

MADAGASCAR: *De Jure* Labor Regulations and Actual Investment Climate Constraints

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Abstract

Although labor market regulations are not among the most pressing issues for a low-income country such as Madagascar, they may still have distorting effects. This paper uses a number of indicators that have been developed in recent years in order to measure the regulatory burden in various countries across the world. These indicators are based both on *de jure* regulations and on opinion surveys among employers. *De jure* regulations on minimum wage, payroll taxes, and fixed-term contract regulations tend to be stricter in Madagascar than in comparator countries. Although labor market constraints are not among the most pressing for enterprises in Madagascar, there is some evidence that firms have an incentive to remain small and informal in order to avoid regulations. In the current investment climate, firms with more potential for job creation (medium-sized and innovative firms) have been less inclined than similar firms in comparator countries to create employment in the period 2002-2005. Moreover, the lack of skills and education of available workers is a particular issue in Madagascar for exporting and innovating firms. There is evidence that Malagasy manufacturing firms have been compensating for this lack through providing formal training to their workers.

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1. Introduction

Madagascar is a low-income country that is among the poorest in the world and within Sub-Saharan Africa. Despite recent improvements in terms of economic growth and poverty reduction, the country is set to miss most of the MDGs if it does not effectively scale up its efforts. The structure of the labor market is typical of lower income countries: labor force participation and employment rates are high; most of the population is engaged in subsistence agriculture (it represents 70 percent of employment); and the informal sector is large. The latter indeed dominates the Malagasy labor market; in 2005, 56.8 percent of non-agricultural adult workers were in the informal sector, and other recent sources, such as the Global Competitiveness Report, suggest that the country is among those with a very large informal employment.¹

Productivity in the agricultural sector remains very low compared to industry and services, and is not foreseen to catch up in the near future. The tertiary sector has grown strongly recently, with public works, tourism, transport, banking and the telecommunications sectors as the key growth sectors. In the secondary sector, mining has shown strong growth, linked to substantial foreign investments in ilmenite.² The secondary sector as a whole, however, is small both in terms of output and employment. After having seen its employment share reduced after the political crisis of 2001/02, only 8 percent of workers are now active in the secondary sector.

Recent assessments have suggested that the country's private sector has a lot of potential for development. In particular, private sector investment rates remain quite low in the country compared with other similar countries in Sub-Saharan Africa. The great majority of new investments are financed through firms' profits rather than credit. There seems to be a lack of investment by the business sector that, if concentrated in potentially more productive and innovative sectors, can be a particular concern. In particular, enterprises outside the EPZ have been generally underperforming, in terms of factor productivity, compared to similar enterprises in comparative countries.³

The policies that enable the government to improve labor market performance are likely to be found both within and outside the labor market itself. This is the case in Madagascar, which has important challenges to face in terms of macroeconomic policies, as well as regulatory policies for other markets (such as financial and product markets). In fact, firms in Madagascar identify labor regulations – one of the most obvious policy levers directly affecting the labor market - as their 16th most important obstacle in a list of 25 obstacles: labor regulations are clearly not perceived to be among the most binding constraints for firms.

Nevertheless, it has been shown for other countries/regions⁴ that labor market regulations may have distorting effects. They may affect certain types of firms differently; for example, firms in more productive sectors, which need to have greater turnover of labor, may be more

This paper has been written under the guidance of Stefano Paternostro and strongly benefited from inputs and comments by Margo Hoftijzer. Mary Hallward-Driemeier also provided useful comments as a peer reviewer. The paper is part of a program of analytical research on labor market issues in Madagascar.

¹ Stifel et al. (2007); the country is ranked by the Global competitiveness Report (2006) 109th out of 117 countries in terms of the share of the informal sector in the economy, the last country having the highest share.

² Program Document for the Fourth Poverty Reduction Support Credit (World Bank, 2007)

³ Shah et al. (2005); World Bank (2007).

⁴ World Bank (2005); Pagés et al. (2007); Micco and Pagés (2006). Haltiwanger et al. (2006).

constrained by labor legislation than others; labor regulations may incite firms to remain informal, thereby reducing their chances to expand and improve productivity; they may be associated with discriminatory behavior against certain vulnerable groups such as women or youth; and, more generally they may affect the structure of employment. Moreover, as countries develop and other constraints are lifted, overly restrictive labor regulations are likely (and have been shown) to then become more binding.

In recent years, a number of indicators have been developed in order to measure the regulatory burden that firms and other economic agents have to face to participate in the economy. These indicators have been based both on *de jure* regulations (e.g., Doing Business) and on opinion surveys among employers (e.g., Enterprise Surveys).

This paper provides an overview of *de jure* labor market regulations in Madagascar, as compared to international experience. It suggests that minimum wage, payroll taxes, and fixed-term contract regulations are relatively stricter in Madagascar than in other countries according to indicators of labor market rigidity. The country is also found to err on the side of complexity of the laws and regulations, leading to relatively high costs for firms to comply with regulations.

The way regulations are enforced influences strongly the final impact that they have on economic outcomes. Simply looking at *de jure* regulations is therefore not sufficient to understand the link between firm performance and labor market regulations. In addition, a large informal economy makes the analysis of the impact of labor market regulations, as well as the design of policies, more complicated. Labor regulations may be considered as unimportant insofar as they are not applied in the informal sector (where firms can find flexibility). At the same time, some regulations may influence practices in the informal sector, or may give incentives for firms or workers to remain in the informal sector, thereby potentially stunting their future growth.

To investigate these issues, this paper analyzes the determinants of the perceptions that Malagasy formal manufacturing firms have about the investment climate in general and those pertaining to the labor market in particular. In particular, it identifies which firms report being the most negatively affected by those regulations, both within Madagascar and as compared with firms in SSA and other low-income countries. First, it situates the relative importance of labor market regulations among other investment climate constraints. Although labor market constraints tend to be considered a low priority in low-income countries, they may be the source of specific problems for some types of firms, which may be those most likely to provide jobs. The paper therefore then focuses on investment climate constraints linked to the labor market.

The results suggest that although investment climate constraints linked to the labor market are not among the most pressing for Madagascar, some aspects disproportionately affect certain types of firms. In particular, small firms complain as much as larger firms about labor regulations, while they are much less confronted by them. Madagascar is found to benefit from relatively good enforcement and governance in the Sub-Saharan Africa and Low Income Countries contexts. This is very positive in the sense that regulations (including labor regulations) are relatively well-enforced and firms suffer comparatively less from corruption. It also means that one way for firms to avoid regulations, including labor regulations, is to remain fully informal. Because informality is associated with lower productivity, greater turnover, and

lack of investment (associated with an incentive to remain very small), it suggests that ensuring that all types of regulations, including labor regulations, are suitable and not overly restrictive is an important policy goal.

Malagasy exporting and innovating firms complain more than others in Madagascar, and more than similar firms in Sub-Saharan Africa and Low Income Countries about the lack of skills and education of available workers. Such concerns can potentially delay the adoption of new technologies. They suggest the need to review the constraints to having a fully qualified labor force. Such policies reside mostly within formal education, but also potentially with labor policies such as training and re-training.

The behavior of Malagasy firms in terms of training and hiring reveals that labor market constraints do affect firms' behavior even in a low income country such as Madagascar. First, there is evidence that Malagasy manufacturing firms have a greater tendency to provide formal training to their workers than in comparator countries, suggesting that one way for firms to compensate for the lack of skills and education is to provide training directly. Second, in the climate just described, firms with more potential for job creation (medium-sized and innovative firms) have been less inclined than similar firms in comparator countries to create employment in the years prior to the survey.

2. Data

In a context where the investment climate has been identified as an important dimension that determines economic growth of countries, the World Bank has developed the Doing Business Database and the Enterprise Surveys.

The Doing Business database is based on the analysis of *de jure* regulations. As of end 2007, it contains information pertaining to regulations in 175 countries. The indicators that it proposes on different aspects of the investment climate (e.g., starting up a business, taxes, employing workers, etc.) all include several selected dimensions which are then standardized to constitute composite indicators. Beyond the issues related to the measurement of these various dimensions, composite indicators may hide important differences and interesting patterns. For this reason, this paper mostly uses the disaggregated data readily provided by the Doing Business team. We use their indicators on hours worked, firing procedures of a redundant worker, and regulations of fixed-term contracts.

The Enterprise Surveys administer a questionnaire related to investment climate and firms characteristics mostly to formal firms, but also, in some countries, workers and informal firms. In Madagascar, 293 firms in the manufacturing sector were interviewed in 2005. As suggested in Annex 1, which describes the methodology of the Enterprise Surveys, it can be assumed that this sample of firms is representative of the population of manufacturing firms in Madagascar. Table 5 shows that the firms in the sample mostly come from the private sector, with a majority being owned within the country. These firms tend to be innovative, in the sense that nearly 70 percent have upgraded or created a new product line in the three years preceding the survey. Less than 30 percent are engaged in exports, and 19 percent belong to the EPZ. Only 45 percent of firms

are in dynamic sectors⁵ and over 65 percent are in low productivity sectors.⁶ Nearly one-third of firms come from the textile/garment industries. This is not surprising as Madagascar has benefited from the Multi-Fiber Agreement. The rest are spread across various industries, with about 22 percent in wood and furniture. The mean age of firms in the sample is 17, with half of them being 12 or older. This means that most of the firms that are being interviewed are those that have survived and are established in the market. The average size⁷ of firms in the sample is 175, but half the firms have less than 31 permanent staff. As is the case in most countries involved in these surveys, the sample is restricted to firms with 10 or more permanent employees.

Importantly, the firms interviewed are from the formal sector, i.e. they are registered with the authorities. In that sense they are part of a relatively small sub-set of enterprises in Madagascar. This restricts the type of questions that our analysis can answer. For our purpose, we are looking at how labor market constraints affect firms. The firms from the survey are *a priori* more affected by such constraints (in particular any form of regulations) than firms in the informal sector and small firms because they are on the “radar screen” of authorities. The impact of regulations and the difference between formal and informal firms in their response to regulations depend strongly on the level of enforcement of regulations in the country. However, strict regulations may also have an indirect impact on informal firms: for example, these firms may voluntarily remain small and/or informal in order to avoid having to comply with constraining regulations. Formal firms may hire part of their workforce informally in order to avoid regulations and associated costs. Workers may prefer receiving pay rather than forsake current income for future benefits (such as pensions or public health), which may be poor or inadequate in their country. In addition, while low levels of enforcement may render regulations meaningless in practice, as the country develops and governance improves, leaving in place strict regulations may later become a binding constraint.

Other data sources used in the paper include: the Global Competitiveness Report, which ranks countries of the world according to various economic dimensions⁸; the Fraser institute indexes, which measure the degree to which the policies and institutions of countries support economic freedom in five areas⁹: size of government; legal structure and security of property rights; access to sound money; freedom to trade internationally; and regulation of credit, labor and business; and governance indicators produced at the World Bank, which measure six dimensions of

⁵ The classification was done taking the average of the sectoral value added growth rate of the G7 countries over the 1990s. The sectors were defined as “dynamic” if their growth rate was equal to or higher than the average growth rate across sectors and “less dynamic” if it was below. Source of data: UNIDO. Source of methodology: Pagés et al. 2007.

⁶ The classification was done taking the average sectoral labor productivity of the G7 countries over the 1990s. Sectors were defined as “low productivity” if their level of productivity was lower or equal to percentile 33 of the distribution across sectors; as “medium productivity” if their level of productivity was between percentile 33 and 66; and “high productivity” if their level of productivity was higher or equal to percentile 66. Source of data: UNIDO. Source of methodology: Pagés et al. 2007.

⁷ The size includes only permanent workers.

⁸ <http://www.weforum.org/en/initiatives/gcp/Global%20Competitiveness%20Report/index.htm>. The rankings are calculated from both publicly available data and the Executive Opinion Survey, a comprehensive annual survey conducted by the World Economic Forum together with its leading research institutes and business organizations in the countries covered by the Report.

⁹ The Fraser institute indicators are mostly based on reports from the private sectors. Some of these indicators are taken from the Doing Business Database. The Fraser institute indexes are well-respected across the world including by academics such as Richard Freeman. <http://www.fraserinstitute.ca>

governance: voice and accountability political stability and absence of violence, government effectiveness, regulatory quality, rule of law, and control of corruption.¹⁰

Keeping data caveats in mind, the following sections provide evidence regarding the functioning of the labor market in Madagascar.

3. How Do Malagasy Labor Regulations Compare Across Sub-Saharan Africa and the World?

We start with the indicators provided by the Doing Business Database.¹¹ Figure 1 shows the summary indicators for Madagascar as well as for Sub-Saharan Africa, and Francophone¹² Africa. Figure 2 shows Madagascar in contrast to OECD countries, South Asia and low income countries. These figures show that Madagascar is relatively strict in terms of regulations in several dimensions. In particular, the country is more stringent than all sub-regions in terms of hiring procedures. It also imposes a greater burden than most sub-regions in terms of the regulations on hours, and non-wage labor costs.

On the other hand, firing procedures and costs tend to be relatively less constraining than in other developing regions. These aggregate indexes however hide many dimensions and it is difficult to disentangle all their implications. We therefore move on to decompose them, and complete them with other sources and other methodologies.

Madagascar's hiring regulations are characterized by a relatively high minimum wage and strict rules on temporary employment

The findings from Fraser Institute's indicators confirm the relatively high level of the Malagasy minimum wage (Figure 3). Madagascar was given a value of 0, which means that the minimum wage was more than 79 percent of the average value added per worker. Although a minimum wage can guarantee a basic income to all formal workers, and prevent vulnerable workers from falling through the cracks, minimum wages that are too high may hurt those they are meant to protect by pricing them out of the labor market, and/or forcing them to the informal sector where such rules are unlikely to apply. Moreover, lack of enforcement may render minimum wage laws largely irrelevant. Based on this indicator, the result suggests that indeed, the Malagasy minimum wage may be too high: not only does it represent an overly large proportion of the national average wage, but this share is also among the highest in the world. Madagascar's minimum wage ratio to national average wage is similar only to that of Chad, Congo (D.R.), Kenya, Morocco, Niger, Nigeria, Tanzania, and Mozambique.

The rest of the "difficulty of hiring" index is composed of variables related to fixed-term contracts (see Annex 2). When looking at the index for temporary employment regulations (Figure 4), Madagascar is much stricter than other sub-regions. This is mostly due to a recent change in law regarding the duration of fixed-term contract. In the view to make sure that fixed-

¹⁰ <http://www.govindicators.org>

¹¹ <http://www.doingbusiness.org>

¹² Excluding Madagascar. There is evidence that the mere fact of using the civil law system, which characterizes Francophone Africa, or the common law system, which characterizes Anglophone Africa, has a bearing on the impact of regulations on the labor market. By comparing Madagascar to other civil law countries, we compare countries that face similar regulations/issues (see for example Botero et al., 2004).

term contracts are used only for the purpose of unusual/short-term business need, the government limited the use of these contracts to 2 years, and to tasks to be finished within the contract duration. As Table 1 illustrate, most countries in the world do not impose such restrictions. Reducing flexibility of fixed-term contract can lead firms to look for other ways to hire labor flexibly, for example, through hiring workers informally. In addition, such measure, on its own, is unlikely to improve employment security for workers. Once the two-year contract runs its course, firms can simply hire a new worker under the same conditions.

In this context, it is important to note that although making fixed-term contracts easier to set-up may be a good thing for short-term employment creation (i.e., increase the flexibility of the labor market), it may lead to situation where temporary employment becomes the main source of employment, leading to greater employment insecurity for workers (i.e., decreased security). This issue is exacerbated in situation where regulations for regular employment are or remain inflexible; this leads to a large bias against employing workers under permanent contracts. To avoid undesirable effects of liberalizing fixed-term contracts, it is therefore necessary to simultaneously review the regulations pertaining to regular employment.

Firing regulations are relatively flexible

Using an OECD-type composite index of labor market regulations,¹³ it appears that Madagascar's regulations for regular employment are relatively flexible compared with other regions of the world, especially compared to other countries from Sub-Saharan Africa (Figure 5).

Looking in more detail at firing regulations (Table 1), we see that Madagascar has relatively flexible dismissal procedures compared with other Francophone Sub-Saharan Africa countries. Specifically, they are similar to Djibouti, Guinea and Rwanda, and less flexible than Côte d'Ivoire. In particular, apart from applying priority rules to dismissals and re-employment, Madagascar does not require notification, approval or prior retraining of redundant workers. Firing costs (Table 2) are also on the low side. In particular, severance payments tend to be low: at 26 months of wages for workers with 20-year tenures, they are below the world's average (43 months) and median (28 months). Moreover, as is the case in most Sub-Saharan African countries, they constitute the only form of income protection that formal workers have in case of job loss. Although they are not the best way to protect workers against dismissal, severance payments are not inordinate in Madagascar.

Other non-wage benefits are within international standards...

The development of workplace safety and regulations that protect workers at their workplace are positive evolutions that are welcome in all countries of the world. Countries that are now developed went through a long process of social progress leading to the establishment of such protection. However, in developing countries, certain kinds of protection may have come about too quickly and imposed on economies that could not afford them.

Table 3 shows that in Madagascar mandatory annual leave (24 days) is slightly above the world average (20 days) and median (21 days). The maximum number of hours per week (40)

¹³ Based on methodology by the OECD, Pierre and Scarpetta (2006) developed an employment protection legislation index in order to evaluate the importance of labor market regulations in developing countries. This methodology is applied to the data provided by the Doing Business Database (see Annex 3 for details).

corresponds to the world's average and median. Similarly to Francophone Africa, and to the majority of countries in the world, Madagascar's labor code imposes some restrictions on night work and weekly holidays work. Depending on their stringency, the latter restrictions may create constraints for some type of firms that would require more flexibility in terms of production. For example, some firms may improve productivity by running continuously. However, these regulations do not seem excessive by international standards.

...But inefficiencies may arise when too many exemptions exist

An issue in Madagascar is the presence of sector by sector/case by case exemptions. In general, having a set of complex and numerous exemptions complicates greatly the application of the law and is likely to cause additional costs in terms of transactions, implementation, and enforcement. Moreover, it leads to a lack of transparency; this is costly for firms that try to understand these regulations, and may lead them to circumvent these. Certain types of firms may end up shouldering more of the regulatory burden. This may in turn lead to misallocation of resources.¹⁴ For example in Madagascar firms that belong to the EPZ benefit from tax incentives and other benefits that other firms do not have. Although the creation of such a zone has been a positive development for the country (Cling et al., 2007), there is evidence that it leads to a situation whereby some firms in the EPZ survive mostly thanks to the associated benefits, while others that are outside the zone suffer unduly from a less advantageous investment climate (Shah et al., 2007).

More generally, regulations that cover only certain groups such as women or the disabled may have perverse effects against the very individuals they are trying to protect, and reduce their chance of employment. When such regulations are accompanied by special case by case authorization, this may create room for varying interpretations of the law. Reform effort should aim to avoid and suppress such exemptions. A set of basic workers rights, which would include regulation against discriminatory behaviors, could be defined in accordance for example with core labor standards,¹⁵ and other internationally recognized standards. Having simpler regulations would also facilitate their enforcement, and the work of labor inspectors.

Enterprises could benefit from some form of annualization of working hours

Moreover, restricting hours worked per week may be impractical for firms that face large fluctuations in demand. Counting hours over a longer period of time (for example, the year) can permit the organization of the workload over the year; workers can work more in peak periods without firms having to pay expensive overtime, but compensating by having more time off at other times of the year.¹⁶

¹⁴ For example, Gauthier and Reinikka (2006) suggest that tax exemptions in Uganda mostly benefit large firms, while small firms are able to evade taxes. Medium-sized firms are therefore disproportionately shouldering the tax burden.

¹⁵ Eight ILO conventions describe the core labor standards: Freedom of Association and Protection of the Right to Organise Convention, 1948 (No. 87); Right to Organise and Collective Bargaining Convention, 1949 (No. 98) ; Forced Labour Convention, 1930 (No. 29); Abolition of Forced Labour Convention, 1957 (No. 105); Minimum Age Convention, 1973 (No. 138); Worst Forms of Child Labour Convention, 1999 (No. 182); Equal Remuneration Convention, 1951 (No. 100); Discrimination (Employment and Occupation) Convention, 1958 (No. 111).

¹⁶ This type of reforms is being tried with some success in several OECD countries.

Social security contributions do not appear overly high

As other benefits, social security contributions can have a negative effect on employment in situations where they are not passed onto workers in the form of lower wages. At 14 percent of contributions (Figure 6), Madagascar is toward the bottom of the range in Francophone Africa. The relevant question here is not so much the level of contributions and their effect on employment, as this effect compared with the benefits they bring (what do they provide for?), and their coverage (who benefits?). Table 4 shows that, as the great majority of Francophone African countries, Madagascar provides for old age, disability and survivor benefits, work injury benefits, and family allowances. Social security contributions are used for these benefits. They also finance maternity benefits. As all these countries, Madagascar does not provide unemployment benefits. One has to look at whether the old age pension, sickness benefit, work injury and family allowances that are provided are efficiently delivered and fill their function of income protection in old age, health coverage, etc. Moreover, in a country like Madagascar which, as mentioned above, has very high informality the coverage rate of such schemes is likely to be very small as workers in the informal sector are generally not eligible for them.

4. How Governance Influences Enforcement and The Impact of Labor Market Regulations

De jure versus subjective indexes of regulations

Hiring and firing regulations, as measured through reports from the private sector, are found to be a greater impediment to doing business than in comparator countries in SSA and LIC. Figure 7 illustrates how the indicator varies across sub-regions.¹⁷ Using an index that is based on reports from the private sector¹⁸ (as opposed to *de jure* regulations) casts a different light on hiring and firing regulations. If we accept that what firms perceive is closer to the actual impact of regulations than *de jure* measures, the result show that the Malagasy regulatory environment is somewhat more burdensome than in other Sub-Saharan African countries and low-income countries.

Governance and the impact of regulations

Interestingly, the above reports from firms are consistent with the finding that Madagascar has relatively good governance compared to other developing regions¹⁹ according to indicators of governance developed by Kaufman and Kraay (Figure 8). Better governance indeed suggests that labor market regulations potentially have a stronger effect on the labor market than in other low income countries: whereas in the latter low governance permits the evasion from regulations, this may be less the case in Madagascar. At the same time, better governance, if it includes better control of corruption (as seems to be the case in Madagascar, compared with similar countries), also implies lower costs associated with corruption.

When asked how much time per week their senior managers spend dealing with regulations²⁰ the average answer in Madagascar is around 20 percent. This is relatively high compared to other Francophone Africa countries as well as compared to the world's average and median

¹⁷ The index potentially ranges from 1 to 7.

¹⁸ Executive Opinion Survey, Global Competitiveness report, 2006.

¹⁹ All developing regions are well below industrialized countries.

²⁰ Enterprise Surveys, World Bank, 2005.

(based on a sample of 97 countries across the world). At the same time, over 60 percent think that officials' interpretations of regulations that affect their firm are consistent and predictable. This suggests that firms that do comply with regulations understand them, but also spend a large amount of time dealing with them. Remaining informal may have the clear advantage of reducing such costs, in particular for small firms. Consistently with the findings above, there is evidence that costs associated with corruption are slightly lower in Madagascar than in LIC and SSA. Firms report that payments for public officials to “get things done” in Madagascar are around 1.7 percent of annual sales, against 2 percent in Sub-Saharan Africa and 2.3 percent in LIC. Moreover, enforcement seems to be higher, as the average number of days spent on labor and social security inspections are on average slightly higher than in SSA and LIC (3 days versus 2.7 in SSA and LIC), while the potential corruption associated with it is lower (4 percent of inspections included bribes in Madagascar against an average of 16 percent in LIC and 10 percent in SSA).

The country benefits from comparatively good governance and government effectiveness in the Sub-Saharan Africa and low income countries contexts. Enforcement of regulations, in particular in the labor market, can therefore be expected to be relatively good. In this context, Malagasy firms find hiring and firing regulations less flexible than firms do in SSA and LIC.

5. Analysis of IC Constraints in Madagascar

5.1 While not unimportant, labor regulations and workforce skills are not perceived to be the main impediments to doing business within Madagascar

We now move from looking specifically at labor regulations, to their relative (perceived) importance compared to other constraints that firms face. Looking at what employers report in Madagascar, we find that cost and access to financing, and macro instability are the worst obstacles that firms have to face both in terms of average score and in terms of the proportion of firms that report these as a major or very severe obstacle (Figure 9). As mentioned above the financial markets in Madagascar are weak and firms borrow little money (Shah et al., 2005). For example, new investments are largely (up to 76 percent) financed through profits rather than credit. It appears therefore that part of the low investment rates can be explained by failures in the credit market.

At the other end of the ladder, business licensing, access to land, telecommunications and transports are perceived to be the least problematic. It is interesting that infrastructure is not among the worst obstacles in a country like Madagascar, as transport and telecommunications, together with other infrastructure, are often weaker elements of the investment climate in low-income countries. In fact, in Madagascar, only electricity supply appears to be an issue. The latter result could be partly linked to the specific problems that the country encountered in terms of electricity supply in 2005, while the fact that infrastructure does not appear as an issue for the firms that were included in the survey sample may be linked to the fact that the great majority (around 85 percent) is located in the capital city, which is likely to benefit from the best infrastructure in the country.

While labor market regulations are ranked as the penultimate issue when looking at the proportion of firms that report them as a major or very severe obstacle, they are ranked as a slightly worse problem than that when looking at the average score. This suggests that although

they are not a severe issue for most firms in the countries, they present a challenge to many firms. At the same time, the skills and education of available workers (or lack thereof) is a major or very severe obstacle to doing business for over 30 percent of firms in Madagascar. Although this ranks them among the lesser obstacles, it is still significant. The low ranking of labor market constraints in general and labor regulations in particular is consistent with a situation where firms face more pressing issues than these.

5.2 The extent to which Malagasy firms are constrained by labor regulations is fairly similar to that faced by firms in other low income countries.

A second step is to look at the situation in Madagascar compared with other countries. We compare Madagascar to two main groups: Sub-Saharan Africa (SSA) and low-income countries (LIC).²¹ The results are presented in a graphical form in Figure 10 to Figure 17, which are based on the marginal effects and predicted probabilities obtained from regression analysis presented in Table 8 to Table 11. Because perceptions are based on subjective beliefs, which may not be based on the same reference points across countries, and even across firms within a country, it is useful to use regression analysis. The latter enables us to control for various observable firm characteristics that may influence perceptions of the investment climate, and to attempt to capture the unobservable characteristics that push respondents to respond in a certain way. For this we control for the average tendency to complain in all elements of the investment climate. With this control, we indeed hope to capture the “natural” tendency that individual firms/managers may have to complain.

The three main constraints reported by Malagasy firms compared with firms in LIC and SSA are electricity, skills and education of available workers, and cost of financing.

Comparisons with both groups of countries show that firms in Madagascar tend to view constraints coming from the supply of electricity as relatively important (Figure 10 and Figure 11). This appears to be the main area where firms are worse off in Madagascar. Given that the survey took place in 2005, this could be due to peculiar circumstances in 2005. However, there is evidence elsewhere that the supply of electricity in the country has been impeded by difficulties encountered by the supplying company (IMF, 2007).

Skills and education of available workers rank as the second (third) main constraint in Madagascar relative to SSA (LIC). The difference is relatively large in economic terms (over 20 percentage points) although it is not statistically significant.

Finally, compared with low-income countries, Malagasy firms have greater difficulties with the cost of financing. This difference disappears when looking at the Sub-Saharan countries group, suggesting that the cost of financing is a common issue in the latter group, but not necessarily among low-income countries.

Least important are licensing and taxes

²¹ Sub-saharan Africa includes here: Benin, Eritrea, Ethiopia, Kenya, Madagascar, Malawi, Mali, Mauritius, Senegal, South Africa, Tanzania, Uganda, and Zambia. Low-income countries include: Bangladesh, Benin, Cambodia, Eritrea, Ethiopia, India, Kenya, Kyrgyz Republic, Madagascar, Malawi, Mali, Moldova, Nicaragua, Pakistan, Senegal, Tajikistan, Tanzania, Uganda, Uzbekistan, Vietnam, and Zambia.

At the other end, business licensing, which was already found to be a minor issue for Malagasy firms, is revealed to be less of a problem in Madagascar than in both groups of countries. Moreover, tax administration and rates are shown to be less of an issue compared with SSA.

Labor market regulations are not among the most important constraints

What about labor market regulations? Compared to SSA, the difference, which is negligible, is both economically and statistically insignificant. Firms in Madagascar are about 10 percentage points more likely than similar firms in LIC to complain about labor regulations as a major or very severe obstacle to doing business. However, this difference is not statistically significant. These results confirm that across LIC within and outside SSA, labor market constraints are not among the worst obstacles that firms face.

5.3 A closer look at the role of labor market constraints for different types of firms

As mentioned above, labor market constraints, and in particular labor market regulations, are not among the worst obstacles that firms face in Madagascar. However labor regulations can have a disproportionate effect on some firms.²² It is interesting in particular to see if firms that are more likely to create jobs are complaining more than others. For example, a situation whereby small firms are less affected by regulations than large firms could indicate that, by getting bigger, firms may encounter new constraints that did not exist when they were small.²³ It could also mean that (already) large firms entering the market face greater constraints than smaller firms. If that was the case, regulations could have an impact on the structure of employment and on employment creation.

Despite being less “exposed” to labor market regulations, small firms are as likely as larger firms to find them constraining

Small and medium size firms (SMEs) are generally the most dynamic, especially in terms of employment creation. It is interesting to look at how firms of different sizes report being affected by the investment climate, especially to see whether the former tend to be more constrained than others. Investment climate constraints that have a disproportional effect on SMEs are indeed the most likely to have the worst effect on job creation, and potentially firm entry in the formal sector. Results suggest that firms of different sizes differ in their perceptions of the investment climate in several dimensions including financing, governance, and regulations. Moreover, most of these differences are greater in Madagascar than in comparator countries.

Perceptions of labor regulations vary little with the size of firms, although there is some evidence that medium Malagasy firms complain less (Table 7). Madagascar differs significantly from the rest of SSA, and from the rest of LIC. All firms in Madagascar tend to complain less about labor regulations than in SSA and slightly more than in LIC. Moreover, the difference between large and small firms is much smaller in Madagascar than it is in SSA (Table 9 and Table 11) (Figure 18).

²² This section describes statistically significant results only.

²³ Similarly, they may constitute constraints to becoming formal. However, we cannot check this as all firms considered here are formal.

Differences in the level of perceptions across different types of firms and across firms in different countries may be due to varying degrees of “exposure” to labor market regulations. When prompted further, larger firms reveal that they tend to be more exposed to labor market regulations. In other words, despite having to deal less with labor regulations, small firms are as likely to complain as large firms. In particular, not only are large firms more likely to have fired workers in the year preceding the survey (over 77 percent of large firms had fired workers, against about 30 percent of small firms), but they are also more likely to have made severance payments for these firings. Whereas 78 percent of large firms made severance payments to workers that they had fired the year before the survey, only 40 percent of small firms did so.

Moreover, whereas about 25 percent of workers are unionized in large firms on average, less than 2 percent are in small firms. For the majority of the former firms, non-union workers benefit from union-negotiated wages and benefits. This means that unions, when they exist, enjoy power that goes beyond the share of workers they represent. These observations are translated in the firms’ responses regarding the specific problems associated with labor market regulations. In particular, whereas nearly half of large firms report that layoff procedures and cost of retrenchment are a more than minor problem, only 24 percent of small firms think the same. Small firms also complain less about procedures to hire foreign workers and temporary workers; this is partly because they are less concerned by these practices (less than 40 percent of small firms hire temporary workers).

Another possible explanation for this result for Madagascar may be linked to informality. Smaller firms are often considered to be able to operate “under the radar” and avoid regulations that larger firms are unable to avoid. However, smaller firms in Madagascar are not especially able to avoid regulations.²⁴ Reports from employers in Madagascar indeed suggest that informality is not only low, but also does not differ across the size of firms. In Madagascar small firms report on average that 92 percent of sales are reported for tax purposes, while large firms estimate this number to be on average 95 percent.²⁵ In LIC (SSA), these numbers range from 72 percent (73 percent) for small firms to 89 percent (86 percent) for large firms.

Enforcement can also play a role. Data from the Investment Climate Surveys suggest that small firms in Madagascar are less able to avoid regulations through lower enforcement, than can be the case in the LIC and SSA regions. Here, as an approximation for enforcement, it is possible to know the number of days spent on meetings with labor and social security officials. The reports from employers again suggest that Madagascar is different from LIC and SSA regional averages. Small firms there report a similar number of days compared with other firms, while in LIC and SSA, they report on average lower numbers. In Madagascar, small firms report on average 3 days of inspection against 5 for large firms (a difference that is not statistically significant), while in LIC and SSA small firms report on average 1.7 days of inspections, and large firms report 3 and over 4 days respectively (differences that are statistically significant).

Large firms tend to have more needs for skilled labor, but do not report being more constrained by a lack of skills in available workers

²⁴ It is important to remember here that firms under 10 employees are not interviewed, while they are the most likely to be informal.

²⁵ Informality is indirectly measured through the answers to the question: “Recognizing the difficulties many enterprises face in fully complying with taxes and regulations, what percentage of total sales would you estimate the typical establishment in your area of activity reports for tax purposes?”

Another dimension of labor market constraints is the quality of the available labor force. Medium Malagasy firms have fewer problems than small and large ones in terms of skills and education. Small firms report to have more problems than medium ones in terms of finding adequate skills and education among available workers; this result is contrary to what is found in SSA and LIC in general where medium and large firms tend to complain more about these (Figure 19). Again, the difference between Madagascar and SSA is much larger than that between Madagascar and LIC.

These differences in perceptions about skills and education of workers do not seem to be associated with difficulties in finding workers with adequate skills: within Madagascar there are no significant differences in the time it takes for firms of different sizes to fill skilled or unskilled vacancies. More consistently with the cross-country results, firms in Madagascar fill skilled vacancies in much less time (1.8 weeks) than firms in SSA (4.4 weeks) and slightly less than in LIC (2.9 weeks). Looking at the use of technology within Malagasy firms, large firms are found to be more likely to use foreign technology and to have been ISO certified. The latter is consistent with large firms having a need for skilled workers, although they do not report greater difficulties in filling skilled vacancies. One reason could be that they do not advertise these positions in the country, and instead rely on foreign workers, whose employment has been made easier in recent years and who are covered by the same labor regulations as domestic workers.

Malagasy exporting firms report important constraints due to a lack of skills of available workers

Fostering the development of firms that export is part of a successful development strategy. Governments that put excessive constraints on exporting firms may damage the potential benefits from this sector in terms of economic growth and spillover effect to the local markets. Exporters have more issues with crime, and access to land, while non-exporters are worse off in terms of anti-competitive practices.

Exporters are found to have more issues with available skills and education in Madagascar (Figure 20). Firms that do not export are less likely to consider skills and education of available workers as a major or very severe obstacle. The difference between non-exporters and exporters is much greater in Madagascar than in LIC and SSA countries, where it is negligible. In other words, lack of appropriate skills among workers is a greater issue for exporting firms in Madagascar than it is in LIC or SSA.

However, overall, both types of firms complain more in Madagascar than in LIC and exporters complain more in Madagascar than in SSA. These differences are not translated in differences in the time it takes them to fill vacancies. The impact may occur at a different level: for example, because of what they perceive as a lack of available skills and education of the workforce, firms may not adopt new technologies, nor post vacancies that require a high level of skills. This is confirmed by the finding that firms that have upgraded or created a new product line tend to complain more about the lack of skills of available workers (Table 9).

Although not among the worst problems of Madagascar, lack of skills of available workers may delay the adoption of new technologies

The lack of skills and education of available worker is not among the worst problems that the country faces at the moment. However, there is some evidence that firms that innovate and/or that have greater job creation potential are more likely to report being constrained by these. Lack of adequate skills may lead firms to postpone adoption of new technologies that could improve productivity and enable their expansion and survival (Figure 21).

EPZ firms' advantages do not translate into lesser (or worse) constraints from labor regulations

Despite the international reputation for firms in EPZs to be able to avoid labor regulations, firms in the Malagasy EPZs do not report being less constrained than other firms in the country. Firms that belong to the EPZ benefit from significant tax advantages. The EPZ is aimed at firms that export most of their production, and tend to facilitate their business through tax holidays, exemptions from import duties and taxes and other benefits. EPZs have had a negative reputation around the world in terms of their impact on workers. In particular, firms in these zones are considered to impose difficult working conditions (longer hours, no union representation, and gender discrimination) and to avoid labor legislation (Cling, 2007). Interestingly, belonging to the EPZ in Madagascar does not affect firms' perceptions on labor market constraints. This means that firms belonging to the EPZs are not at a particular advantage compared to other firms with respect to labor regulations. This is consistent with a situation where the EPZs' firms in Madagascar tend to provide better working conditions to their workers compared with other firms (Cling, 2007).

**6. What Does it all Mean in Terms of Labor Market Performance?
Hiring Permanent and Temporary Workers
and Providing Training in Madagascar**

The paper has so far exposed what the law says and what firms report when it comes to regulations and their impact. It now tries to link these findings with actual firm behavior, in particular in terms of their hiring practices for temporary and permanent employees, and the provision of training. These three specific behaviors are interesting to study together as they may be complementary or substitute. For example, firms may supplement their workforce with temporary workers instead of permanent workers if they fear future downturns and regulations are favorable to such practice. Firms may also decide to provide additional training to existing employees rather than hire new staff that would be more costly to hire and train, being less aware of the firm's business.²⁶

Permanent employment (Figure 22 and Figure 23)

The main result suggests that firms with more potential for job creation (medium and innovative firms) created less employment in the years prior to the survey than similar firms in comparator countries.

²⁶ The results of these section are based on regression analysis, modeling firms' reactions as a function of firms' characteristics (age, public ownership, domestic ownership, industry, size, exporter, and innovation history), interacted with a country dummy identifying Madagascar.

Malagasy firms are not found to be overall different from other SSA firms in terms of their hiring and firing in the 2-3 years preceding the surveys. However, whereas medium and large firms are more likely to have increased employment in general in SSA, medium Malagasy firms are less likely to have done so. Similarly, whereas innovative firms tend to be more likely to have increased employment, this is less the case of Malagasy innovative firms.

Compared with LIC, Malagasy firms are less likely to have decreased employment and more likely to have increased it. Moreover, similarly to what was found for SSA, whereas medium and large firms are more likely to have increased employment in general in LIC, medium Malagasy firms are less likely to have done so. Similarly, whereas innovative firms tend to be more likely to have increased employment, this is less the case of Malagasy innovative firms.

Provision of formal training (Figure 24 and Figure 25)

Malagasy firms are more likely to provide formal training than firms in LIC and SSA, but the difference is not statistically significant for SSA. Moreover, there are no significant differences between different types of firms in Madagascar and SSA. Compared with LIC, large Malagasy firms are even more likely to provide formal training.

The result that Malagasy manufacturing firms have a greater tendency to provide formal training to their workers on average suggests that one way for firms to compensate for the lack of skills and education is for them to provide training directly. Among the 48.5 percent of respondent firms that provided formal training, most provided it internally. This means that the training provided was most probably directly related to the firms' business needs. At the same time, this result may be linked to the fact that large firms were more likely than others to provide training. Not only must it be easier for these firms to finance training, but they probably have more available human capital within the firms to provide formal training internally to their workers.

Temporary employment (Figure 24 and Figure 25)

Malagasy firms are not especially inclined to hire temporary workers compared with similar countries. But different types of firms are indeed more likely to do so, such as large and innovative firms.

On average in LIC, medium and large firms are more likely to hire temporary workers, but in Madagascar, only large firms do, while medium firms are actually less likely to hire them. Within SSA, large and innovative firms are more likely to use temporary workers, but in Madagascar, this is less the case for large firms.

Conclusions

From the analysis presented above, we derive two main conclusions that complete those presented in the investment climate assessment of Madagascar (Shah et al. 2005):

Important gap in skills and education of workers

The analysis suggests that improving the skills and education of workers is of primary importance in the development of the manufacturing sector and the adoption of advanced technologies. Although this can be partly done through on-the-job training, it is well-known that the latter cannot replace adequate formal education.

Simplifying labor regulations

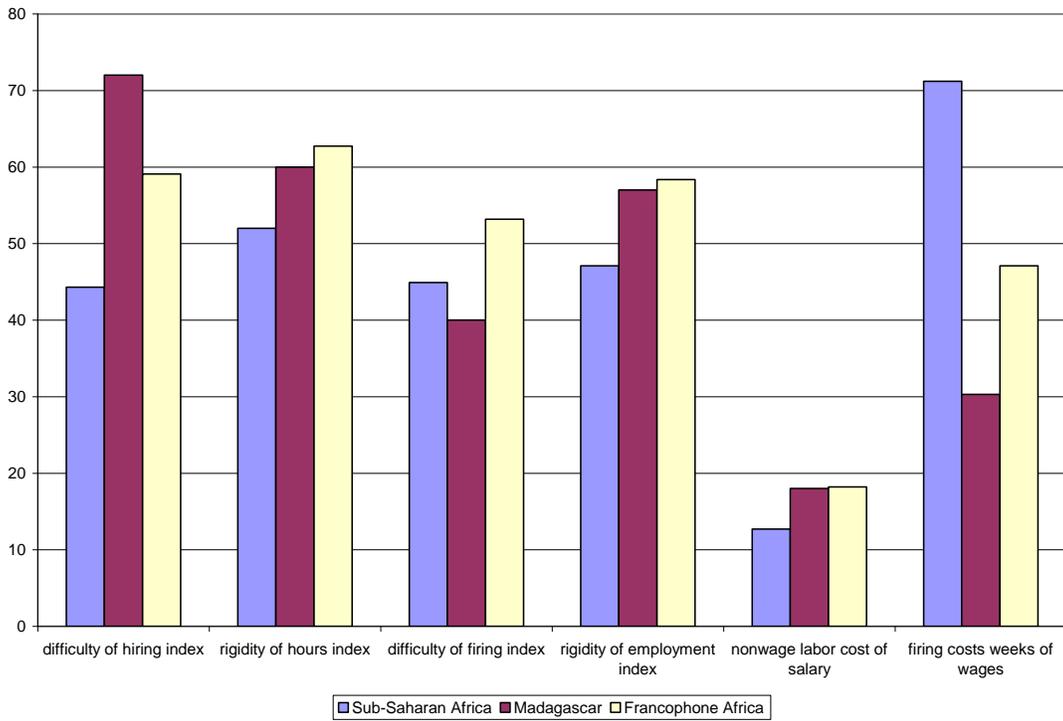
Although labor regulations are not a binding constraint for firms, they have the potential to become one, especially when considering they tend to affect more small firms. Because they tend to be relatively well enforced, they may act as a deterrent for firms to grow and become more formal. Complex regulations applied on a case by case basis are also liable to be misinterpreted, misused, and lead to further costs for firms. In some cases however, exemptions can be beneficial to correct impacts of regulations that can be disadvantageous to certain types of workers. For example, having lower minimum wages for younger/less skilled workers can offset their pricing out of the labor market that a comparatively large minimum wage can create.

Simplifying regulations does not have to mean reducing workers' right or protection. For example, although regulations on hours worked are within international standards, restricting hours worked over a longer period of time (than a week) can be beneficial in the organization of production of some firms, thereby increasing productivity. Moreover, sticking to a set of basic workers rights, rather than elaborate complex regulations including amendments is less likely to create distortionary effects among different types of firms with associated misallocation of resources.

Looking to the future of labor market reform

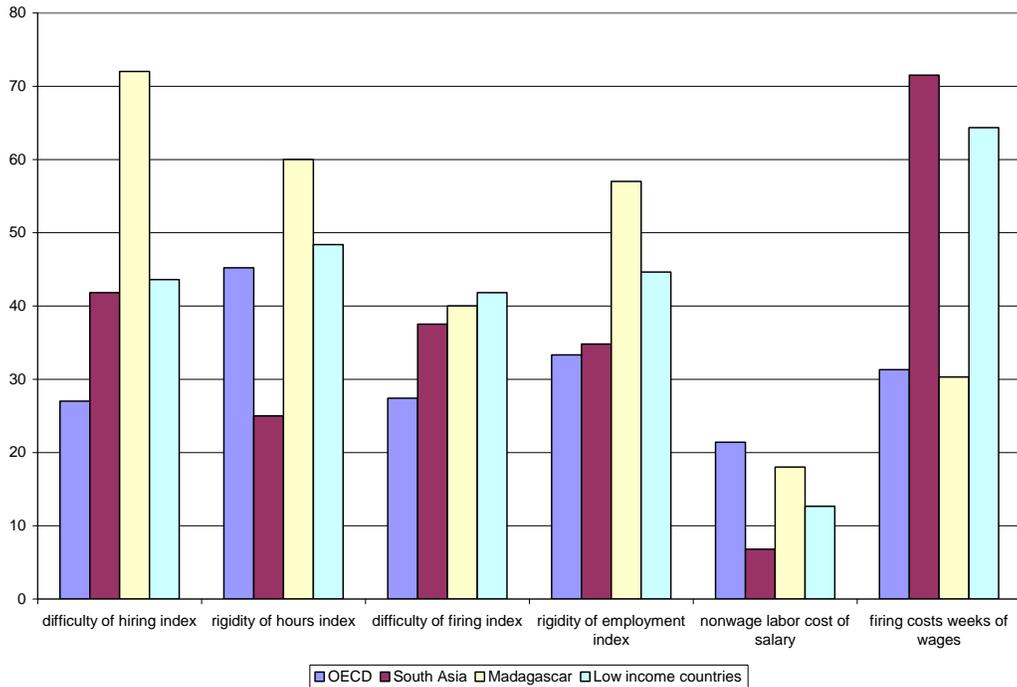
The analysis of this paper has been limited to broad labor market indicators that are quantifiable and easily comparable across countries. They have helped flag areas in which Madagascar comes out as having regulations that are comparatively strict in a low-income/African country, and areas that are potentially constraining dynamic firms. In the area of labor regulations, it is delicate to specify benchmarks; each country has to find its own balance of the right menu of regulations. Down the line, low income countries can look to more developed countries, for which the current political debate is moving toward decreasing the protection of jobs and increasing the protection of workers/individuals as they move from job to job, while improving the quality of jobs created by the economy.

Figure 1: Doing Business in Madagascar (greater numbers indicate less flexibility)



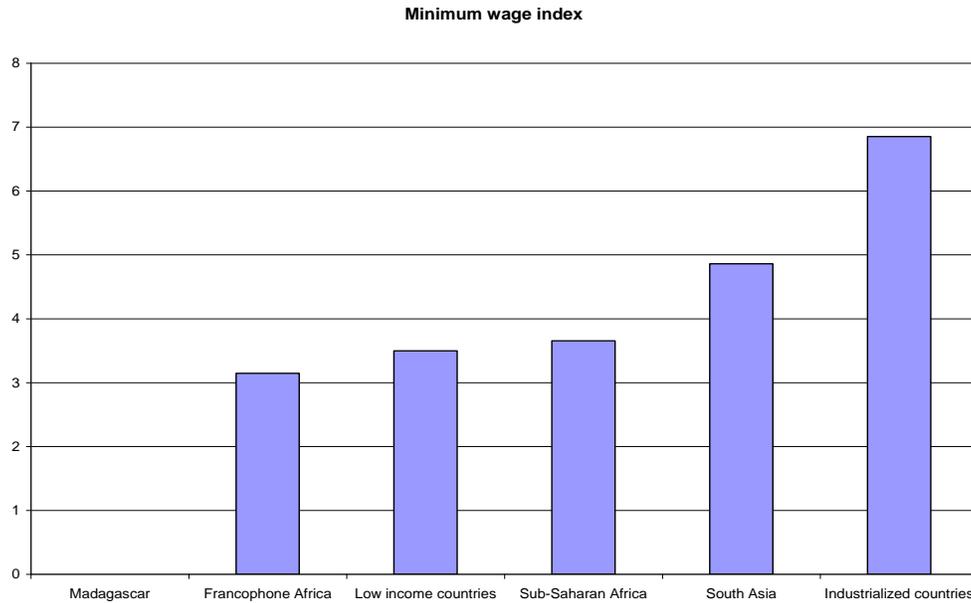
Source: Doing Business (2007). See Annex 2 for definitions

Figure 2: Doing Business in Madagascar (greater numbers indicate less flexibility)



Source: Doing Business (2007). See Annex 2 for definitions.

Figure 3: A relatively high minimum wage



Source: Fraser institute (2006). Greater numbers indicate more economic freedom.

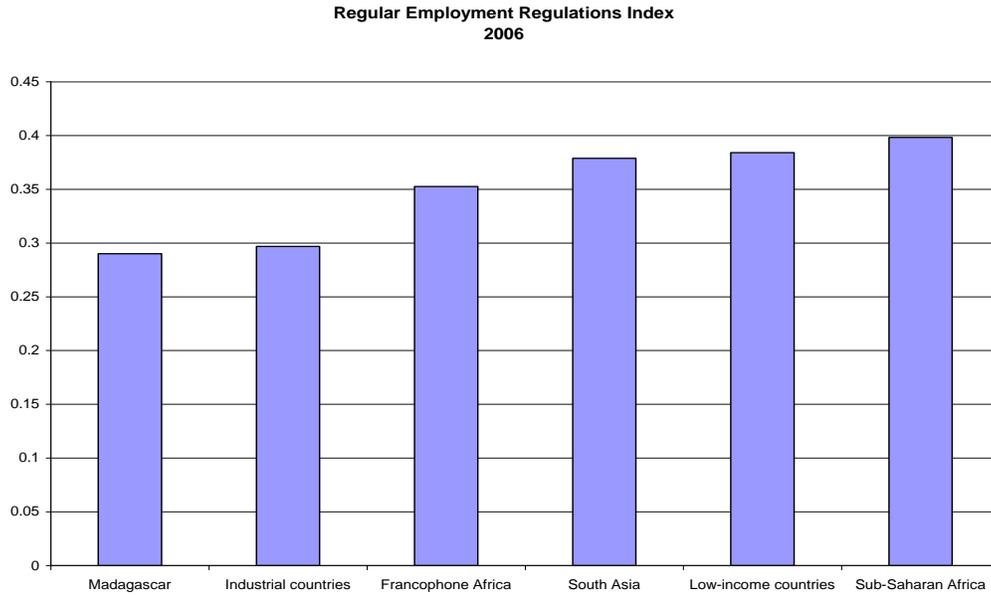
Note: This component is based on the World Bank's Doing Business data for the ratio of mandated minimum wage to the average value added per worker, a component part of the "Difficulty of Hiring Index". Countries with higher mandated minimum wages relative to average value added per worker are given lower ratings. The formula used to calculate the zero-to-10 ratings for this component was: $(V_{max} - V_i) / (V_{max} - V_{min})$ multiplied by 10. V_i represents the minimum wage to average value added per worker ratio. The values for V_{max} and V_{min} were set at 79% (1.5 standard deviations above average) and 0, respectively. Countries where the minimum wage was more than 79% of the average value added per worker were given a rating of zero. Countries with no minimum wage were given a rating of 10.

Figure 4: Comparatively strict regulations on temporary employment



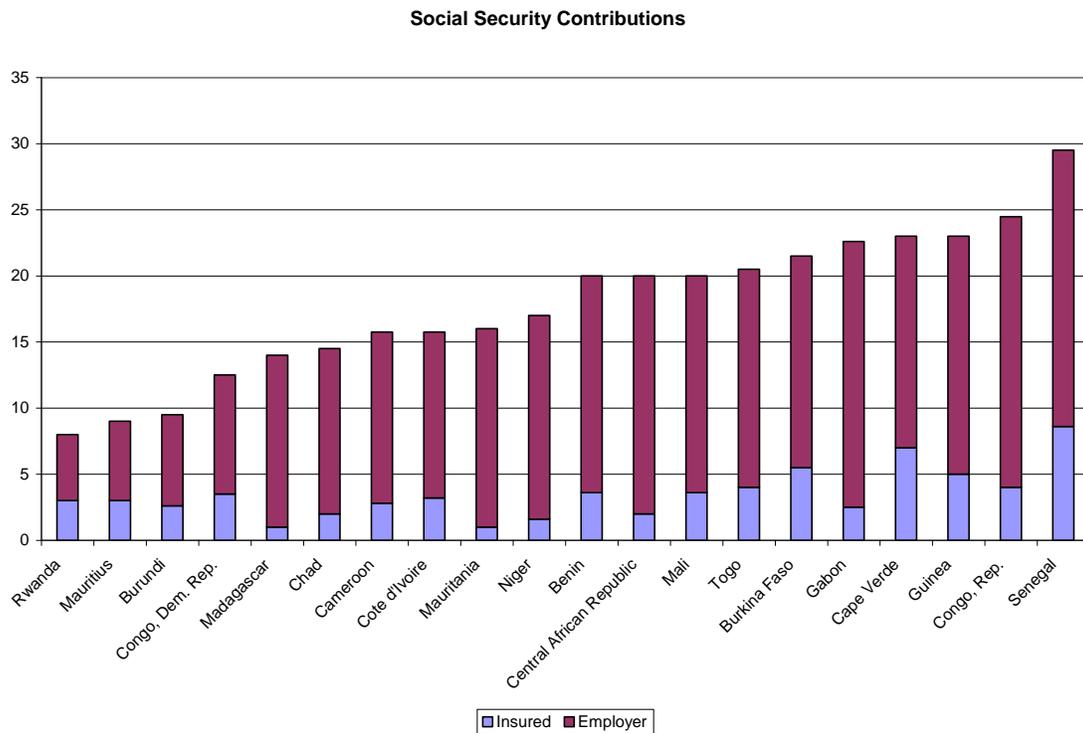
Source of raw data: Doing Business (2007). Note: Higher index means more stringent regulations on temporary employment contracts. See Annex 3.

Figure 5: Regular employment regulations are not overly restrictive compared with other sub-regions



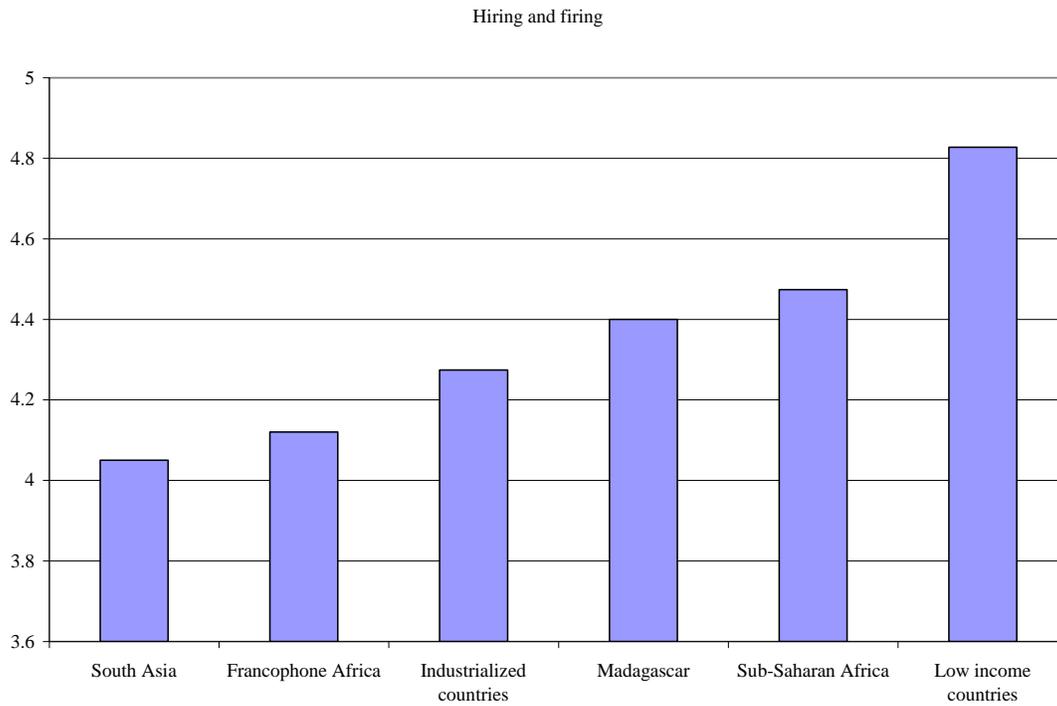
Source of raw data: Doing Business (2007). Note: Higher index means more stringent regulations on regular employment contracts. See Annex 3.

Figure 6: Social security contributions are among the lowest in Francophone Sub-Saharan Africa



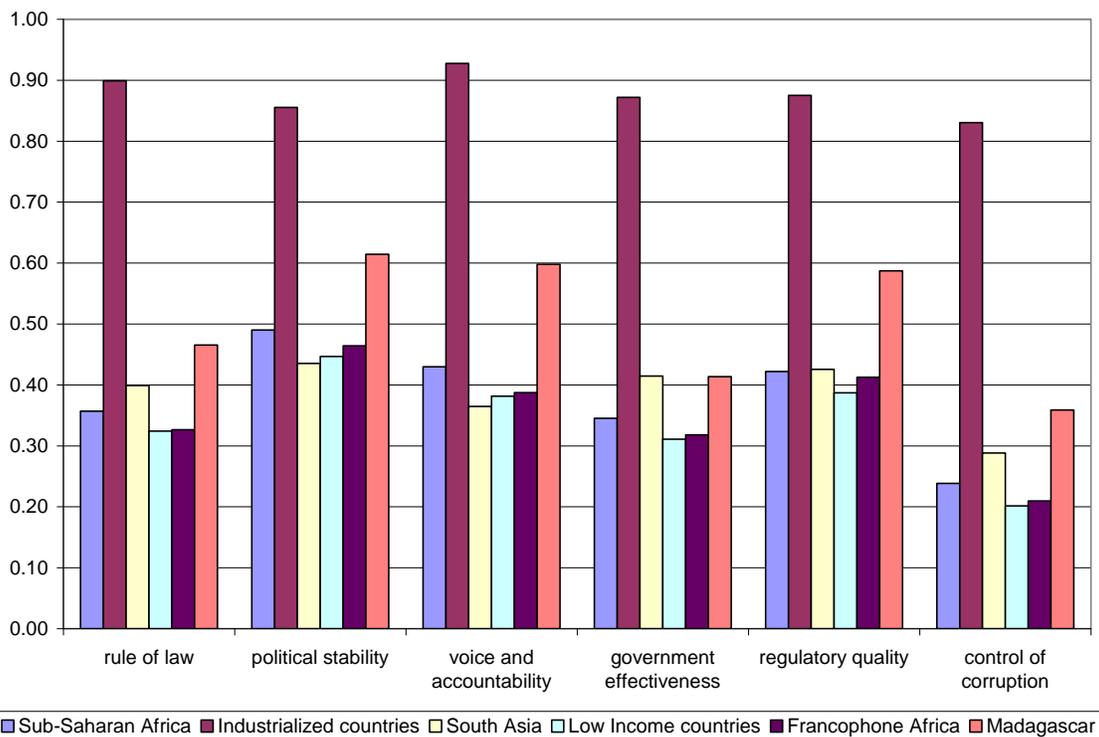
Source: Social Security Programs throughout the World (2007).
 Notes: Burkina Faso, Cameroon, Cape Verde, Central African Republic, Chad, Congo, Rep., Cote d'Ivoire, Gabon, Guinea, Madagascar, Mauritania, Mauritius, Niger, and Rwanda have ceilings on some benefits. Data are at least 2 years old for Central African Republic, Chad, Congo, Rep., Guinea, and Togo.

Figure 7: Hiding and firing



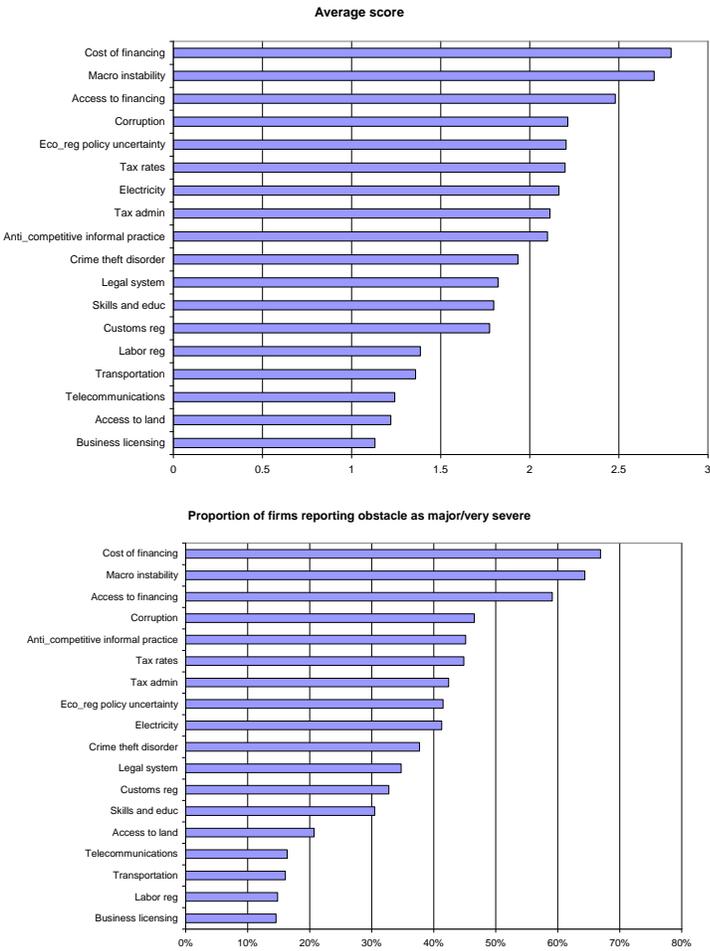
Source: Fraser institute/Global competitiveness report (2006). Hiring and firing practices of companies are determined by private contract. Low ratings mean higher impediments by regulations (as reported by businesses).

Figure 8: In the SSA and LIC contexts, Madagascar has good governance



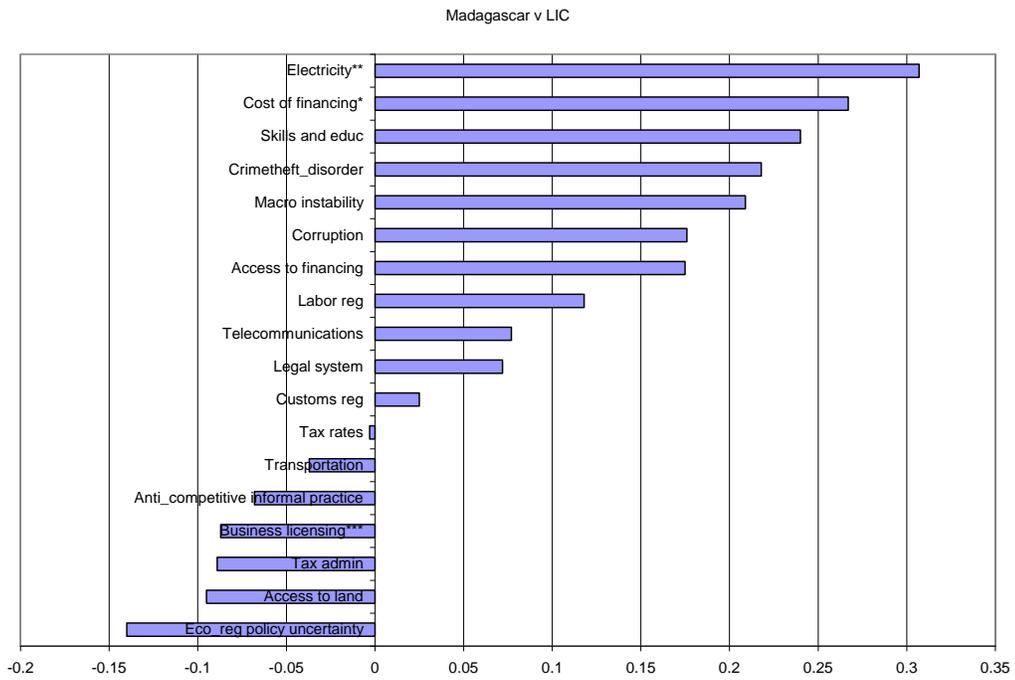
Source: Kaufman and Kraay (2004). Higher value means better governance.

Figure 9: Ranking of Investment Climate constraints by employers in Madagascar (2005)



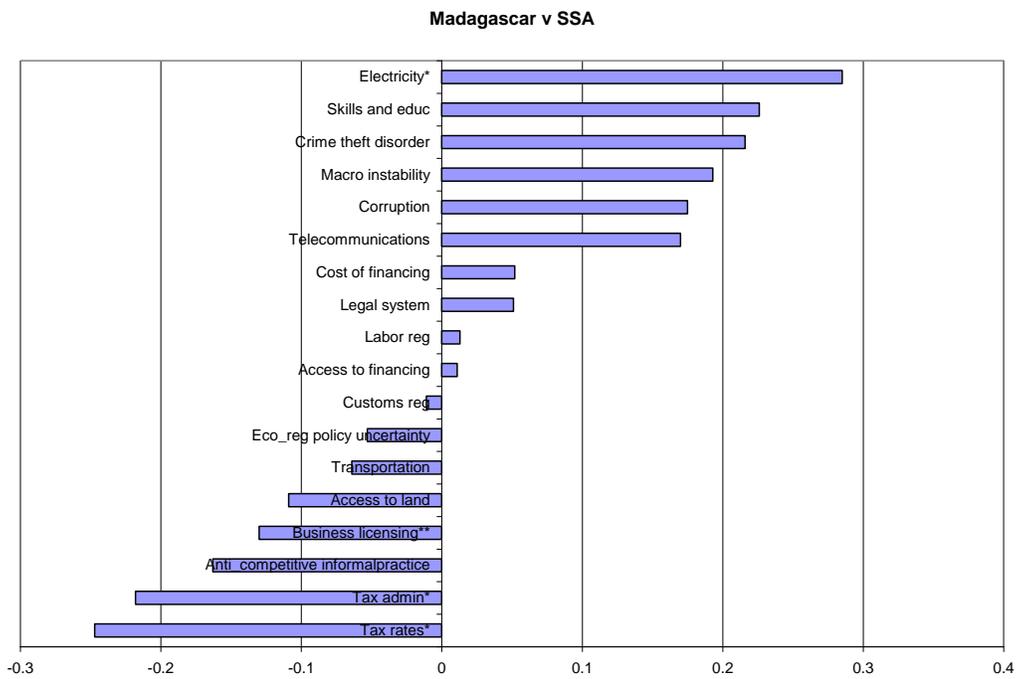
Note: score is calculated by giving a value of 0 to a “no obstacle” response, to 4 to a “very severe obstacle response”. Source of raw data: Madagascar Enterprise Survey 2005.

Figure 10: Comparing Madagascar to LIC



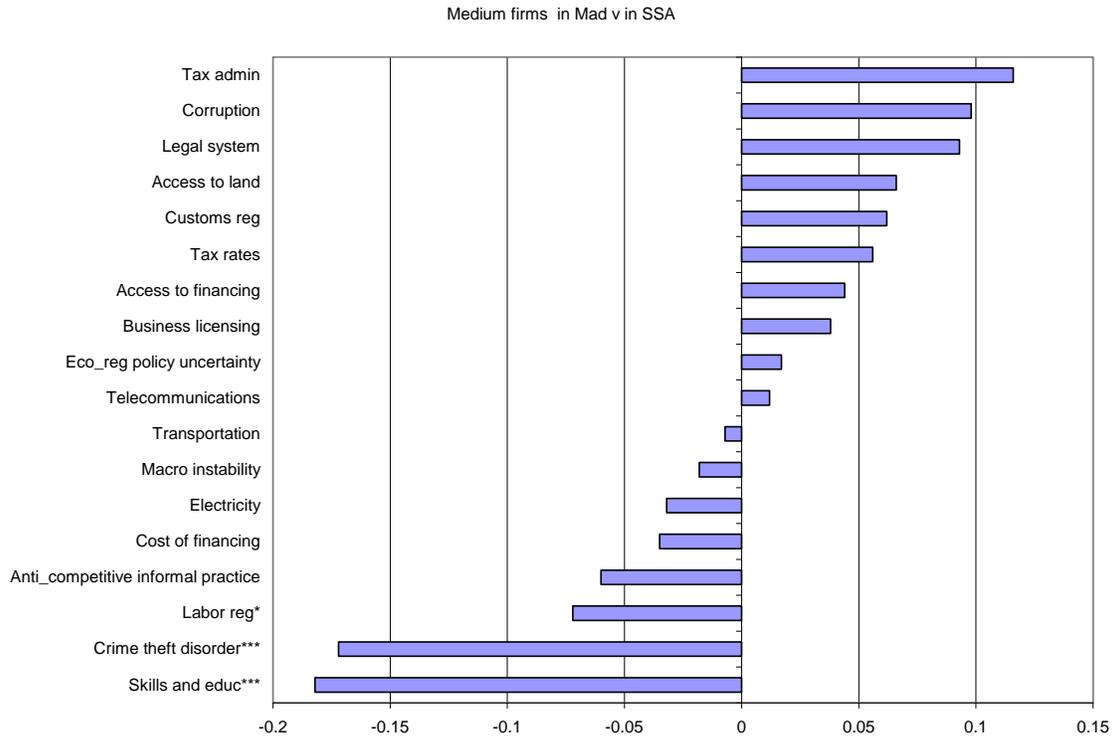
Note: difference in average scores. Source of raw data: Madagascar Enterprise Survey 2005.

Figure 11: Comparing Madagascar to SSA



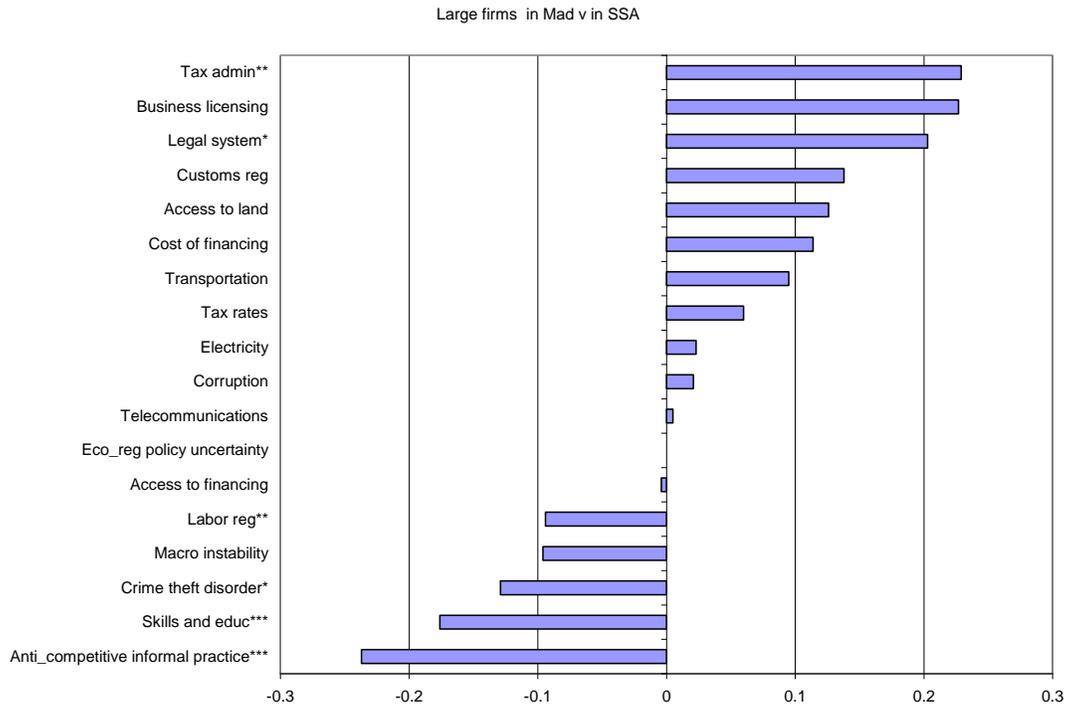
Source of raw data: Madagascar Enterprise Survey 2005.

Figure 12: How do medium Malagasy firms differ from similar firms in SSA?



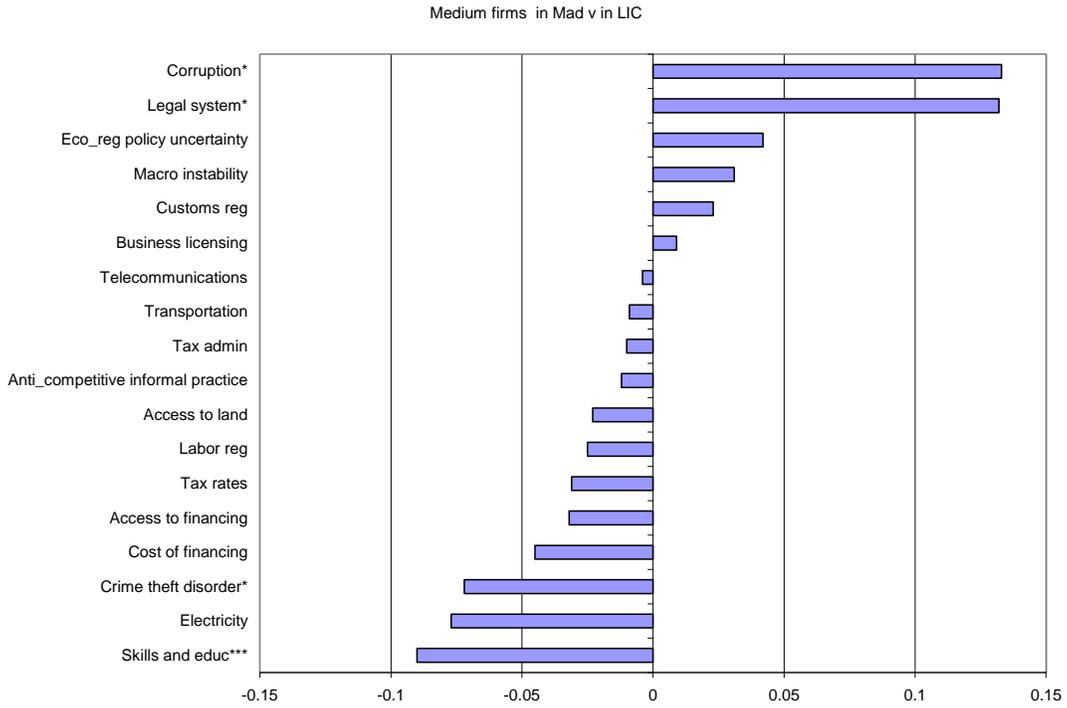
Source of raw data: Madagascar Enterprise Survey 2005.

Figure 13: How do large Malagasy firms differ from similar firms in SSA?



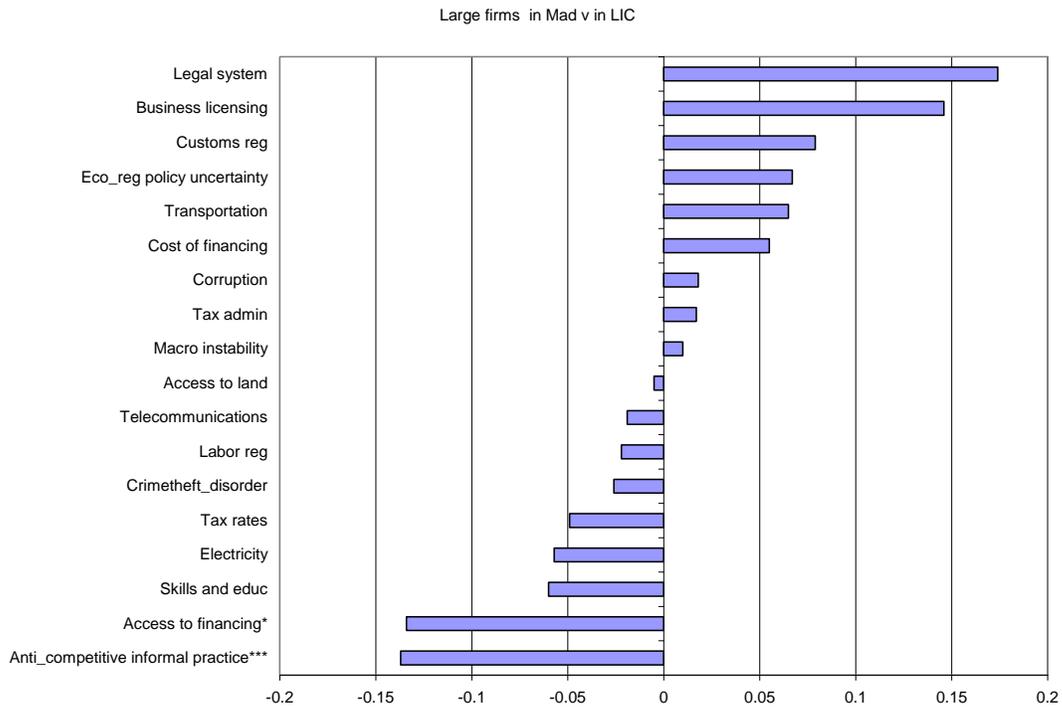
Source of raw data: Madagascar Enterprise Survey 2005.

Figure 14: How do medium Malagasy firms differ from similar firms in LIC?



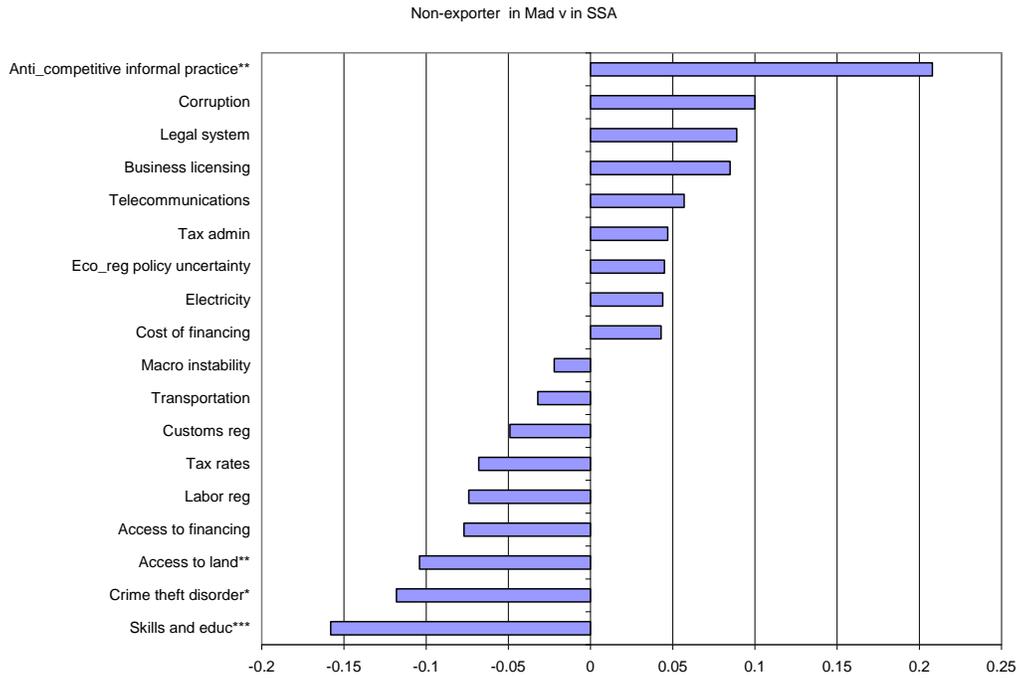
Source of raw data: Madagascar Enterprise Survey 2005.

Figure 15: How do large Malagasy firms differ from similar firms in LIC?



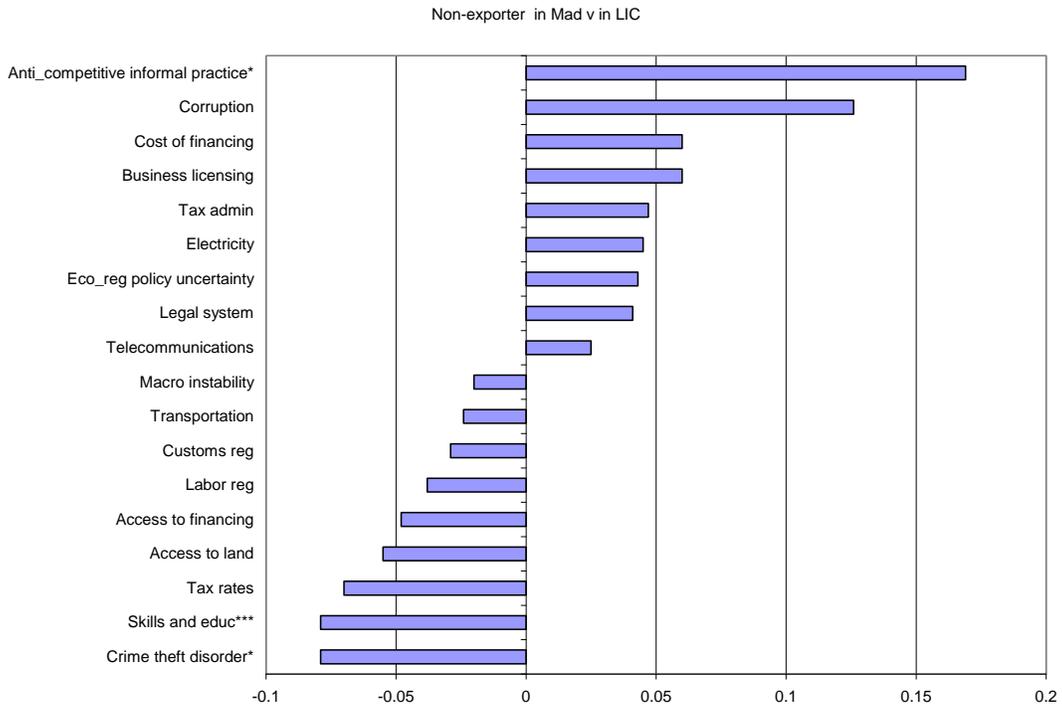
Source of raw data: Madagascar Enterprise Survey 2005.

Figure 16: How do non-exporting Malagasy firms differ from similar firms in SSA?



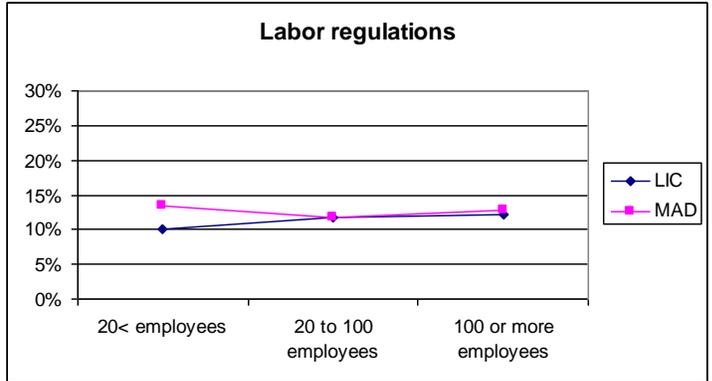
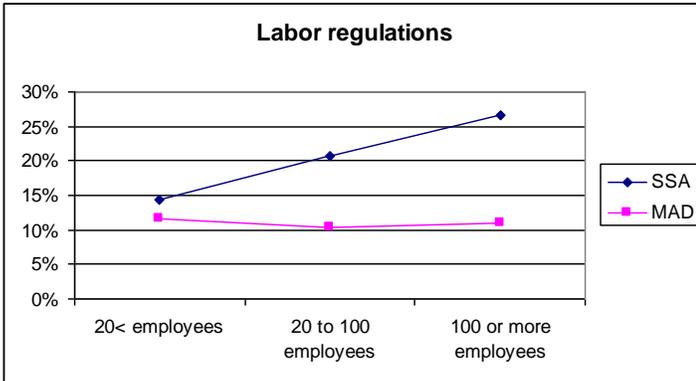
Source of raw data: Madagascar Enterprise Survey 2005.

Figure 17: How do non-exporting Malagasy firms differ from similar firms in LIC?



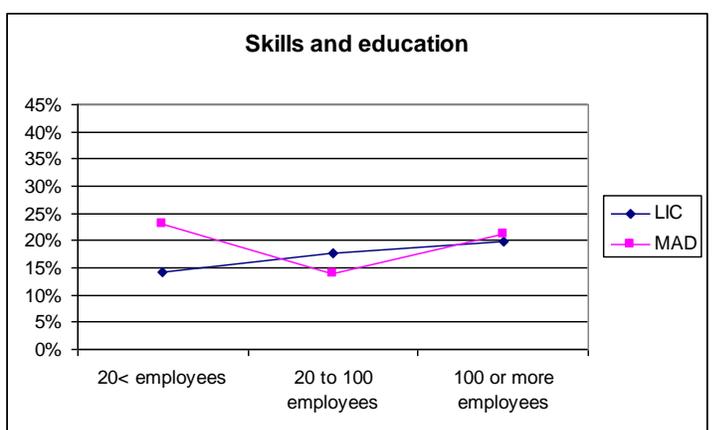
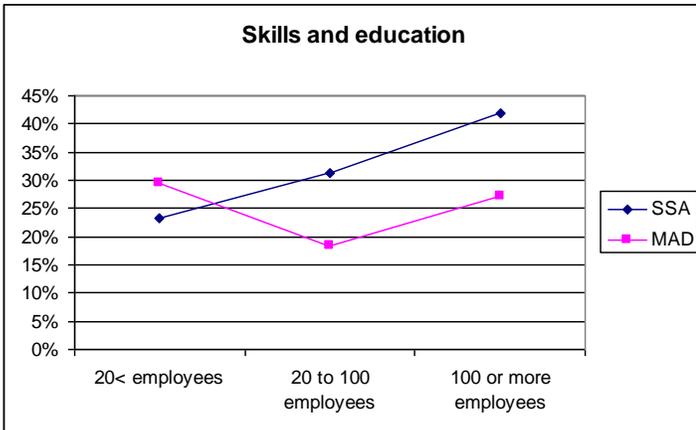
Source of raw data: Madagascar Enterprise Survey 2005.

Figure 18: Predicted probabilities of complaining about labor regulations by firm size



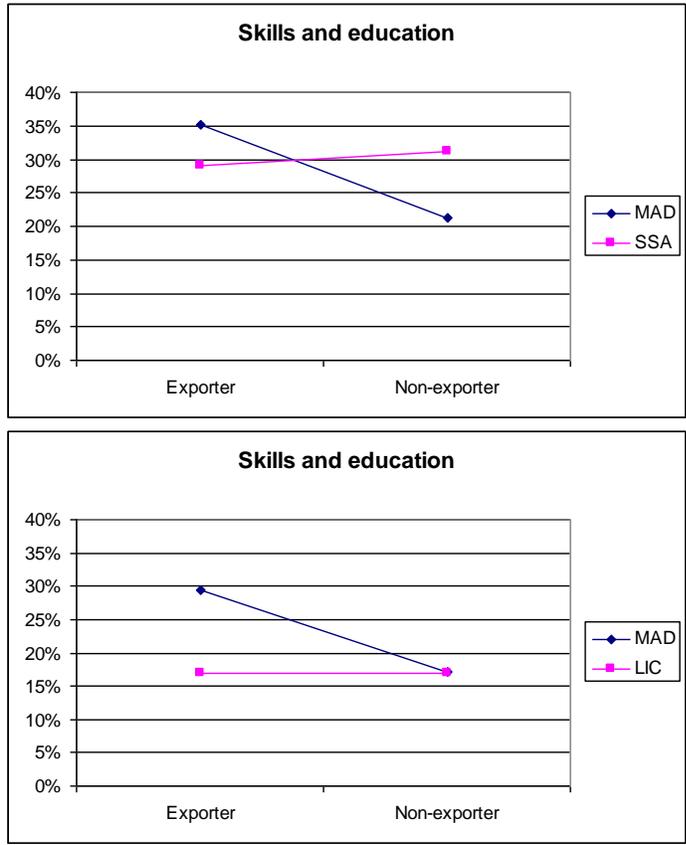
Source of raw data: Madagascar Enterprise Survey 2005.

Figure 19: Predicted probabilities of complaining about skills and education of workers by firm size



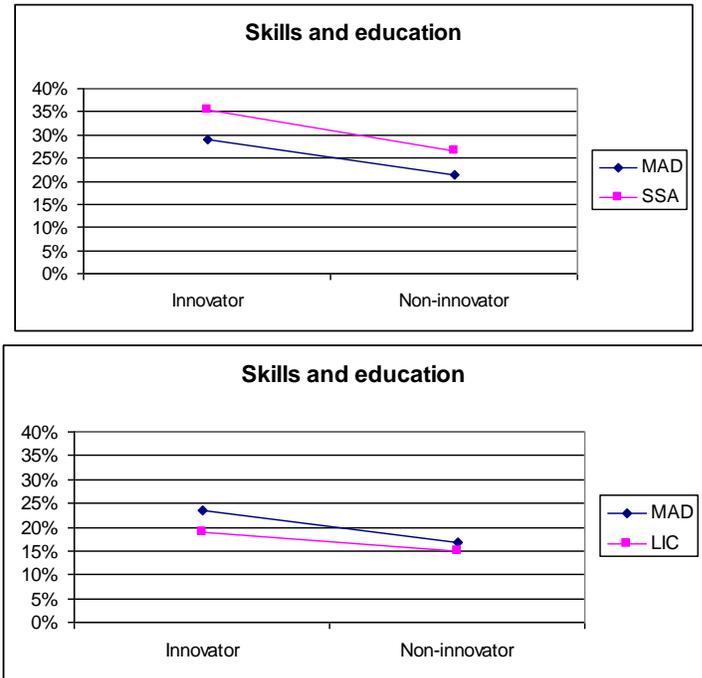
Source of raw data: Madagascar Enterprise Survey 2005.

Figure 20: Predicted probabilities of complaining about skills and education of workers for exporters



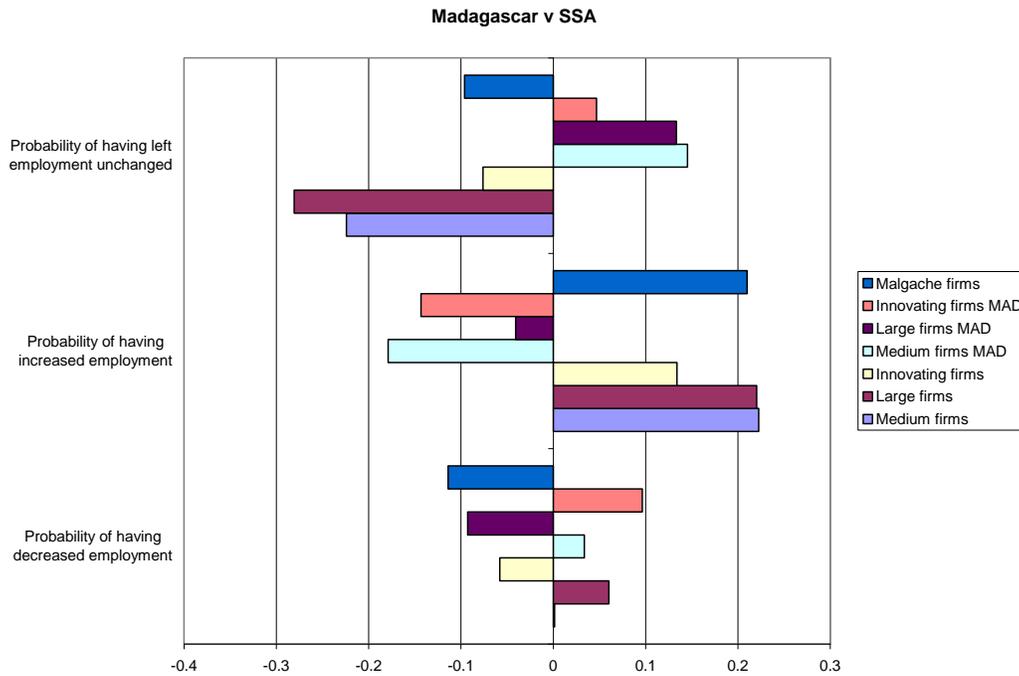
Source of raw data: Madagascar Enterprise Survey 2005.

Figure 21 Predicted probabilities of complaining about skills and education of workers for innovators



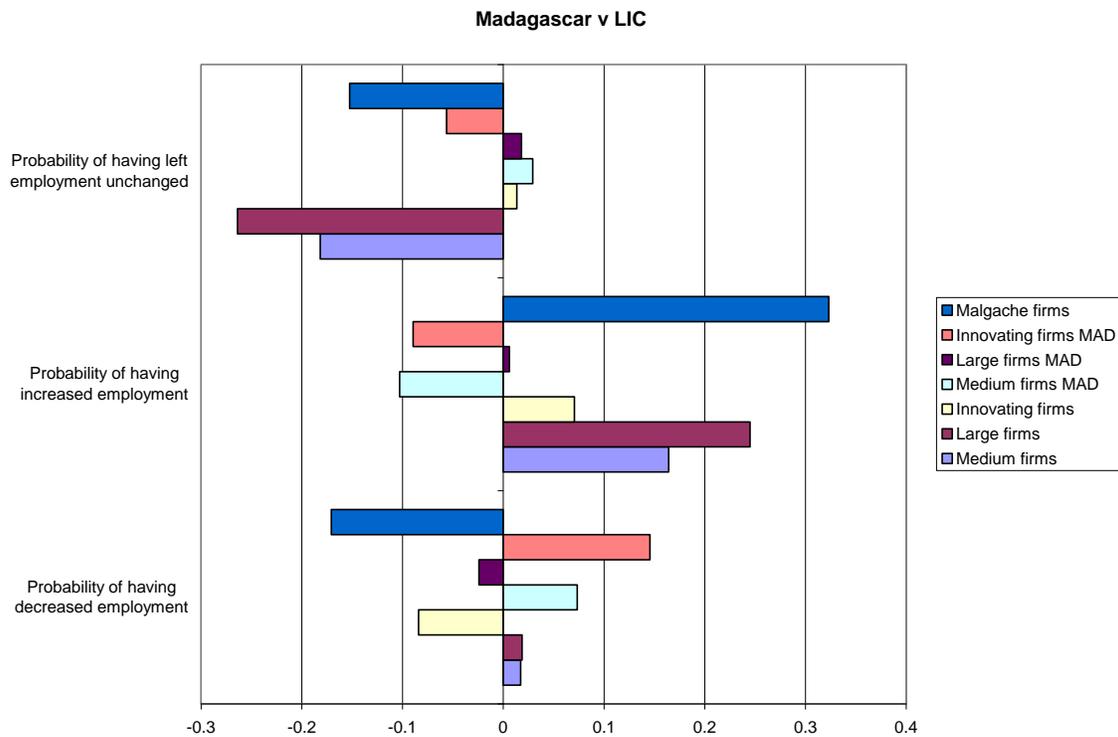
Source of raw data: Madagascar Enterprise Survey 2005.

Figure 22: Hiring workers in Madagascar compared with SSA (Marginal effects)



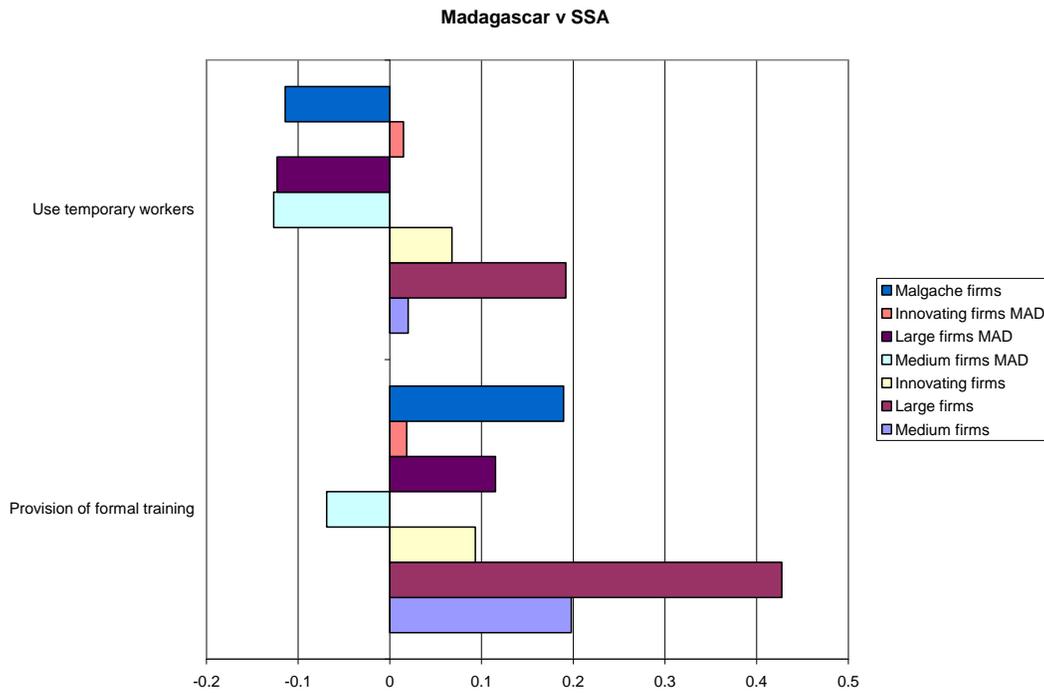
Source of raw data: Madagascar Enterprise Survey 2005.

Figure 23: Hiring workers in Madagascar compared with LIC (Marginal effects)



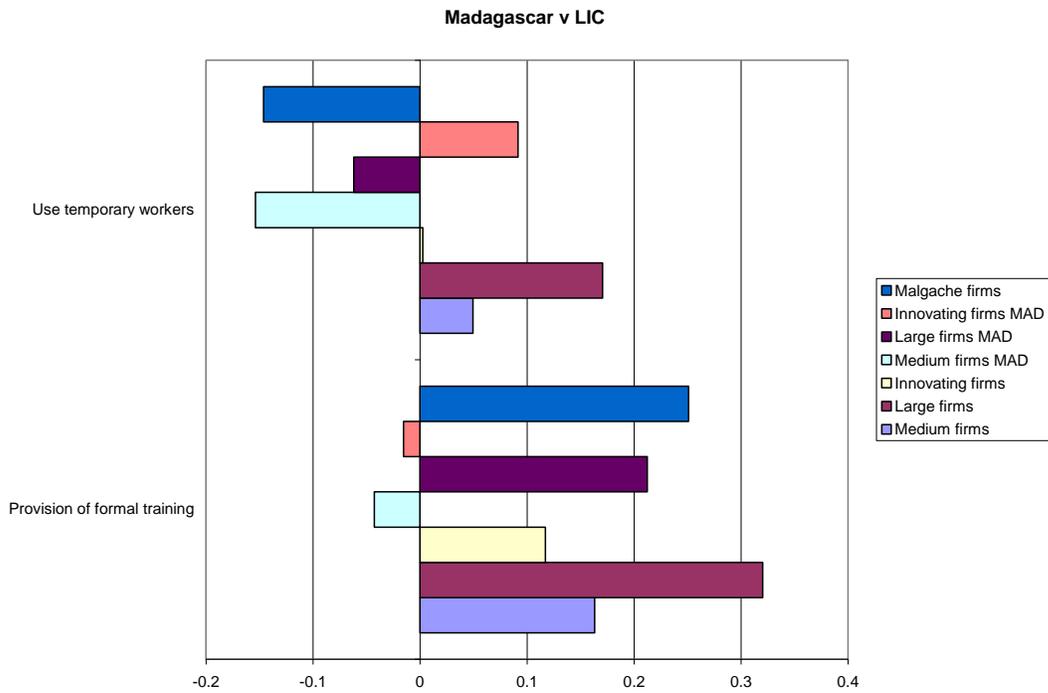
Source of raw data: Madagascar Enterprise Survey 2005.

Figure 24: Temporary employment and training in Madagascar compared with SSA (Marginal effects)



Source of raw data: Madagascar Enterprise Survey 2005.

Figure 25: Temporary employment and training in Madagascar compared with LIC (Marginal effects)



Source of raw data: Madagascar Enterprise Survey 2005.

Table 1: Hiring and dismissal procedures Madagascar and Francophone Africa.

Economy	Fixed-term contracts are only allowed for fixed-term tasks?	What is the maximum duration of fixed-term contracts (in months)?	The employer must notify a third party before dismissing one redundant employee?	The employer needs the approval of a third party to dismiss one redundant worker?	The law mandates retraining or replacement prior to dismissal?	There are priority rules applying to dismissal or lay-offs?	There are priority rules applying to re-employment?
Benin	No	48	Yes	No	No	Yes	Yes
Burkina Faso	Yes	48	Yes	No	Yes	Yes	Yes
Cameroon	No	48	Yes	Yes	Yes	Yes	Yes
Cape Verde	Yes	No limit	Yes	Yes	No	Yes	No
Central African Republic	Yes	24	Yes	No	No	Yes	Yes
Chad	No	48	Yes	Yes	Yes	Yes	Yes
Comoros	No	36	Yes	No	No	Yes	Yes
Congo, Rep.	Yes	24	Yes	Yes	No	Yes	Yes
Côte d'Ivoire	No	24	No	No	No	No	No
Djibouti	Yes	24	Yes	No	No	No	Yes
Gabon	No	48	Yes	Yes	Yes	Yes	Yes
Guinea	No	24	No	No	No	Yes	Yes
Guinea-Bissau	Yes	12	Yes	Yes	No	Yes	Yes
Madagascar	Yes	48	No	No	No	Yes	Yes
Mali	Yes	72	Yes	No	Yes	Yes	Yes
Mauritania	No	24	Yes	No	Yes	Yes	Yes
Niger	Yes	24	Yes	No	Yes	Yes	Yes
Rwanda	No	24	Yes	No	No	Yes	No
Senegal	Yes	48	Yes	No	Yes	Yes	Yes
Togo	No	24	Yes	Yes	No	Yes	Yes
World* average	45.7%**	-	49.7%**	20.0%**	33.7%**	49.7%**	40.0%**
World* median	-	-	-	-	-	-	-

Source: Doing Business database (2007).

Notes: * 175 countries included in DB database.** Proportion of yes.

Table 2: Firing costs in Francophone Africa

Economy	Legally mandated notice period for redundancy dismissal (in weeks) after twenty years of continuous employment?	Severance pay for redundancy dismissal as number of months for which full wages are payable after continuous employment of twenty years?
Benin	4.3	31.4
Burkina Faso	4.3	29.3
Burundi	13.0	13.0
Cameroon	8.7	23.8
Cape Verde	4.3	86.7
Central African Republic	4.3	17.3
Chad	8.7	27.1
Comoros	13.0	86.7
Congo, Dem. Rep.	30.8	0.0
Congo, Rep.	4.3	36.8
Côte d'Ivoire	17.3	31.4
Djibouti	4.3	52.0
Equatorial Guinea	4.3	128.6
Gabon	26.0	17.3
Guinea	4.3	21.7
Guinea-Bissau	0.0	86.7
Madagascar	4.3	26
Mali	4.3	27.1
Mauritania	4.3	27.1
Niger	4.3	27.1
Rwanda	4.3	21.7
Senegal	4.3	33.6
Togo	4.3	31.4
World* average	7.0	42.8
World* median	4.3	28.0

Source: Doing Business database (2007).

Note: * 175 countries included in DB database.

Table 3: Regulation pertaining to hours worked in Francophone Africa (2006)

Country	Are 10 hour days allowed for two months?	Are there restrictions on night work?	Are there restrictions on "weekly holiday" work?	What is the maximum number of working days per week?	Mandatory days of annual leave (i.e. vacation) with pay in manufacturing after 20 years of continuous employment?
Benin	Yes	Yes	Yes	6	26
Burkina Faso	Yes	Yes	Yes	6	24
Burundi	Yes	Yes	Yes	6	25
Cameroon	Yes	Yes	Yes	6	24
Cape Verde	Yes	Yes	Yes	6	21
Central African Republic	Yes	Yes	Yes	5	24
Chad	Yes	Yes	Yes	6	30
Comoros	Yes	Yes	Yes	6	22
Congo, Dem. Rep.	Yes	Yes	Yes	5	22
Congo, Rep.	Yes	Yes	Yes	6	26
Djibouti	Yes	No	Yes	6	30
Gabon	No	Yes	Yes	6	24
Guinea	Yes	Yes	Yes	6	30
Guinea-Bissau	Yes	Yes	Yes	6	28
Madagascar	Yes	Yes	Yes	6	24
Mali	Yes	Yes	Yes	6	22
Mauritania	Yes	Yes	Yes	6	26
Mauritius	Yes	Yes	Yes	6	18
Niger	No	Yes	Yes	6	24
Rwanda	Yes	Yes	Yes	6	24
Senegal	Yes	Yes	Yes	6	24
Togo	Yes	Yes	Yes	6	30
World* average	93.1%**	65.7%**	85.7%**	6.0	20.1
World* median	-	-	-	6.0	21.0

Source: Doing Business database (2007).

Notes: * 175 countries included in DB database.** Proportion of yes.

Table 4: Types of social security programs in Francophone Africa

	Old age, disability, and survivor	Sickness and maternity		Work injury	Unemployment	Family allowances
		Cash benefits for both	Cash benefits plus medical care			
Benin	X	b	c	X	d	X
Burkina Faso	X	b	X	X	d	X
Burundi	X	d	d	X	d	X
Cameroon	X	b	X	X	d	X
Cape Verde	X	X	X	X	d	X
Central African Republic	X	b	X	X	d	X
Chad	X	b	c	X	d	X
Congo, Dem. Rep.	X	d	c	X	d	X
Congo, Rep.	X	b	X	X	d	X
Cote d'Ivoire	X	b	X	X	d	X
Gabon	X	b	X	X	d	X
Guinea	X	X ^f	X	X	d	X
Madagascar	X	b	X	X	d	X
Mali	X	b	X	X	d	X
Mauritania	X	b	X	X	d	X
Mauritius	X	d	g	X	c	X
Niger	X	b	X	X	d	X
Rwanda	X	d	d	X	d	d
Senegal	H	b	X	X	d	X
Togo	X	b	c	X	d	X

Source: Social Security Programs Throughout the World (2007). Table 1.

Notes: b. Maternity benefits only.

c. Coverage is provided under other programs or through social assistance

d. Has no program or information is not available

e. Old age and orphan's benefits only

f. Maternity benefits are financed under family allowances

g. Medical benefits only

h. Old age and survivor benefits only

Table 5: Descriptive statistics

	# Observations	Proportion of firms that
Created or updated a product line	293	66.2
Are partially owned by the government/state	292	5.8
Are foreign owned	292	38.7
Export	291	27.8
Belong to the EPZ	293	19.1
Are in dynamic sectors	292	45.1
Low productivity sectors	292	65.2
Medium productivity sectors	292	23.9
High productivity sectors	292	10.6
less than 5 years old	292	18.8
5 to 15 years	292	46.2
16 or more	292	34.9
20< employees (Small)	293	37.2
20 to 100 employees (Medium)	293	37.2
More than 100 employees (Large)	293	25.6
Antananarivo	293	84.6
Ansirabe	293	4.8
Tamatave	293	3.4
Other	293	7.2
Textiles	293	10.2
Leather	293	2.4
Garments	293	17.75
Food	293	15.0
Beverages	293	0.3
Metals and machinery	293	6.8
Chemicals and pharmaceuticals	293	5.8
Construction	293	0.3
Wood and furniture	293	21.8
Non-metallic and plastic materials	293	4.4
Paper	293	2.05
Other manufacturing	293	13.0

Source: Madagascar Enterprise Survey (World Bank, 2005)

Table 6 Determinants of perceptions about IC within Madagascar

	Macro instability	Economic, regulatory policy uncertainty	Access to financing	Cost of financing	Corruption	Crime theft disorder	Anti- competitive informal practice	Legal system	Business licensing
5 to 15 years old	0.033 (0.081)	-0.027 (0.092)	0.006 (0.092)	0.096 (0.084)	-0.011 (0.088)	0.047 (0.087)	0.082 (0.097)	-0.005 (0.089)	-0.010 (0.046)
16 or more	-0.042 (0.094)	-0.027 (0.104)	-0.103 (0.103)	0.062 (0.091)	0.006 (0.100)	-0.044 (0.099)	0.104 (0.106)	-0.033 (0.098)	-0.049 (0.047)
Partly owned by government/state	0.165 (0.096)*	0.002 (0.149)	-0.313 (0.153)**	-0.270 (0.146)*	-0.189 (0.131)	-0.023 (0.131)	0.149 (0.148)	0.372 (0.138)***	0.076 (0.111)
Domestic firms	0.047 (0.078)	-0.020 (0.088)	0.187 (0.080)**	0.143 (0.077)*	-0.119 (0.082)	0.000 (0.080)	-0.008 (0.084)	-0.084 (0.081)	-0.005 (0.042)
leather	-0.199 (0.231)	0.084 (0.248)	0.280 (0.136)**	-0.257 (0.234)	-0.134 (0.206)	0.143 (0.225)	-0.210 (0.187)	0.196 (0.279)	0.089 (0.178)
Garments	-0.122 (0.135)	-0.053 (0.139)	0.202 (0.113)*	0.019 (0.123)	0.082 (0.134)	0.177 (0.136)	0.180 (0.146)	-0.070 (0.119)	-0.017 (0.059)
Food	-0.076 (0.131)	-0.053 (0.141)	-0.067 (0.140)	-0.178 (0.139)	-0.163 (0.126)	0.283 (0.136)**	-0.018 (0.137)	-0.138 (0.109)	-0.016 (0.067)
Metals and Machinery	0.130 (0.133)	0.244 (0.170)	0.195 (0.132)	0.039 (0.152)	0.024 (0.166)	0.293 (0.155)*	-0.111 (0.155)	-0.130 (0.122)	0.008 (0.081)
Chemicals and pharmaceuticals	0.270 (0.087)***	-0.129 (0.158)	0.135 (0.152)	0.139 (0.137)	0.100 (0.172)	0.106 (0.181)	0.274 (0.165)*	0.029 (0.163)	-0.072 (0.032)**
Wood and furniture	-0.069 (0.118)	0.055 (0.135)	0.139 (0.116)	-0.033 (0.121)	-0.096 (0.121)	-0.057 (0.120)	-0.013 (0.124)	-0.086 (0.108)	0.073 (0.090)
Non-metallic and plastic materials	-0.014 (0.163)	0.323 (0.170)*	0.318 (0.097)***	0.020 (0.157)	-0.088 (0.179)	0.338 (0.166)**	-0.168 (0.162)	-0.208 (0.111)*	0.237 (0.196)
Paper	0.188 (0.151)	0.347 (0.221)	0.223 (0.179)	0.052 (0.227)	0.010 (0.244)	-0.090 (0.229)	0.149 (0.250)	-0.248 (0.109)**	
Other manufacturing	0.133 (0.111)	0.127 (0.151)	0.173 (0.124)	-0.167 (0.147)	0.055 (0.142)	0.308 (0.138)**	0.039 (0.145)	-0.154 (0.106)	0.070 (0.101)
Medium firms	0.054 (0.072)	0.022 (0.084)	-0.067 (0.080)	-0.041 (0.074)	0.074 (0.079)	-0.129 (0.074)*	-0.089 (0.079)	0.194 (0.079)**	0.010 (0.042)
Large firms	0.011 (0.105)	-0.009 (0.119)	-0.269 (0.111)**	0.059 (0.101)	-0.079 (0.114)	-0.044 (0.104)	-0.265 (0.104)**	0.254 (0.120)**	0.105 (0.080)
Non-exporter	0.051 (0.096)	0.141 (0.099)	-0.060 (0.099)	0.008 (0.095)	0.128 (0.099)	-0.083 (0.101)	0.170 (0.098)*	0.036 (0.096)	0.034 (0.042)
Innovator	-0.009 (0.066)	0.085 (0.073)	0.027 (0.076)	0.010 (0.069)	-0.128 (0.074)*	-0.031 (0.072)	0.088 (0.076)	-0.067 (0.075)	0.034 (0.035)
Proportion of other constraints cited as major issue	0.928 (0.168)***	1.428 (0.192)***	0.652 (0.167)***	0.729 (0.160)***	1.059 (0.178)***	0.927 (0.165)***	1.216 (0.195)***	1.228 (0.177)***	0.519 (0.093)***
Not EPZ	-0.055 (0.114)	-0.313 (0.136)**	0.090 (0.135)	0.237 (0.132)*	-0.102 (0.134)	-0.040 (0.129)	0.271 (0.114)**	0.201 (0.100)**	-0.003 (0.064)
Observations	286	283	273	275	284	283	284	276	276

Standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

Table 7 Determinants of perceptions about IC within Madagascar

	Access to land	Customs regulations	Telecom munications	Electricity	Transport ation	Tax rates	Tax admin	Labor regulations	Skills and education
5 to 15 years old	0.126 (0.077)*	-0.126 (0.090)	0.029 (0.062)	-0.017 (0.084)	-0.025 (0.053)	0.029 (0.091)	-0.015 (0.091)	-0.004 (0.054)	0.015 (0.082)
16 or more	0.035 (0.088)	0.127 (0.110)	0.100 (0.080)	-0.009 (0.095)	-0.003 (0.061)	0.074 (0.103)	-0.027 (0.103)	0.047 (0.068)	0.117 (0.096)
Partly owned by government/state	-0.035 (0.103)	-0.197 (0.096)**	-0.114 (0.045)**	-0.018 (0.136)	0.131 (0.129)	-0.131 (0.137)	-0.099 (0.151)	0.032 (0.111)	0.053 (0.134)
Domestic firms	0.042 (0.060)	-0.149 (0.085)*	-0.091 (0.057)	-0.036 (0.078)	-0.015 (0.049)	0.043 (0.082)	0.074 (0.083)	0.027 (0.050)	-0.077 (0.075)
leather	0.058 (0.184)	-0.222 (0.083)***	-0.048 (0.095)	0.012 (0.217)	-0.102 (0.033)***	0.342 (0.185)*	0.110 (0.242)	-0.084 (0.047)*	0.098 (0.227)
Garments	0.016 (0.105)	-0.063 (0.118)	-0.116 (0.050)**	-0.172 (0.114)	-0.073 (0.051)	0.123 (0.135)	0.194 (0.135)	-0.043 (0.057)	-0.146 (0.092)
Food	0.110 (0.126)	-0.112 (0.121)	-0.028 (0.075)	0.024 (0.127)	-0.024 (0.070)	0.126 (0.141)	0.003 (0.143)	-0.084 (0.048)*	-0.020 (0.114)
Metals and Machinery	0.028 (0.134)	-0.076 (0.131)	-0.023 (0.086)	-0.030 (0.147)	-0.096 (0.038)**	0.195 (0.158)	0.086 (0.164)	-0.059 (0.055)	-0.100 (0.113)
Chemicals and pharmaceuticals	0.157 (0.164)	-0.078 (0.133)	-0.095 (0.052)*	-0.077 (0.153)	-0.052 (0.063)	0.080 (0.172)	-0.033 (0.165)	0.035 (0.102)	-0.233 (0.069)***
Wood and furniture	-0.022 (0.094)	-0.144 (0.100)	-0.049 (0.066)	0.000 (0.117)	0.006 (0.071)	0.087 (0.128)	0.117 (0.127)	-0.054 (0.055)	-0.054 (0.100)
Non-metallic and plastic materials	-0.063 (0.124)	-0.186 (0.100)*	-0.072 (0.073)	-0.305 (0.105)***	-0.075 (0.059)	0.020 (0.185)	-0.193 (0.156)	-0.069 (0.060)	-0.004 (0.155)
Paper	0.224 (0.252)	-0.131 (0.151)		-0.188 (0.186)	0.042 (0.158)	0.320 (0.204)	-0.093 (0.222)		-0.218 (0.100)**
Other manufacturing	0.153 (0.138)	-0.106 (0.121)	-0.135 (0.039)***	-0.286 (0.095)***	-0.146 (0.030)***	0.217 (0.140)	0.146 (0.145)	-0.047 (0.059)	0.023 (0.124)
Medium firm	0.002 (0.059)	0.083 (0.089)	0.017 (0.053)	-0.059 (0.074)	0.012 (0.050)	-0.034 (0.080)	0.003 (0.079)	-0.019 (0.046)	-0.135 (0.066)**
Large firm	-0.001 (0.083)	0.229 (0.123)*	-0.010 (0.075)	-0.032 (0.107)	0.145 (0.089)	-0.122 (0.108)	0.063 (0.114)	-0.032 (0.061)	-0.013 (0.098)
Non-exporter	-0.062 (0.084)	-0.098 (0.103)	0.043 (0.060)	0.105 (0.092)	-0.072 (0.068)	0.007 (0.103)	-0.019 (0.102)	-0.071 (0.068)	-0.187 (0.096)*
Innovative firm	0.047 (0.054)	0.057 (0.075)	-0.019 (0.051)	0.068 (0.069)	0.056 (0.042)	0.014 (0.074)	0.043 (0.074)	0.003 (0.045)	0.094 (0.062)
Proportion of other constraints cited as major issue	0.439 (0.118)***	1.185 (0.187)***	0.463 (0.102)***	0.513 (0.153)***	0.434 (0.098)***	1.222 (0.186)***	1.240 (0.183)***	0.494 (0.096)***	0.628 (0.144)***
Not EPZ	0.015 (0.097)	0.100 (0.108)	-0.147 (0.118)	-0.208 (0.127)	0.069 (0.053)	-0.084 (0.134)	0.202 (0.117)*	-0.140 (0.111)	0.052 (0.110)
Observations	279	239	281	287	286	286	284	278	286

Standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

Table 8 Determinants of perceptions about IC in Madagascar versus SSA

	Macro instability	Economic, regulatory policy uncertainty	Access to financing	Cost of financing	Corruption	Crime theft disorder	Anti-competitive informal practice	Legal system	Business licensing
5 to 15 years old	0.023 (0.031)	0.003 (0.030)	-0.006 (0.031)	0.024 (0.032)	-0.003 (0.032)	-0.001 (0.028)	-0.005 (0.029)	0.005 (0.028)	0.026 (0.019)
16 years old or older	0.059 (0.031)*	0.044 (0.030)	-0.078 (0.031)**	0.033 (0.033)	-0.008 (0.032)	0.031 (0.028)	0.009 (0.030)	0.016 (0.028)	0.022 (0.019)
MAD dummy=1	0.193 (0.161)	-0.053 (0.149)	0.011 (0.164)	0.052 (0.167)	0.175 (0.165)	0.216 (0.169)	-0.163 (0.123)	0.051 (0.131)	-0.130 (0.019)***
5 to 15 years old & MAD dummy=1	0.016 (0.095)	-0.019 (0.086)	0.009 (0.097)	0.073 (0.097)	-0.004 (0.091)	0.045 (0.089)	0.073 (0.099)	-0.007 (0.065)	-0.033 (0.048)
16 years old or older & MAD dummy=1	-0.106 (0.101)	-0.079 (0.087)	-0.018 (0.106)	0.054 (0.108)	0.008 (0.103)	-0.070 (0.082)	0.101 (0.110)	-0.024 (0.066)	-0.065 (0.037)*
Partly owned by government	-0.071 (0.043)*	0.031 (0.042)	0.109 (0.046)**	0.010 (0.046)	-0.145 (0.040)***	-0.122 (0.032)***	0.061 (0.043)	0.007 (0.049)	-0.005 (0.027)
Partly owned by government & MAD dummy=1	0.271 (0.133)**	-0.045 (0.131)	-0.316 (0.079)***	-0.259 (0.132)**	-0.048 (0.149)	0.124 (0.147)	0.076 (0.152)	0.333 (0.171)*	0.102 (0.147)
Domestic	-0.000 (0.027)	-0.020 (0.026)	0.077 (0.028)***	0.065 (0.029)**	-0.076 (0.029)***	-0.002 (0.024)	-0.032 (0.027)	0.013 (0.024)	0.029 (0.015)**
Domestic & MAD dummy=1	0.041 (0.087)	-0.046 (0.075)	0.125 (0.084)	0.131 (0.079)*	-0.056 (0.079)	-0.004 (0.073)	0.073 (0.083)	-0.039 (0.049)	-0.033 (0.041)
Leather	0.021 (0.079)	0.071 (0.080)	-0.013 (0.081)	-0.281 (0.073)***	0.063 (0.087)	-0.082 (0.065)	-0.021 (0.073)	0.111 (0.114)	-0.069 (0.025)***
Garments	-0.077 (0.056)	0.029 (0.056)	-0.182 (0.050)***	-0.070 (0.064)	0.133 (0.063)**	0.174 (0.060)***	0.011 (0.055)	-0.028 (0.070)	-0.039 (0.026)
Agroindustry	-0.113 (0.043)***	-0.004 (0.043)	-0.061 (0.044)	0.036 (0.048)	0.059 (0.049)	0.051 (0.044)	-0.017 (0.042)	0.037 (0.041)	-0.029 (0.021)
Food	-0.035 (0.050)	-0.105 (0.042)**	-0.162 (0.045)***	-0.172 (0.053)***	0.007 (0.055)	0.048 (0.049)	-0.037 (0.046)	-0.014 (0.044)	-0.053 (0.020)***
Beverages	0.034 (0.117)	-0.110 (0.095)	-0.184 (0.100)*	-0.223 (0.117)*	-0.055 (0.135)	-0.134 (0.090)	-0.149 (0.084)*		0.120 (0.106)
Metals and Machinery	-0.068 (0.045)	-0.021 (0.043)	-0.114 (0.044)***	-0.115 (0.049)**	0.161 (0.051)***	0.066 (0.045)	0.029 (0.045)	-0.018 (0.037)	-0.042 (0.020)**
Chemicals and pharmaceuticals	-0.028 (0.051)	-0.029 (0.047)	-0.106 (0.048)**	-0.052 (0.054)	0.095 (0.056)*	0.048 (0.049)	-0.064 (0.045)	0.013 (0.044)	-0.026 (0.024)
Construction	-0.136 (0.056)**	0.019 (0.059)	-0.108 (0.057)*	-0.033 (0.065)	0.109 (0.067)	0.041 (0.060)	-0.041 (0.055)	-0.003 (0.056)	-0.008 (0.033)
Wood and furniture	-0.194 (0.040)***	-0.054 (0.040)	-0.107 (0.043)**	-0.162 (0.046)***	0.111 (0.048)**	0.005 (0.041)	-0.066 (0.039)*	0.035 (0.041)	-0.005 (0.024)
Non-metallic and plastic materials	-0.011 (0.057)	-0.034 (0.053)	-0.130 (0.053)**	-0.154 (0.061)**	0.047 (0.064)	0.009 (0.054)	0.049 (0.057)	-0.084 (0.037)**	-0.030 (0.027)
Paper	0.048 (0.057)	-0.025 (0.053)	-0.115 (0.053)**	-0.057 (0.061)**	-0.002 (0.064)	0.004 (0.054)	-0.105 (0.057)	-0.046 (0.037)**	0.005 (0.027)

	Macro instability	Economic, regulatory policy uncertainty	Access to financing	Cost of financing	Corruption	Crime theft disorder	Anti-competitive informal practice	Legal system	Business licensing
Other manufacturing	(0.062) -0.125	(0.057) -0.025	(0.057)** -0.206	(0.065) -0.260	(0.065) -0.028	(0.056) -0.009	(0.051)** -0.146	(0.047) 0.016	(0.034) -0.042
Mining and quarrying	(0.056)** -0.127	(0.058) 0.207	(0.052)** -0.165	(0.059)** -0.006	(0.067) 0.161	(0.056) 0.167	(0.049)** -0.176	(0.057) 0.002	(0.027) -0.064
leather & MAD dummy=1	(0.106) -0.209	(0.119)* -0.016	(0.102) 0.350	(0.118) 0.049	(0.124) -0.184	(0.121) 0.239	(0.082)** -0.153	(0.089) 0.042	(0.037)* 0.288
Garments & MAD dummy=1	(0.192) -0.037	(0.226) -0.004	(0.199)* 0.376	(0.243) 0.036	(0.180) -0.030	(0.242) 0.004	(0.168) 0.097	(0.216) -0.051	(0.299) 0.024
Food & MAD dummy=1	(0.146) -0.048	(0.135) 0.057	(0.110)** 0.112	(0.148) -0.006	(0.138) -0.160	(0.126) 0.223	(0.151) 0.033	(0.090) -0.072	(0.102) 0.048
Metals and Machinery & MAD dummy=1	(0.144) 0.220	(0.150) 0.245	(0.150) 0.330	(0.150) 0.169	(0.117) -0.131	(0.152) 0.211	(0.139) -0.105	(0.068) -0.061	(0.128) 0.068
Chemicals and pharmaceuticals & MAD dummy=1	(0.175) 0.388	(0.182) -0.120	(0.144)** 0.266	(0.159) 0.240	(0.145) -0.009	(0.171) 0.043	(0.131) 0.389	(0.080) 0.028	(0.139) -0.081
Wood and furniture & MAD dummy=1	(0.148)** 0.125	(0.131) 0.091	(0.167) 0.259	(0.152) 0.132	(0.175) -0.188	(0.171) -0.056	(0.164)** 0.073	(0.128) -0.072	(0.043)* 0.106
Non-metallic and plastic materials & MAD dummy=1	(0.132) -0.006	(0.138) 0.336	(0.125)** 0.472	(0.126) 0.175	(0.099)* -0.129	(0.107) 0.323	(0.129) -0.172	(0.060) -0.059	(0.136) 0.352
Other manufacturing & MAD dummy=1	(0.187) 0.276	(0.189)* 0.131	(0.103)** 0.393	(0.162) 0.102	(0.166) 0.079	(0.188)* 0.313	(0.121) 0.232	(0.103) -0.096	(0.243) 0.171
Medium firms	(0.137)** 0.081	(0.163) 0.010	(0.116)** -0.114	(0.151) -0.023	(0.158) -0.021	(0.157)** 0.096	(0.159) -0.025	(0.057)* 0.048	(0.175) -0.021
Large firms	(0.025)** 0.127	(0.024) 0.053	(0.024)** -0.265	(0.026) -0.111	(0.026) -0.073	(0.023)** 0.121	(0.023) 0.007	(0.023)** -0.025	(0.014) -0.039
Medium firms & MAD dummy=1	(0.031)** -0.018	(0.031)* 0.017	(0.027)** 0.044	(0.033)** -0.035	(0.032)** 0.098	(0.030)** -0.172	(0.030) -0.060	(0.028) 0.093	(0.016)** 0.038
Large firms & MAD dummy=1	(0.085) -0.096	(0.080) -0.000	(0.085) -0.004	(0.087) 0.114	(0.084) 0.021	(0.044)** -0.129	(0.071) -0.237	(0.074) 0.203	(0.066) 0.227
Non-exporter	(0.111) 0.063	(0.107) 0.022	(0.114) 0.040	(0.109) 0.020	(0.114) 0.002	(0.070)* 0.048	(0.055)** 0.022	(0.121)* -0.019	(0.138) -0.025
Non-exporter & MAD dummy=1	(0.025)** -0.022	(0.024) 0.045	(0.026) -0.077	(0.027) 0.043	(0.027) 0.100	(0.022)** -0.118	(0.024) 0.208	(0.023) 0.089	(0.016) 0.085
	(0.102)	(0.099)	(0.094)	(0.101)	(0.100)	(0.068)*	(0.104)**	(0.084)	(0.085)

	Macro instability	Economic, regulatory policy uncertainty	Access to financing	Cost of financing	Corruption	Crime theft disorder	Anti-competitive informal practice	Legal system	Business licensing
Innovator	0.063 (0.032)**	0.020 (0.031)	-0.048 (0.032)	-0.048 (0.033)	-0.077 (0.033)**	0.064 (0.028)**	0.021 (0.031)	-0.017 (0.023)	-0.005 (0.017)
Innovator (status unknown)	0.017 (0.032)	0.043 (0.031)	-0.019 (0.032)	-0.011 (0.033)	-0.085 (0.032)***	-0.065 (0.028)**	0.084 (0.031)***	-0.075 (0.025)***	-0.096 (0.015)***
Innovator & MAD dummy=1	-0.071 (0.077)	0.066 (0.080)	0.074 (0.085)	0.054 (0.082)	-0.046 (0.077)	-0.085 (0.060)	0.056 (0.081)	-0.029 (0.049)	0.058 (0.069)
Proportion of other constraints cited as major issue	0.957 (0.048)***	1.148 (0.048)***	1.065 (0.050)***	1.316 (0.055)***	1.441 (0.055)***	0.875 (0.042)***	1.002 (0.046)***	0.748 (0.042)***	0.442 (0.026)***
Electronics	-0.158 (0.147)	0.119 (0.172)	-0.314 (0.105)***	-0.323 (0.152)**	0.140 (0.173)	0.199 (0.166)	-0.200 (0.130)	-0.047 (0.125)	
Retail and wholesale trade	0.248 (0.200)	0.042 (0.255)	-0.006 (0.241)	0.170 (0.205)	-0.010 (0.267)	0.008 (0.238)	0.005 (0.247)	0.170 (0.243)	
Other unclassified	0.125 (0.363)		0.010 (0.311)	-0.133 (0.318)	0.202 (0.294)	0.153 (0.305)	0.021 (0.283)		
Paper & MAD dummy=1	0.202 (0.260)	0.352 (0.256)	0.366 (0.201)*	0.142 (0.256)	0.003 (0.247)	-0.086 (0.197)	0.294 (0.249)	-0.111 (0.077)	
Observations	3079	3048	3032	2998	3100	3127	3093	2156	3066

Standard errors in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%. Each regression controls for average perceptions for all other IC elements interacted with Madagascar dummy.

Table 9 Determinants of perceptions about IC in Madagascar versus SSA

	Access to land	Customs regulations	Telecom-munications	Electricity	Transports	Tax rates	Tax admin	Labor regulations	Skills and education
5 to 15 years old	0.017	-0.018	-0.014	0.005	0.018	-0.008	0.024	0.015	0.040
	(0.023)	(0.028)	(0.020)	(0.029)	(0.023)	(0.032)	(0.031)	(0.022)	(0.028)
16 years old or older	-0.041	-0.033	-0.001	-0.011	-0.014	-0.023	-0.003	0.038	0.019
	(0.024)*	(0.028)	(0.020)	(0.029)	(0.023)	(0.032)	(0.032)	(0.022)*	(0.028)
MAD dummy=1	-0.109	-0.011	0.170	0.285	-0.064	-0.247	-0.218	0.013	0.226
	(0.093)	(0.159)	(0.164)	(0.153)*	(0.112)	(0.150)*	(0.119)*	(0.125)	(0.163)
5 to 15 years old & MAD dummy=1	0.133	-0.095	0.053	-0.015	-0.052	0.039	-0.040	-0.017	-0.026
	(0.107)	(0.076)	(0.081)	(0.083)	(0.067)	(0.096)	(0.090)	(0.067)	(0.083)
16 years old or older & MAD dummy=1	0.088	0.190	0.104	-0.010	0.020	0.092	-0.009	0.008	0.105
	(0.113)	(0.129)	(0.103)	(0.094)	(0.097)	(0.105)	(0.104)	(0.084)	(0.108)
Partly owned by government	-0.030	-0.004	0.021	0.150	0.091	0.103	0.053	-0.052	-0.069
	(0.034)	(0.039)	(0.030)	(0.043)***	(0.038)**	(0.044)**	(0.045)	(0.025)**	(0.034)**
Partly owned by government & MAD dummy=1	-0.008	-0.176	-0.120	-0.152	0.078	-0.238	-0.118	0.086	0.140
	(0.127)	(0.095)*	(0.030)***	(0.102)	(0.147)	(0.133)*	(0.137)	(0.164)	(0.151)
Domestic	0.002	-0.072	-0.007	-0.025	-0.046	-0.030	-0.069	0.038	0.023
	(0.023)	(0.026)***	(0.018)	(0.026)	(0.022)**	(0.028)	(0.029)**	(0.017)**	(0.023)
Domestic & MAD dummy=1	0.049	-0.052	-0.081	-0.042	0.048	0.059	0.188	-0.033	-0.084
	(0.076)	(0.074)	(0.031)***	(0.071)	(0.079)	(0.084)	(0.087)**	(0.055)	(0.063)
leather	0.095	0.036	0.110	-0.091	0.026	0.077	0.076	-0.081	-0.044
	(0.079)	(0.074)	(0.072)	(0.068)	(0.065)	(0.082)	(0.085)	(0.036)**	(0.062)
Garments	-0.014	-0.049	0.128	0.026	-0.017	0.041	0.005	0.073	-0.117
	(0.047)	(0.048)	(0.054)**	(0.057)	(0.043)	(0.061)	(0.060)	(0.047)	(0.040)***
Agroindustry	0.003	-0.032	0.074	0.104	0.115	-0.041	-0.011	-0.042	-0.134
	(0.037)	(0.039)	(0.038)*	(0.045)**	(0.042)***	(0.046)	(0.046)	(0.026)	(0.031)***
Food	0.008	-0.023	0.092	0.091	0.055	0.043	0.048	0.027	-0.085
	(0.043)	(0.044)	(0.046)**	(0.051)*	(0.044)	(0.052)	(0.054)	(0.036)	(0.038)**
Beverages	0.288	-0.143	0.343	0.002	0.020	0.058	0.046	-0.114	-0.141
	(0.130)**	(0.069)**	(0.123)***	(0.114)	(0.098)	(0.126)	(0.129)	(0.045)**	(0.072)*
Metals and Machinery	-0.041	-0.029	0.039	0.009	0.018	0.007	0.033	0.023	-0.054
	(0.036)	(0.040)	(0.037)	(0.045)	(0.038)	(0.049)	(0.049)	(0.032)	(0.036)
Electronics		0.008	0.065	-0.151	0.163	0.009		0.158	0.081
		(0.163)	(0.161)	(0.150)	(0.178)	(0.176)		(0.146)	(0.152)
Chemicals and pharmaceuticals	0.004	0.041	0.024	0.013	0.057	-0.003	0.005	-0.055	-0.040
	(0.043)	(0.048)	(0.039)	(0.050)	(0.045)	(0.053)	(0.052)	(0.027)**	(0.041)
Construction	-0.010	0.004	0.114	0.059	0.012	-0.090	0.021	-0.025	-0.107
	(0.047)	(0.057)	(0.057)**	(0.060)	(0.049)	(0.062)	(0.063)	(0.039)	(0.043)**
Wood and furniture	0.084	0.016	0.073	0.033	0.047	0.118	0.105	0.002	-0.108
	(0.041)**	(0.041)	(0.036)**	(0.043)	(0.037)	(0.045)***	(0.047)**	(0.029)	(0.033)***
Non-metallic and plastic materials	-0.003	-0.093	0.046	0.050	0.091	-0.037	-0.003	0.059	-0.072
	(0.048)	(0.043)**	(0.048)	(0.058)	(0.053)*	(0.060)	(0.061)	(0.044)	(0.043)*
Paper	0.074	0.025	-0.011	0.085	-0.014	0.060	0.056	-0.057	-0.029
	(0.058)	(0.057)	(0.044)	(0.062)	(0.048)	(0.063)	(0.066)	(0.033)*	(0.050)

	Access to land	Customs regulations	Telecommunications	Electricity	Transports	Tax rates	Tax admin	Labor regulations	Skills and education
Other manufacturing	-0.058 (0.048)	0.044 (0.060)	0.076 (0.056)	-0.142 (0.053)***	-0.024 (0.048)	0.001 (0.064)	0.142 (0.067)**	0.060 (0.047)	-0.050 (0.047)
Mining and quarrying	0.148 (0.119)	-0.063 (0.091)	0.166 (0.118)	0.125 (0.121)	-0.067 (0.077)	0.042 (0.121)	-0.024 (0.124)	-0.021 (0.070)	-0.137 (0.071)*
leather & MAD dummy=1	-0.026 (0.164)	-0.221 (0.066)***	-0.104 (0.049)**	0.101 (0.233)	-0.166 (0.048)***	0.259 (0.196)	0.052 (0.250)	-0.061 (0.127)	0.150 (0.248)
Garments & MAD dummy=1	0.029 (0.127)	-0.035 (0.126)	-0.125 (0.019)***	-0.137 (0.102)	-0.103 (0.070)	0.100 (0.140)	0.142 (0.148)	-0.078 (0.058)	-0.043 (0.115)
Food & MAD dummy=1	0.111 (0.148)	-0.087 (0.124)	-0.087 (0.045)*	-0.065 (0.118)	-0.075 (0.087)	0.080 (0.148)	-0.032 (0.142)	-0.111 (0.045)**	0.074 (0.138)
Metals and Machinery & MAD dummy=1	0.082 (0.166)	-0.045 (0.142)	-0.059 (0.069)	-0.045 (0.141)	-0.147 (0.051)***	0.178 (0.153)	0.071 (0.169)	-0.091 (0.060)	-0.049 (0.131)
Chemicals and pharmaceuticals & MAD dummy=1	0.165 (0.181)	-0.098 (0.123)	-0.109 (0.035)***	-0.102 (0.136)	-0.101 (0.084)	0.071 (0.175)	-0.004 (0.169)	0.101 (0.155)	-0.202 (0.074)***
Wood and furniture & MAD dummy=1	-0.085 (0.077)	-0.138 (0.084)*	-0.093 (0.038)**	-0.038 (0.112)	-0.026 (0.097)	-0.037 (0.136)	0.028 (0.132)	-0.069 (0.062)	0.064 (0.123)
Non-metallic and plastic materials & MAD dummy=1	-0.064 (0.139)	-0.120 (0.139)	-0.096 (0.054)*	-0.280 (0.068)***	-0.150 (0.060)**	0.053 (0.193)	-0.175 (0.150)	-0.109 (0.059)*	0.079 (0.182)
Other manufacturing & MAD dummy=1	0.256 (0.181)	-0.130 (0.104)	-0.131 (0.014)***	-0.143 (0.114)	-0.184 (0.022)***	0.203 (0.137)	0.017 (0.153)	-0.092 (0.055)*	0.080 (0.145)
Medium firms	-0.058 (0.018)***	0.021 (0.023)	0.009 (0.017)	-0.016 (0.023)	0.026 (0.019)	-0.089 (0.026)***	-0.111 (0.024)***	0.068 (0.019)***	0.092 (0.023)***
Large firms	-0.104 (0.021)***	0.066 (0.030)**	0.012 (0.021)	-0.010 (0.029)	0.069 (0.026)***	-0.167 (0.031)***	-0.189 (0.028)***	0.131 (0.026)***	0.209 (0.030)***
Medium firms & MAD dummy=1	0.066 (0.076)	0.062 (0.098)	0.012 (0.059)	-0.032 (0.072)	-0.007 (0.071)	0.056 (0.084)	0.116 (0.086)	-0.072 (0.042)*	-0.182 (0.043)***
Large firms & MAD dummy=1	0.126 (0.115)	0.138 (0.132)	0.005 (0.080)	0.023 (0.105)	0.095 (0.116)	0.060 (0.113)	0.229 (0.114)**	-0.094 (0.045)**	-0.176 (0.057)***
Non-exporter	0.063 (0.020)***	-0.020 (0.023)	-0.045 (0.019)**	0.006 (0.025)	-0.033 (0.020)	0.052 (0.027)*	-0.015 (0.027)	-0.033 (0.018)*	0.023 (0.022)
Non-exporter & MAD dummy=1	-0.104 (0.053)**	-0.049 (0.087)	0.057 (0.079)	0.044 (0.092)	-0.032 (0.072)	-0.068 (0.101)	0.047 (0.100)	-0.074 (0.047)	-0.158 (0.058)***
Innovator	0.007 (0.025)	0.054 (0.030)*	-0.014 (0.021)	-0.043 (0.030)	-0.028 (0.024)	-0.007 (0.033)	-0.033 (0.032)	-0.014 (0.020)	0.092 (0.028)***

	Access to land	Customs regulations	Telecom-munications	Electricity	Transports	Tax rates	Tax admin	Labor regulations	Skills and education
Innovator (status unknown)	0.123	0.091	0.031	0.019	0.006	0.069	0.062	-0.120	-0.004
	(0.027)***	(0.031)***	(0.022)	(0.030)	(0.024)	(0.033)**	(0.032)*	(0.019)***	(0.028)
Innovator & MAD dummy=1	0.048	0.001	-0.000	0.116	0.126	0.023	0.079	0.025	0.005
	(0.074)	(0.084)	(0.055)	(0.078)	(0.093)	(0.082)	(0.083)	(0.067)	(0.072)
Proportion of other constraints cited as major issue	0.466	1.019	0.512	0.910	0.643	1.322	1.321	0.422	0.546
	(0.034)***	(0.045)***	(0.029)***	(0.045)***	(0.035)***	(0.055)***	(0.052)***	(0.030)***	(0.039)***
Observations	2961	2864	3110	3120	3128	3118	3093	3080	3129

Standard errors in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%

Table 10 Determinants of perceptions about IC in Madagascar versus LIC

	Macro instability	Economic, regulatory policy uncertainty	Access to financing	Cost of financing	Corruption	Crime theft disorder	Anti-competitive informal practice	Legal system	Business licensing
5 to 15 years old	0.000 (0.015)	0.035 (0.015)**	-0.033 (0.015)**	0.024 (0.016)	0.054 (0.016)***	0.011 (0.012)	-0.006 (0.013)	0.017 (0.013)	-0.003 (0.009)
16 years old or older	0.021 (0.017)	0.045 (0.017)***	-0.033 (0.016)**	0.087 (0.018)***	0.045 (0.018)**	0.028 (0.014)**	0.028 (0.015)*	-0.004 (0.015)	-0.009 (0.009)
Age unknown	0.025 (0.024)	0.082 (0.025)***	0.018 (0.024)	0.100 (0.026)***	-0.006 (0.025)	-0.016 (0.018)	-0.050 (0.018)***	0.166 (0.139)	0.002 (0.013)
MAD dummy=1	0.209 (0.161)	-0.140 (0.105)	0.175 (0.158)	0.267 (0.157)*	0.176 (0.157)	0.218 (0.157)	-0.068 (0.103)	0.072 (0.123)	-0.087 (0.017)***
5 to 15 years old & MAD dummy=1	0.034 (0.084)	-0.049 (0.076)	0.036 (0.088)	0.071 (0.096)	-0.059 (0.079)	0.024 (0.068)	0.064 (0.083)	-0.018 (0.049)	-0.007 (0.050)
16 years old or older & MAD dummy=1	-0.062 (0.083)	-0.077 (0.080)	-0.052 (0.086)	-0.003 (0.101)	-0.045 (0.091)	-0.055 (0.057)	0.063 (0.092)	-0.004 (0.060)	-0.041 (0.040)
Partly owned by government	-0.027 (0.019)	-0.022 (0.019)	0.079 (0.021)***	-0.043 (0.021)**	-0.161 (0.019)***	-0.094 (0.013)***	0.035 (0.019)*	-0.018 (0.016)	-0.021 (0.011)**
Partly owned by government & MAD dummy=1	0.235 (0.152)	0.007 (0.134)	-0.244 (0.057)***	-0.173 (0.099)*	-0.020 (0.142)	0.107 (0.124)	0.082 (0.133)	0.357 (0.156)**	0.126 (0.146)
Domestic	-0.042 (0.018)**	-0.023 (0.018)	0.118 (0.016)***	0.074 (0.018)***	-0.030 (0.020)	0.002 (0.014)	-0.035 (0.017)**	-0.021 (0.016)	0.021 (0.009)**
Domestic & MAD dummy=1	0.081 (0.081)	-0.041 (0.071)	0.055 (0.077)	0.118 (0.084)	-0.093 (0.068)	-0.006 (0.055)	0.071 (0.072)	-0.004 (0.047)	-0.025 (0.037)
leather	0.004 (0.033)	-0.035 (0.031)	-0.025 (0.031)	-0.089 (0.032)***	-0.087 (0.033)***	0.017 (0.027)	0.047 (0.032)	0.005 (0.046)	0.038 (0.024)
Garments	0.015 (0.022)	-0.012 (0.022)	-0.052 (0.021)**	-0.078 (0.022)***	0.014 (0.024)	0.047 (0.020)**	0.046 (0.021)**	0.023 (0.033)	0.042 (0.016)***
Agroindustry	-0.037 (0.026)	-0.105 (0.023)***	0.003 (0.028)	0.134 (0.032)***	-0.084 (0.027)***	0.057 (0.025)**	0.116 (0.029)***	0.029 (0.033)	0.006 (0.017)
Food	-0.003 (0.023)	-0.063 (0.021)***	-0.069 (0.020)***	-0.061 (0.023)***	-0.043 (0.024)*	-0.006 (0.018)	0.048 (0.022)**	0.025 (0.033)	0.007 (0.014)
Beverages	0.050 (0.036)	0.035 (0.036)	-0.087 (0.031)***	0.048 (0.039)	-0.135 (0.034)***	-0.068 (0.024)***	0.154 (0.038)***	0.030 (0.038)	0.056 (0.028)**
Metals and Machinery	-0.023 (0.025)	-0.091 (0.022)***	-0.003 (0.025)	-0.023 (0.027)	-0.012 (0.028)	0.003 (0.021)	0.077 (0.026)***	-0.016 (0.028)	-0.007 (0.015)
Electronics	-0.083 (0.027)***	-0.086 (0.025)***	-0.103 (0.025)***	-0.139 (0.026)***	0.036 (0.032)	0.000 (0.024)	0.018 (0.027)	0.128 (0.124)	0.035 (0.021)
Chemicals and pharmaceuticals	-0.063 (0.022)***	-0.052 (0.022)**	-0.057 (0.022)***	-0.056 (0.024)**	0.014 (0.026)	0.005 (0.019)	0.056 (0.023)**	0.010 (0.035)	0.031 (0.016)*
Construction	-0.035 (0.031)	-0.050 (0.030)*	-0.087 (0.029)***	-0.035 (0.035)	-0.027 (0.035)	-0.001 (0.027)	0.039 (0.032)	0.023 (0.037)	0.049 (0.025)*
Wood and furniture	-0.079 (0.023)***	-0.120 (0.020)***	0.043 (0.026)*	0.024 (0.028)	-0.067 (0.026)***	-0.053 (0.017)***	0.038 (0.024)	0.009 (0.030)	0.009 (0.015)
Non-metallic and plastic materials	0.040 (0.033)	-0.068 (0.028)**	0.014 (0.032)	-0.039 (0.033)	-0.066 (0.033)**	-0.026 (0.025)	0.067 (0.032)**	-0.003 (0.032)	-0.049 (0.013)***
Paper	0.065 (0.044)	-0.124 (0.032)***	0.082 (0.044)*	0.041 (0.046)	-0.177 (0.036)***	-0.057 (0.028)**	-0.016 (0.037)	-0.073 (0.027)***	-0.025 (0.021)
Sport goods		-0.157 (0.082)*	-0.217 (0.064)***	-0.321 (0.050)***	-0.308 (0.065)***		-0.103 (0.100)		-0.032 (0.061)
IT services	-0.010 (0.054)	0.192 (0.062)***	-0.225 (0.031)***	-0.226 (0.041)***	0.202 (0.063)***	0.208 (0.060)***	0.121 (0.060)**	0.211 (0.081)***	-0.012 (0.033)
Other manufacturing	-0.175 (0.030)***	-0.111 (0.033)***	0.218 (0.043)***	0.158 (0.046)***	-0.160 (0.037)***	-0.154 (0.016)***	-0.074 (0.033)**	-0.095 (0.023)***	-0.039 (0.021)*

	Macro instability	Economic, regulatory policy uncertainty	Access to financing	Cost of financing	Corruption	Crime theft disorder	Anti-competitive informal practice	Legal system	Business licensing
Telecommunications	0.039 (0.098)	-0.079 (0.091)	-0.156 (0.077)**	-0.011 (0.111)	-0.188 (0.100)*	0.016 (0.100)	0.028 (0.096)	0.031 (0.093)	0.040 (0.087)
Advertising and marketing	-0.001 (0.071)	-0.066 (0.067)	-0.224 (0.039)***	-0.038 (0.075)	-0.158 (0.070)**	-0.033 (0.060)	0.004 (0.069)	-0.003 (0.063)	0.069 (0.061)
Other services	-0.023 (0.037)	0.058 (0.041)	-0.190 (0.025)***	-0.184 (0.032)***	0.022 (0.042)	0.146 (0.040)***	0.092 (0.039)**	0.084 (0.046)*	0.070 (0.032)***
Retail and wholesale trade	0.044 (0.030)	0.034 (0.030)	-0.201 (0.019)***	-0.067 (0.030)**	-0.112 (0.029)***	0.011 (0.026)	0.025 (0.028)	0.060 (0.037)	0.103 (0.026)***
Hotels and restaurants	-0.090 (0.042)**	0.008 (0.047)	-0.225 (0.027)***	-0.162 (0.043)***	-0.066 (0.049)	0.158 (0.050)***	0.007 (0.046)	0.002 (0.045)	-0.021 (0.030)
Transports	-0.003 (0.050)	0.032 (0.051)	-0.207 (0.030)***	-0.129 (0.047)***	-0.022 (0.055)	0.115 (0.051)**	0.068 (0.051)	0.135 (0.060)**	0.194 (0.052)***
Real estate and rental services	-0.125 (0.068)*	-0.140 (0.064)**	-0.225 (0.044)***	-0.231 (0.064)***	-0.174 (0.077)**	-0.155 (0.032)***	-0.061 (0.070)	0.098 (0.090)	0.102 (0.075)
Mining and quarrying	0.054 (0.075)	0.057 (0.076)	-0.096 (0.062)	0.017 (0.079)	-0.014 (0.086)	0.050 (0.074)	-0.117 (0.050)**	0.020 (0.063)	-0.006 (0.046)
Auto and auto components	-0.074 (0.036)**	-0.069 (0.035)**	-0.117 (0.032)***	-0.158 (0.034)***	0.058 (0.041)	0.084 (0.037)**	0.035 (0.037)		0.086 (0.033)**
leather & MAD dummy=1	-0.158 (0.137)	0.092 (0.240)	0.374 (0.219)*	-0.124 (0.184)	-0.045 (0.205)	0.090 (0.190)	-0.149 (0.084)*	0.142 (0.238)	0.049 (0.162)
Garments & MAD dummy=1	-0.106 (0.098)	0.037 (0.129)	0.255 (0.135)*	0.050 (0.136)	0.086 (0.132)	0.094 (0.115)	0.042 (0.117)	-0.074 (0.043)*	-0.045 (0.044)
Food & MAD dummy=1	-0.067 (0.110)	0.010 (0.132)	0.016 (0.129)	-0.099 (0.117)	-0.110 (0.112)	0.255 (0.143)*	-0.047 (0.090)	-0.081 (0.041)**	-0.023 (0.069)
Metals and Machinery & MAD dummy=1	0.175 (0.189)	0.330 (0.171)*	0.222 (0.172)	0.088 (0.182)	0.030 (0.162)	0.249 (0.165)	-0.114 (0.077)	-0.052 (0.066)	0.016 (0.098)
Chemicals and pharmaceuticals & MAD dummy=1	0.458 (0.182)**	-0.095 (0.129)	0.220 (0.179)	0.274 (0.193)	0.070 (0.172)	0.071 (0.147)	0.233 (0.186)	0.026 (0.112)	-0.082 (0.018)***
Wood and furniture & MAD dummy=1	0.015 (0.117)	0.179 (0.137)	0.097 (0.128)	-0.046 (0.120)	-0.026 (0.117)	0.015 (0.095)	-0.033 (0.087)	-0.047 (0.055)	0.077 (0.116)
Non-metallic and plastic materials & MAD dummy=1	-0.052 (0.147)	0.376 (0.178)**	0.390 (0.175)**	0.073 (0.185)	-0.019 (0.176)	0.344 (0.189)*	-0.141 (0.071)**	-0.095 (0.043)**	0.415 (0.240)*
Other manufacturing & MAD dummy=1	0.385 (0.141)***	0.244 (0.158)	-0.028 (0.132)	-0.239 (0.079)***	0.237 (0.146)	0.614 (0.119)***	0.143 (0.146)	0.046 (0.118)	0.166 (0.168)
Medium firms	0.025 (0.013)**	-0.015 (0.013)	-0.033 (0.012)***	-0.007 (0.014)	-0.054 (0.013)***	-0.009 (0.010)	-0.058 (0.010)***	0.007 (0.012)	0.002 (0.007)
Large firms	0.014 (0.016)	-0.014 (0.015)	-0.105 (0.014)***	-0.047 (0.017)***	-0.068 (0.017)***	0.002 (0.013)	-0.066 (0.012)***	-0.015 (0.015)	-0.004 (0.009)
Medium firms & MAD dummy=1	0.031 (0.077)	0.042 (0.079)	-0.032 (0.070)	-0.045 (0.075)	0.133 (0.081)*	-0.072 (0.040)*	-0.012 (0.059)	0.132 (0.072)*	0.009 (0.051)
Large firms & MAD dummy=1	0.010 (0.103)	0.067 (0.111)	-0.134 (0.074)*	0.055 (0.113)	0.018 (0.107)	-0.026 (0.067)	-0.137 (0.046)***	0.174 (0.109)	0.146 (0.116)

	Macro instability	Economic, regulatory policy uncertainty	Access to financing	Cost of financing	Corruption	Crime theft disorder	Anti-competitive informal practice	Legal system	Business licensing
Non-exporter	0.055 (0.014)***	0.022 (0.014)	0.014 (0.014)	0.001 (0.016)	-0.024 (0.016)	0.027 (0.011)**	0.030 (0.012)**	0.015 (0.014)	-0.009 (0.009)
Non-exporter & MAD dummy=1	-0.020 (0.087)	0.043 (0.095)	-0.048 (0.081)	0.060 (0.100)	0.126 (0.097)	-0.079 (0.047)*	0.169 (0.098)*	0.041 (0.068)	0.060 (0.074)
Innovator	0.032 (0.016)**	0.046 (0.016)***	-0.046 (0.016)***	-0.004 (0.018)	0.098 (0.019)***	0.067 (0.015)***	0.039 (0.015)***	0.047 (0.011)***	0.010 (0.010)
Innovator (status unknown)	-0.080 (0.018)***	-0.044 (0.018)**	-0.125 (0.018)***	-0.059 (0.019)***	0.059 (0.020)***	0.029 (0.015)*	0.022 (0.016)	-0.050 (0.020)**	-0.001 (0.011)
Innovator & MAD dummy=1	-0.039 (0.063)	0.037 (0.072)	0.072 (0.076)	0.010 (0.075)	-0.188 (0.051)***	-0.074 (0.038)**	0.024 (0.063)	-0.071 (0.027)***	0.035 (0.057)
Proportion of other constraints cited as major issue	1.057 (0.026)***	1.258 (0.027)***	1.064 (0.026)***	1.382 (0.030)***	1.425 (0.031)***	0.781 (0.020)***	0.842 (0.022)***	0.703 (0.026)***	0.444 (0.014)***
Observations	9728	9800	9718	9628	9657	9755	9730	5285	9636

Standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

Table 11 Determinants of perceptions about IC in Madagascar versus LIC

	Access to land	Customs regulations	Telecom munications	Electricity	Transport ation	Tax rates	Tax admin	Labor regulations	Skills and education
5 to 15 years old	-0.053 (0.010)***	-0.014 (0.013)	-0.016 (0.008)**	-0.010 (0.014)	-0.031 (0.009)***	0.056 (0.015)***	0.053 (0.015)***	0.008 (0.008)	-0.025 (0.010)**
16 years old or older	-0.064 (0.010)***	-0.045 (0.013)***	-0.017 (0.008)**	0.021 (0.016)	-0.035 (0.009)***	0.083 (0.018)***	0.050 (0.017)***	0.028 (0.010)***	-0.019 (0.011)*
Age unknown	-0.059 (0.013)***	-0.057 (0.016)***	-0.044 (0.008)***	-0.038 (0.020)*	-0.056 (0.010)***	0.121 (0.026)***	0.132 (0.026)***	0.033 (0.015)**	-0.036 (0.014)***
5 to 15 years old & MAD dummy=1	0.220 (0.110)**	-0.076 (0.054)	0.046 (0.060)	0.001 (0.074)	0.004 (0.057)	-0.027 (0.082)	-0.064 (0.072)	-0.009 (0.039)	0.037 (0.063)
16 years old or older & MAD dummy=1	0.122 (0.109)	0.194 (0.122)	0.104 (0.086)	-0.038 (0.077)	0.045 (0.079)	-0.018 (0.094)	-0.057 (0.083)	0.001 (0.049)	0.118 (0.088)
Partly owned by government	-0.001 (0.015)	-0.034 (0.016)**	-0.013 (0.010)	-0.058 (0.018)***	0.062 (0.015)***	-0.016 (0.020)	-0.014 (0.020)	0.037 (0.013)***	0.020 (0.014)
Partly owned by government & MAD dummy=1	-0.030 (0.092)	-0.119 (0.077)	-0.066 (0.022)***	0.034 (0.127)	0.064 (0.113)	-0.109 (0.117)	-0.052 (0.130)	-0.020 (0.059)	0.017 (0.088)
Domestic	0.018 (0.013)	-0.052 (0.016)***	-0.021 (0.010)**	0.029 (0.016)*	-0.017 (0.012)	-0.033 (0.019)*	-0.035 (0.018)*	0.006 (0.009)	-0.014 (0.012)
Domestic & MAD dummy=1	0.024 (0.061)	-0.049 (0.055)	-0.042 (0.020)**	-0.083 (0.054)	0.017 (0.054)	0.061 (0.080)	0.148 (0.084)*	-0.004 (0.038)	-0.027 (0.040)
Leather	0.031 (0.026)	0.043 (0.030)	0.021 (0.019)	-0.023 (0.028)	0.022 (0.022)	-0.008 (0.034)	-0.021 (0.032)	-0.009 (0.015)	0.014 (0.023)
Garments	-0.014 (0.015)	0.005 (0.018)	-0.013 (0.010)	-0.021 (0.019)	-0.030 (0.012)**	0.010 (0.023)	-0.017 (0.022)	0.028 (0.013)**	-0.047 (0.012)***
Agroindustry	-0.015 (0.019)	0.011 (0.024)	0.021 (0.016)	0.013 (0.026)	0.096 (0.023)***	0.066 (0.030)**	-0.045 (0.026)*	0.008 (0.015)	-0.013 (0.017)
Food	-0.002 (0.016)	-0.018 (0.018)	-0.002 (0.011)	0.036 (0.021)*	0.006 (0.015)	0.066 (0.025)***	0.001 (0.023)	0.018 (0.013)	-0.043 (0.013)***
Beverages	-0.048 (0.022)**	0.023 (0.032)	-0.033 (0.015)**	-0.189 (0.021)***	-0.068 (0.015)***	0.148 (0.039)***	0.077 (0.039)*	-0.041 (0.014)***	-0.044 (0.019)**
Metals and Machinery	-0.001 (0.019)	0.007 (0.023)	0.001 (0.013)	-0.076 (0.021)***	0.026 (0.018)	0.072 (0.029)**	-0.027 (0.025)	0.025 (0.016)	0.019 (0.018)
Electronics	-0.026 (0.019)	0.031 (0.027)	0.010 (0.016)	-0.044 (0.024)*	0.016 (0.020)	-0.017 (0.029)	-0.032 (0.028)	0.035 (0.019)*	-0.040 (0.017)**
Chemicals and pharmaceuticals	-0.022 (0.016)	0.001 (0.020)	-0.006 (0.012)	-0.038 (0.020)*	0.018 (0.016)	0.028 (0.025)	-0.020 (0.023)	0.034 (0.015)**	-0.020 (0.015)
Construction	-0.015 (0.023)	0.017 (0.031)	0.011 (0.019)	-0.096 (0.025)***	-0.026 (0.019)	0.085 (0.036)**	0.086 (0.036)**	-0.024 (0.015)	-0.031 (0.019)
Wood and furniture	0.138 (0.024)***	0.014 (0.023)	0.033 (0.015)**	-0.041 (0.022)*	0.044 (0.019)**	0.193 (0.028)***	0.034 (0.026)	-0.001 (0.013)	0.004 (0.017)
Non-metallic and plastic materials	0.022 (0.025)	-0.068 (0.023)***	0.010 (0.018)	-0.035 (0.028)	0.106 (0.028)***	0.040 (0.035)	-0.048 (0.031)	0.014 (0.018)	0.011 (0.022)
Paper	0.055 (0.035)	0.029 (0.039)	-0.009 (0.021)	0.029 (0.040)	0.011 (0.028)	0.178 (0.046)***	-0.004 (0.043)	-0.011 (0.020)	0.035 (0.031)
IT services	-0.149 (0.008)***	0.158 (0.065)**	0.077 (0.044)*	-0.092 (0.046)**	-0.059 (0.028)**	-0.127 (0.051)**	-0.041 (0.054)	-0.044 (0.022)**	-0.062 (0.029)**
Other manufacturing	0.228 (0.043)***	0.073 (0.046)	0.049 (0.029)*	-0.105 (0.032)***	0.016 (0.028)	0.013 (0.044)	-0.087 (0.038)**	0.047 (0.029)	0.105 (0.035)***
Telecommunications	-0.105 (0.046)**	0.071 (0.105)	-0.027 (0.052)	-0.086 (0.033)***	-0.086 (0.111)	-0.043 (0.112)	0.124 (0.112)	-0.036 (0.045)	-0.009 (0.063)
Advertising and marketing	-0.081 (0.040)**	0.135 (0.081)*	-0.018 (0.042)	-0.194 (0.045)***	-0.088 (0.027)***	0.042 (0.079)	0.114 (0.080)	-0.080 (0.021)	-0.080 (0.034)**
Other services	-0.105 (0.040)**	0.021 (0.081)*	-0.018 (0.042)	-0.158 (0.045)***	-0.053 (0.027)***	0.092 (0.079)	0.100 (0.080)	-0.021 (0.021)	-0.050 (0.034)**

	Access to land (0.017)*** -0.082	Customs regulations (0.039) 0.116	Telecom munications (0.020) -0.017	Electricity (0.026)*** -0.185	Transport ation (0.020)*** -0.060	Tax rates (0.043)** 0.123	Tax admin (0.044)** 0.112	Labor regulations (0.020) -0.030	Skills and education (0.021)** -0.090
Retail and wholesale trade	(0.016)*** -0.093	(0.032)*** 0.018	(0.015) -0.019	(0.019)*** -0.122	(0.014)*** -0.047	(0.033)*** 0.002	(0.033)*** 0.033	(0.014)** -0.047	(0.013)*** -0.101
Hotels and restaurants	(0.025)*** -0.063	(0.050) 0.100	(0.027) -0.032	(0.038)*** -0.187	(0.029) -0.037	(0.053) -0.006	(0.054) 0.090	(0.022)** -0.031	(0.019)*** -0.073
Transports	(0.030)** 0.033	(0.053)* 0.024	(0.022) 0.086	(0.030)*** -0.148	(0.028) -0.051	(0.054) -0.019	(0.055) 0.135	(0.023) -0.035	(0.023)*** -0.117
Real estate and rental services	(0.067) -0.053	(0.090) -0.028	(0.068) 0.009	(0.060)** -0.046	(0.047) -0.012	(0.086) 0.093	(0.092) 0.019	(0.029) -0.035	(0.024)*** -0.020
Mining and quarrying	(0.046) -0.119	(0.060) -0.060	(0.043) -0.047	(0.065) -0.050	(0.043) 0.028	(0.083) -0.067	(0.079) -0.075	(0.029) 0.096	(0.045) -0.010
Auto and auto components	(0.013)*** -0.095	(0.029)** 0.025	(0.013)*** 0.077	(0.030) 0.307	(0.029) -0.037	(0.037)* -0.003	(0.034)** -0.089	(0.032)*** 0.118	(0.026) 0.240
MAD dummy=1	(0.058) 0.021	(0.138) -0.164	(0.110) -0.048	(0.148)** 0.024	(0.072) -0.104	(0.150) 0.357	(0.121) 0.147	(0.133) -0.059	(0.148) 0.050
leather & MAD dummy=1	(0.156) 0.027	(0.036)*** -0.067	(0.042) -0.051	(0.194) -0.085	(0.022)*** -0.057	(0.217) 0.126	(0.241) 0.159	(0.032)* -0.037	(0.163) -0.052
Garments & MAD dummy=1	(0.102) 0.109	(0.077) -0.069	(0.025)** -0.022	(0.089) -0.017	(0.047) -0.028	(0.134) 0.051	(0.135) 0.012	(0.034) -0.061	(0.053) 0.038
Food & MAD dummy=1	(0.130) 0.029	(0.090) -0.062	(0.046) -0.021	(0.107) 0.050	(0.066) -0.097	(0.139) 0.112	(0.129) 0.130	(0.020)*** -0.055	(0.091) -0.069
Metals and Machinery & MAD dummy=1	(0.126) 0.187	(0.097) -0.054	(0.053) -0.060	(0.141) -0.047	(0.024)*** -0.056	(0.167) 0.036	(0.163) 0.021	(0.026)** -0.014	(0.054) -0.110
Chemicals and pharmaceuticals & MAD dummy=1	(0.170) -0.097	(0.103) -0.107	(0.023)*** -0.051	(0.127) 0.039	(0.058) -0.025	(0.165) -0.099	(0.153) 0.091	(0.058) -0.038	(0.029)*** -0.035
Wood and furniture & MAD dummy=1	(0.043)** -0.069	(0.057)* -0.098	(0.024)** -0.052	(0.108) -0.204	(0.061) -0.101	(0.102) -0.024	(0.125) -0.118	(0.033) -0.053	(0.057) -0.012
Non-metallic and plastic materials & MAD dummy=1	(0.095) -0.046	(0.096) -0.117	(0.036) -0.075	(0.070)*** -0.140	(0.024)*** -0.114	(0.168) 0.197	(0.136) 0.262	(0.036) -0.054	(0.097) -0.060
Other manufacturing & MAD dummy=1	(0.077) 0.027	(0.062)* 0.044	(0.006)*** 0.019	(0.083)* 0.039	(0.007)*** 0.023	(0.154) 0.002	(0.153)* 0.009	(0.025)** 0.016	(0.054) 0.037
Medium firms	(0.010)*** 0.001	(0.012)*** 0.090	(0.007)** 0.035	(0.012)*** 0.073	(0.009)*** 0.056	(0.013) -0.048	(0.013) -0.000	(0.007)** 0.020	(0.009)*** 0.059
Large firms	(0.012) -0.023	(0.015)*** 0.023	(0.009)*** -0.004	(0.015)*** -0.077	(0.011)*** -0.009	(0.016)*** -0.031	(0.016) -0.010	(0.009)** -0.025	(0.012)*** -0.090
Medium firms & MAD dummy=1	(0.048) -0.005	(0.077) 0.079	(0.035) -0.019	(0.055) -0.057	(0.048) 0.065	(0.072) -0.049	(0.070) 0.017	(0.028) -0.022	(0.022)*** -0.060
Large firms & MAD dummy=1	(0.072) 0.013	(0.109) -0.029	(0.041) -0.018	(0.080) 0.001	(0.088) -0.021	(0.096) 0.058	(0.100) -0.016	(0.040) -0.029	(0.042) -0.002
Non-exporter	(0.010) -0.055	(0.012)** -0.029	(0.008)** 0.025	(0.014) 0.045	(0.010)** -0.024	(0.015)*** -0.070	(0.015) 0.047	(0.009)*** -0.038	(0.010) -0.079
Non-exporter & MAD dummy=1	(0.049) 0.012	(0.070) 0.029	(0.052) -0.013	(0.084) -0.024	(0.047) 0.001	(0.083) -0.022	(0.091) -0.022	(0.026) 0.010	(0.030)*** 0.040
Innovator									

	Access to land (0.013)	Customs regulations (0.015)*	Telecom munications (0.009)	Electricity (0.016)	Transport ation (0.011)	Tax rates (0.016)	Tax admin (0.016)	Labor regulations (0.010)	Skills and education (0.012)***
Innovator (status unknown)	0.048	0.068	0.023	0.145	0.018	0.023	0.095	0.022	0.008
Innovator & MAD dummy=1	(0.014)*** 0.034	(0.016)*** 0.017	(0.010)** 0.004	(0.017)*** 0.092	(0.012) 0.066	(0.019) 0.037	(0.018)*** 0.064	(0.010)** -0.004	(0.013) 0.025
Proportion of other constraints cited as major issue	(0.061) 0.464	(0.069) 0.875	(0.037) 0.325	(0.070) 0.731	(0.067) 0.449	(0.073) 1.264	(0.073) 1.282	(0.035) 0.316	(0.049) 0.440
Sport goods	(0.017)*** 0.058	(0.022)*** -0.113	(0.012)***	(0.023)*** -0.063	(0.015)***	(0.028)*** -0.278	(0.027)*** -0.265	(0.012)***	(0.016)*** -0.068
Paper & MAD dummy=1	(0.078) 0.137	(0.075) -0.109		(0.071) -0.172	0.044	(0.067)*** 0.145	(0.037)*** -0.055		(0.056) -0.120
Observations	(0.229) 9502	(0.099) 9021	9956	(0.114) 10054	(0.165) 10000	(0.262) 10009	(0.195) 9965	9514	(0.029)*** 9957

Standard errors in parentheses * significant at 10%; ** significant at 5%; *** significant at 1%

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Annex 1: Methodology of the Enterprise Surveys (taken from the World Bank website)

Who conducts the surveys?

Private contractors conduct the Enterprise Surveys on behalf of the World Bank. While the Enterprise Analysis Unit (EA) welcomes the support and suggestions of both local and national governments, confidentiality of the data at all stages is necessary to ensure the greatest degree of participation, integrity and confidence in the quality of the data. For this reason, the EA unit uses private contractors rather than any government agency, or any organization or other institution associated with government, to collect the data. Surveys are usually carried out in cooperation with business organizations and government agencies promoting job creation and economic growth, but confidentiality is never compromised.

Who is surveyed?

The survey is completed by managing directors, accountants, human resource managers and other company staff. At the heart of the enterprise survey is the core survey, which is integrated into a manufacturing and a services-sector survey. Some surveys are extended to include specialized modules (human resources & training, tourism, for example) customized to the country's needs.

Structure of the surveys:

The core survey is organized into two parts. The first part seeks managers' opinions on the main constraints in the business environment. The second part focuses on productivity measures and is often completed with help from the chief accountant or human resource manager.

The Enterprise Surveys sample from the universe of registered businesses and follow a stratified random sampling methodology. A small number of sectoral sub-samples are included to provide measures of productivity that can be compared to the same sectors in other countries. Because the distribution of establishments in most countries is overwhelmingly populated by small and medium enterprises, surveys generally over-sample large establishments. Sample sizes for recent enterprise surveys range from 250-1500 businesses.

Sampling and weights:

Enterprise surveys have been conducted following simple random sampling or random stratified sampling. In a simple random sample, all members of the population have the same probability of being selected and no weighting of the observations is necessary. In a stratified random sample, all population units are grouped within homogeneous groups and simple random samples are selected within each group. This method allows computing estimates for each of the strata with a specified level of precision while population estimates can also be estimated by properly weighting individual observations. Weights take care of the varying probabilities of selection across different strata. Under certain conditions, estimates' precision under stratified random sampling will be higher than under simple random sampling (lower standard errors may result from the estimation procedure).

Annex 2: Definitions of “Doing Business” Indicators

Rigidity of employment index

The rigidity of employment index is the average of three subindices: a difficulty of hiring index, a rigidity of hours index and a difficulty of firing index. All the subindices have several components. And all take values between 0 and 100, with higher values indicating more rigid regulation.

The *difficulty of hiring* index measures (i) whether term contracts can be used only for temporary tasks; (ii) the maximum cumulative duration of term contracts; and (iii) the ratio of the minimum wage for a trainee or first-time employee to the average value added per worker. A country is assigned a score of 1 if term contracts can be used only for temporary tasks and a score of 0 if they can be used for any task. A score of 1 is assigned if the maximum cumulative duration of term contracts is less than 3 years; 0.5 if it is between 3 and 5 years; and 0 if term contracts can last 5 years or more. Finally, a score of 1 is assigned if the ratio of the minimum wage to the average value added per worker is higher than or equal to 0.75; 0.67 for a ratio greater than or equal to 0.50 and less than 0.75; 0.33 for a ratio greater than or equal to 0.25 and less than 0.50; and 0 for a ratio less than 0.25.

The *rigidity of hours* index has 5 components: (i) whether night work is unrestricted; (ii) whether weekend work is unrestricted; (iii) whether the workweek can consist of 5.5 days; (iv) whether the workweek can extend to 50 hours or more (including overtime) for 2 months a year; and (v) whether paid annual vacation is 21 working days or fewer. For each of these questions, if the answer is no, the country is assigned a score of 1; otherwise a score of 0 is assigned.

The *difficulty of firing* index has 8 components: (i) whether redundancy is disallowed as a basis for terminating workers; (ii) whether the employer needs to notify a third party (such as a government agency) to terminate 1 redundant worker; (iii) whether the employer needs to notify a third party to terminate a group of 25 redundant workers; (iv) whether the employer needs approval from a third party to terminate 1 redundant worker; (v) whether the employer needs approval from a third party to terminate a group of 25 redundant workers; (vi) whether the law requires the employer to consider reassignment or retraining options before redundancy termination; (vii) whether priority rules apply for redundancies; and (viii) whether priority rules apply for reemployment. For the first question an answer of yes for workers of any income level gives a score of 10 and means that the rest of the questions do not apply. An answer of yes to question (iv) gives a score of 2. For every other question, if the answer is yes, a score of 1 is assigned; otherwise a score of 0 is given. Questions (i) and (iv), as the most restrictive regulations, have greater weight in the construction of the index.

Nonwage labor cost

The *nonwage labor cost* indicator measures all social security payments (including retirement fund; sickness, maternity and health insurance; workplace injury; family allowance; and other obligatory contributions) and payroll taxes associated with hiring an employee in fiscal year 2005. The cost is expressed as a percentage of the worker's salary.

Firing cost

The firing cost indicator measures the cost of advance notice requirements, severance payments and penalties due when terminating a redundant worker, expressed in weekly wages. One month is recorded as 4 and 1/3 weeks.

This methodology was developed in Botero and others (2004) and is adopted here with minor changes.

These definitions are taken from the Doing Business website (<http://www.doingbusiness.org>).

Annex 3: Construction of Employment Protection Legislation Indexes

The indexes are calculated from the raw data provided in the Doing Business Database (2005). All the variables range between 0 and 1. They are either zero-one dummies (no/yes) or they are normalized over the sample. Variables for which higher values (x) represent looser regulations

are normalized according to the simple formula: $x_N = 1 - \left(\frac{x - \min(x_E)}{\max(x_E) - \min(x_E)} \right)$ while

variables for which higher values represent stricter regulations are normalized in the following way: $x_N = 1 - \frac{(\max(x_E) - x)}{(\max(x_E) - \min(x_E))}$ where x_N is the normalized value, $\max(x_E)$ is the maximum

value that the variable takes over the total number of countries. The resulting index values for the 44 countries in our estimation sample are presented in Table A1 below.

The *regular employment weighted index* is constructed from the raw variables in the following way (weights in parentheses):

Procedures (1/2)	The employer must notify a third party before dismissing one redundant employee? (1/6)
	The employer needs the approval of a third party to dismiss one redundant worker? (1/6)
	The law mandates retraining or replacement prior to dismissal? (1/6)
	There are priority rules applying to dismissal or lay-offs? (1/6)
	There are priority rules applying to re-employment? (1/6)
	Is redundancy considered a “fair” ground for dismissal? (1/6)
Firing costs (1/2)	Legally mandated notice period for redundancy dismissal (in weeks) after twenty years of continuous employment? Normalized (1/2)
	Severance pay for redundancy dismissal as number of months for which full wages are payable after continuous employment of twenty years? Normalized (1/2)

The *temporary employment regulation index* is equal to the simple average of the following variables:

Fixed-term contracts are only allowed for fixed-term tasks?
What is the maximum duration of fixed-term contracts (in months)? Normalized

Finally, the *overall employment regulation index* is the simple average of the regular and temporary employment indexes.

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