector



Sources: 1-2-3 Survey, Phase 1, 1995-2006, INSTAT/MADIO, authors' calculations.
 Note: Remuneration excludes bonuses. The monthly and hourly wage curves correspond to the ratio of wages in the *Zone Franche* compared with the other sectors. The premium corresponds to the coefficients of models 1 and 2, estimated for each year. For each curve, the significant coefficients (5%) are shown in black.

¹⁴ The estimated models are similar to those presented here, but have not been included. They cover the entire labour market, broken down into five institutional sectors (public administration, public enterprises, formal private sector excluding the *Zone Franche*, *Zone Franche* and informal sector). The results are available from the authors on request.

Graph 3: Change in relative earnings and earnings premium in the Zone Franche from 1995 to 2006: Zone Franche vs. Rest of the economy



Sources: 1-2-3 Survey, Phase 1, 1995-2006, INSTAT/MADIO, authors' calculations.
 Note: idem Graph 2.

This negative trend can doubtless be explained to a large extent by the fact that the exceptional activity seen on the domestic market did not benefit *Zone Franche* companies, which export to highly competitive international markets. Moreover, the rise in the exchange rate from the second half of 2000 followed by the final dismantling of textile & clothing quotas at the beginning of 2005 reduced the *Zone Franche* companies' room for manoeuvre. The premium's downward trend highlights a gradual aligning of wages in the *Zone Franche* with conditions on the labour market. Despite the upsurge in *Zone Franche* employment, there was no shortage of salaried labour, which could have put upward pressure on wages.

4. OTHER LABOUR STANDARDS

Job quality is gauged by more than just money. It is also measured by the non-monetary elements attached to the job such as the social security cover it provides, job security, promotion possibilities, etc. Across all these benefits, *Zone Franche* companies perform better than all the other formal industrial companies in the private sector. Yet, these advantages are progressively being reduced.

4.1. Better labour standards in the Zone Franche

Table 6 shows that three main types of benefits are systematically more common in the *Zone Franche*: registration with an official social security body (83.5%), paid holidays (64.6%) and the possibility of consulting a company medical service (60.8%).

Yet *Zone Franche* employees are at the greatest advantage when it comes to job security. A higher percentage of them have permanent jobs (98.8%) and receive pay slips (97.0%). They are also more often covered by a written employment contract (96.3%) and are paid on a fixed basis (93.5%). All of these elements contribute to secure, formal working relations. Although there is less in-house promotion of *Zone Franche* employees, this can be explained by the fact that they have less seniority. Once the differences in jobs and skills have been taken into account, the disparities are no longer significant.

The logit models we have tested - where the dependent variable corresponds to a form of cover or protection and the independent variables are the same as for the earnings equations - show that *Zone*

Franche employees enjoy significantly better coverage across all these benefits¹⁵. In many respects, *Zone Franche* employees are in as favourable a situation as public sector employees, who are the most highly protected on the labour market.

Overall, *Zone Franche* companies treat their employees somewhat better than their counterparts in the private formal sector and much better than workers in the informal sector, although, as we have seen, the wage premium has become negative. Furthermore, as mentioned before, core labour standards are better respected: the percentage of trade union presence is higher; wage gender discriminations are lower (which is also confirmed by Glick and Roubaud, 2006).

Doubtless, this favourable treatment of *Zone Franche* employees, albeit relative, should not be attributed to the company heads' philanthropic tendencies, given that their main reason for setting up in Madagascar was the low cost of labour. Some characteristics of the EPZs (larger size, foreign-owned firms' "best practices", etc.) could explain the more favourable conditions. For example, as these companies are sometimes working in a hostile local environment, they are more mindful of the legislation, especially labour standards, and this observance is further stimulated by active trade unions. It is important to belie the common assumption that EPZs undermine working conditions on the national labour market. In Madagascar's case, it is not the *Zone Franche* companies that reduce the quality of wage employment, but the poor conditions provided employees on the local labour market that attract them to the country in the first place. In fact, their presence is likely to benefit the workers by acting as an incentive to other companies to align their labour policies with the usually more advantageous conditions found in the *Zone Franche*.

Table 6: Share of employees with job benefits in the Zone Franche compared with the other sectors (Antananarivo), 2006

| | Public sector | Formal private sector | Of which: Industrial (non-Zone Franche) | Of which: Zone Franche | Informal sector | Total |
|------------------------------|---------------|-----------------------|---|------------------------|-----------------|-------|
| Social security registration | 80.7 | 56.6 | 57.4 | 83.5*** | 2.4 | 45.9 |
| Company medical service | 58.1 | 42.5 | 44.7 | 64.6*** | 4.7 | 34.8 |
| Paid holidays | 68.1 | 40.0 | 40.6 | 60.8*** | 2.2 | 34.5 |
| Pay slip | 92.9 | 76.7 | 79.1 | 97.0*** | 8.4 | 60.7 |
| Written contract | 95.9 | 76.5 | 78.1 | 96.3*** | 15.3 | 63.1 |
| Company-paid training | 31.4 | 14.6 | 15.2 | 14.7* | 2.8 | 14.3 |
| Do not want to change job | 79.4 | 69.3 | 69.6 | 72.6 | 60.0 | 68.5 |

Source: 1-2-3 Survey, Phase 1, 2006, DIAL/INSTAT, authors' calculations.

Note: ***: significant positive coefficient at 1% threshold (logit models in private formal industrial sector).

In addition to this relative advantage for *Zone Franche* employees, the zone's companies stepped up their formalization of work relations over the past decade. The proportion of employees benefiting from all work-related benefits (paid holidays, bonuses, medical cover, etc.) has also increased, to the extent that the contractualization of wage relations is now widespread in the *Zone Franche*, which was far from the case just a few years ago. This fundamental change, which has occurred in record time, is all the more exceptional in that it took several decades for the industrialised countries to achieve the same result. The 1980s and 1990s even saw an inverse trend towards increased insecurity in wage relations in most of the emerging countries (see Saavedra, 2003, for a study of Latin America). This positive trend for the Malagasy labour force has gradually spread to the formal sector as a whole. The model introduced by the *Zone Franche* was probably a driving force behind this.

¹⁵ The results of these models are not included here, but are available from the authors on request.

4.2. But social progress is being reversed

The abovementioned advantages of working in the *Zone Franche* are actually offset by a series of negative factors. Apart from the low wages, these include the workload and work pace, both far higher than elsewhere. Integration into the world market and its demands in terms of competitiveness (costs, delivery times and quality) force the companies to tighten their labour management, with stricter controls as regards rates, output and productivity. The problems caused by steadily increasing working hours, standing at 54 hours in 2006, are all the more acute since the *Zone Franche* employs large numbers of women who suffer, as elsewhere, from the “double day” phenomenon since they also have to cope with domestic tasks and bringing up their children (Rambeloma, Rabeson and Andrianarison, 2002).

Moreover, the relative advantages benefiting *Zone Franche* employees are progressively being reduced for the same reasons explaining the declining trend of relative wages, i.e. increased international competition for clothing products. All the main advantages (company medical service, paid holidays, company-paid training) peaked at the beginning of the 2000s and have been progressively reduced since then. Simultaneously, the percentage of trade union presence has declined. This degradation has also been observed in the rest of the economy, as if after playing a leading role for social progress, the *Zone Franche* was now contributing to social regression and to the process of informalization of labour under international competitive pressure.

These elements help us to understand why the employee satisfaction rates in the *Zone Franche*, albeit high, are no higher than the average (Table 6)¹⁶. Further proof of this is the high staff turnover, calculated by the ratio of the number of employees who left their companies in the year preceding the survey to this same total plus those still employed in the *Zone Franche* at the time of the survey. Every year, about one in five *Zone Franche* employees leave their job, compared with a little over one in ten in the formal private sector. This rate is far higher than in Mauritius, where it is around only one in twenty (Cadot and Nasir, 2001).

5. CONCLUSION

The *Zone Franche* has been the main driving force behind employment and export growth in Madagascar over the last decade and has made a major contribution to the economic upturn observed since 1995 after a long recession period. Contrary to academic wisdom, the *Zone Franche* has also been up to the beginning of the 2000's the driving force behind the observed improvement in wages and working conditions in the other sectors of the economy. This surprising result was explained by the fact that Madagascar is an LDC (where labour standards are very low on average), unlike Middle Income Countries where most of the EPZs are established.

As expected by many economic studies (see especially Nordas, 2004; Cling, Razafindrakoto and Roubaud, 2005), the final dismantling of MFAs customs quotas on 1 January 2005 has benefited mainly the Asian countries and especially China, and has had a negative impact on most other developing countries, including Madagascar. Since 2005, the *Zone Franche* exports have stagnated and employment has slightly decreased.

Due to increased international competition, real wages have decreased in the *Zone Franche* and labour standards have deteriorated. Our econometric estimates on individual data show that the remuneration paid by the *Zone Franche* companies has become significantly lower, other things being equal, than that paid by the industrial firms in the formal private sector. Nonetheless, the *Zone Franche* companies still pay their employees more on average than the informal sector, which is the main alternative for the low-skilled female labour force.

¹⁶ This relatively high satisfaction rate may seem to contradict the low average job seniority levels presented in Table 2. But the satisfaction index as defined here only concerns employees who have kept their jobs. It is overestimated in that it does not take into account employees who have left their jobs. Conversely, the low average levels of job seniority are not just the result of higher turnover in the *Zone Franche*, but also of the fact that this special scheme for these companies was created fairly recently and their very strong recruitment campaigns automatically reduce average employee seniority.

The same negative trend is observed for labour standards and nonwage benefits, which used to be much higher (except for working hours) than in the formal private sector: not only are the working hours increasingly longer but most relative advantages (company medical service, paid holidays, etc.) are being reduced in the *Zone Franche* as well as in the rest of the economy.

The success of the *Zone Franche* is therefore under threat. Beyond the case of Madagascar, the *Zone Franche*'s success had added fuel to the idea that using EPZs to develop a productive manufacturing base and promote employment was a possible path for African countries. This paper shows that this strategy is not sustainable anymore since the end of the MFAs. Yet an alternative growth model has still to be designed.

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