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AN EXPLORATORY ANALYSIS OF THE EFFECTS OF THE FORMALISATION POLICY FOR INDIVIDUAL MICRO-ENTREPRENEURS*

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ABSTRACT

This paper presents an exploratory analysis of the potential impacts of the *Lei do Empreendedor Individual* (Individual Entrepreneur Law). We intend to present evidence that helps clarify, albeit only partially, whether the policy was successful in promoting:

i) micro-entrepreneurship in Brazil; and ii) the formalisation of entrepreneurs. Regarding the promotion of micro-entrepreneurship, there is evidence that the policy may have achieved this particular goal. It is worth noting, however, that the evidence in this study suggests that larger businesses could be reducing their scale in order to fit within the programme requirements, as well as there being a possibility that certain companies, particularly smaller ones, might be using the programme to change their working relationships with their employees, from wage-earning work to services rendered. The policy seems to have had a positive effect on the formalisation of individual entrepreneurs in terms of social security contributions, but not in the rate of registration in the National Register of Legal Entities (CNPJ).

Keywords: entrepreneurship; informality.

JEL: L26, O17.

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1 INTRODUCTION

In Brazil, most businesses are informal: about 75 per cent of entrepreneurs are not registered with the tax authorities (do not hold a *Cadastro Nacional de Pessoa Jurídica*—CNPJ) and do not contribute to the social security system, according to data from the 2011 National Household Survey (PNAD) by the Brazilian Bureau of Statistics (IBGE). Both indicators are worrisome, from a public policy perspective. The first indicator implies a high degree of tax evasion and may pose serious challenges to firms' development—difficulties in accessing credit, inability to issue invoices, among others. The second implies that most of these entrepreneurs are not protected by the social security system, which can be a big social liability.

This scenario is even more pronounced among micro-entrepreneurs with up to one employee (otherwise known as *microempreendedores individuais* (MEIs) or individual micro-entrepreneurs), who account for about 21.3 per cent of the total working population and 89 per cent of entrepreneurs in Brazil, according to the 2011 PNAD. Moreover, some argue that micro-entrepreneurs, particularly the self-employed, are an important source of dynamism for the economy, given their potential for innovation and business expansion.[1] Seen from this angle, the downward trend in the share of micro-entrepreneurs among the working population in Brazil between 2003 and 2008 should be a point of concern to society.[2]

In 2009, the federal government introduced a new policy directed exclusively at MEIs. This policy, with full national coverage, significantly reduced formalisation-related costs for this group of entrepreneurs. The objective of this paper is to present an exploratory analysis of the potential impacts of this policy. To do so, we used data from the PNAD and the Monthly Employment Survey (PME), as well as simple econometric models, to contrast the results observed for eligible and non-eligible entrepreneurs. Note that we do not seek to identify any causal effect but to establish possible associations between the policy and the outcomes highlighted here.

Since the introduction of the Integrated System for the Payment of Taxes and Contributions for Micro and Small Enterprises (SIMPLES) in 1996, the Brazilian government has designed policies to reduce the bureaucracy applicable to—and the tax burden levied on—micro and small enterprises (MSEs). The general aim of such policies is to encourage the creation of new formal businesses, formalise existing informal enterprises and encourage the creation of formal jobs. The Complementary Law (*Lei Complementar*—LC) no. 128/2008, known as the Individual Entrepreneur Law, constitutes the basic institutional framework for MEIs, distinguishing them from other entrepreneurs and creating specific incentives for them to formalise their businesses and contribute to social security. The law officially came into effect in July 2009. The Units of the Federation started their operations progressively, between July 2009 and February 2010. To be eligible under the law, entrepreneurs must have an annual gross income of up to BRL60,000[3] and employ at most one person earning up to one minimum wage.

Through LC no. 128, MEIs came to have access to a CNPJ registration number without monetary or bureaucratic costs; they were automatically placed in the SIMPLES and were exempt from federal taxes—income tax, the Social Integration Programme (PIS), Contribution to Social Security Financing (COFINS), Industrialised Products Tax (IPI) and Social Contribution on Net Profits (CSL). As for their own social security contributions, MEIs now contributed a fixed rate of only 5 per cent of the minimum wage.[4] Thus, the MEI policy

significantly reduced the costs of formalising businesses, by assigning entrepreneurs a CNPJ registration number and having them contribute to the social security system. As such, the policy encourages micro-entrepreneurs to formalise their businesses in both senses, and generates a link between them for this group of entrepreneurs.

In this paper, we intend to demonstrate evidence that helps clarify, albeit only partially, whether the MEI policy was successful in promoting: i) micro-entrepreneurship in Brazil; and ii) the formalisation of entrepreneurs. To achieve this goal, we proceed in two alternative ways. First, we gather evidence for each of these two issues, using specific methodologies for each one. Second, we conduct an integrated analysis of these two issues, by tracking the transitions of individuals through different labour market situations, including their occupations and formalisation status. This integrated analysis can also contribute to a third issue, namely: can employers use the MEI policy to avoid paying labour taxes, by replacing labour contracts with service contracts signed with alleged individual entrepreneurs?

The results of research specifically on promoting entrepreneurship suggest that the MEI policy may have had a reduction-of-scale effect on those who were already entrepreneurs. However, there is no evidence of changes in the pattern of occupational choice between being a small entrepreneur and holding other positions. Regarding the specific research on the decision to formalise, results suggest that the policy may have had a positive impact on the decision by individual entrepreneurs to contribute to the social security system.

Finally, an integrated analysis of labour market flows based on PME data reveals that all occupations became less-absorbing states when compared to the option of being formally self-employed. This includes both the formalisation of workers who were already self-employed as well as effects on the reduction of the scale of businesses. Furthermore, we observe a reduction in the likelihood of being in formal employment in relation to being a formal MEI. This latter evidence would be more closely linked to the third issue, and corroborates Oliveira's (2013) observations. However, available data do not allow for the separation of, on the one hand, this potential effect of replacing formal working relations with service contracts and, on the other hand, a decision by formal employees who wish to become entrepreneurs, now that they face lower costs to open a business.

This paper relates to at least two branches found in literature. The first examines policies designed to encourage entrepreneurial activity. Cho and Honorati (2013) synthesise a literature review of programmes with this objective, in the context of developing countries. Nogueira and Oliveira (2013) provide a critical analysis of existing initiatives for developing this segment in Brazil.

The second branch analyses the determinants of business informality. In particular, recent articles use reduced methods and microdata to identify the (*ex post*) impacts of policies aimed at reducing the cost of formality when businesses decide to formalise. Kaplan, Piedra and Seira (2011) analyse a programme to simplify the bureaucracy of business formalisation in Mexico and find very limited effects on both the formalisation of businesses and on formal job creation.[5] More recently, De Mel, McKenzie and Woodruff (2012) conducted a natural experiment in Sri Lanka and found that reducing the bureaucratic and monetary costs involved with formalisation has very limited effects on the rate of business formalisation. For Brazil, Fajnzylber, Maloney and Montes-Rojas (2011) and Assunção and Monteiro (2012) analyse the impacts of SIMPLES on the decision of businesses to formalise, based on data from the Informal Economy Survey (ECINF) conducted by IBGE. Both studies found that the programme had weak effects on business formalisation.[6]

The remainder of this paper is organised as follows: Section 2 presents preliminary empirical information, with a description of the data used and a presentation of certain stylised facts. Sections 3 and 4 present the analyses of the associations between the MEI programme, individuals' occupational choices and the decisions of micro-entrepreneurs to formalise their businesses. Section 5 is an analysis of worker flows and how they may have been influenced by the policy. Section 6 presents a conclusion.

2 PRELIMINARY EMPIRICAL INFORMATION

2.1 DATA AND METHODOLOGY

Throughout this paper, we use microdata from PNAD and PME, both conducted by IBGE. Both data sets contain information about each individual's job status—self-employed, employer or employee—and whether they contribute to social security. In the case of the PNAD, from 2009 onwards there is information available about whether the self-employed workers and employers hold a CNPJ.

In both data sets, we excluded observations from the agricultural sector, unpaid workers, domestic workers, and those aged 10 years of age and under. In the case of PNAD, we also excluded observations from the Federal District.[7]

In the following section, we show the evolution of several indicators potentially affected by the MEI policy. However, there is a possibility that the evolution of these indicators may have been affected by other factors, such as labour force composition. In this sense, starting with Section 3, we present results in which we seek to minimise the influence of these factors, controlling for a number of observable characteristics of individuals and contrasting before and after the policy within the group of eligible entrepreneurs. In some cases, we also compare the evolution of the indicator of interest before and after the programme for eligible and non-eligible entrepreneurs (with two to five employees). In this second strategy, the level of success in minimising the influence of other factors increases proportionately to the level of similarity between these two groups.[8]

According to certain socio-demographic characteristics measured by PNAD and shown in Table 1, the group of MEIs has very similar traits to those of entrepreneurs with two to five employees. For example, the average age of the entrepreneurs is around 43 years, and the percentage of those working in manufacturing is around 12 per cent. However, MEIs also bear some resemblance to employees, as can be attested by the percentage of white individuals—at around 50 per cent in both groups—which is well below the percentage reported for other entrepreneurs. Maybe the MEI profile is a combination of the small entrepreneur and employee profiles, as attested by the percentages of men and heads of household shown in Table 1. However, some features of MEIs differ from those of other reference groups, such as the average education—8 years for this group, compared to 9.5 and 12 years for the other reference groups. The same applies to the percentage of residents in the South and Southeast regions, which is lower than 60 per cent for MEIs and around 70 per cent for the other groups.

TABLE 1

Socio-demographic Characteristics of MEIs and other Entrepreneurs (2011)

	Entrepreneurs			
	MEIs	**Small (two to five employees)**	**Other**	**Employees**
Average schooling (years)	7.9	10.5	11.9	9.5
Average age (years)	42.7	43.4	44.9	35.4
Men (%)	64.7	69.1	73.9	53.1
White (%)	50.0	69.7	78.0	50.7
Heads of household (%)	58.6	63.9	68.3	44.3
South and Southeast regions (%)	59.1	67.6	73.8	66.2
Manufacturing (%)	12.0	12.5	18.4	17.2

Source: PNAD.

Prepared by the authors.

It is worth highlighting that the MEI group comprises those eligible for the policy, but they are not necessarily affected by the law. This requires additional care in interpreting the results. For example, in the exercise where we analyse the likelihood of an individual entrepreneur becoming formal, we are estimating the association between the policy and a given outcome for potential (eligible) beneficiaries.

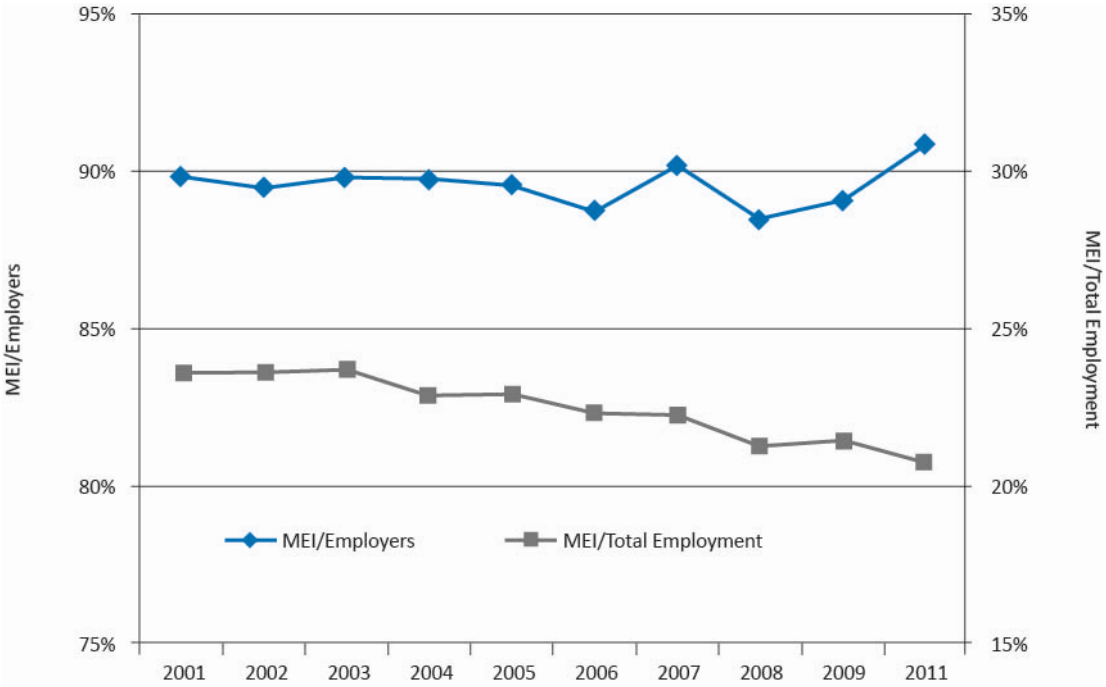
2.2 CONTEXT

The changes introduced by LC no. 128 directly influence the decisions of small entrepreneurs to formalise. Nevertheless, it is likely that the changes introduced by this policy have also brought about broader changes to the occupational choices of individuals—between being a small entrepreneur or a formal worker, for example—since the new policy has changed the costs and benefits associated with the different choices. Moreover, it is also possible that the law led some entrepreneurs with more than one employee to reduce the size of their businesses to be eligible for the policy.

Figure 1 shows a mixed picture with regard to the possible effects on occupational choices.[9] The share of entrepreneurs eligible for the MEI policy among those with up to 10 employees experienced an upward trend between 2009 and 2011, even though the graph shows that this rise began in 2008, albeit slightly less sharply. However, this does not happen with regard to the broader occupational choices made by workers, since the hare of those eligible for the MEI policy did not increase as a share of the total working population. On the contrary, a continued and slight downward trend began in 2003. Note that when we include the employed population in the basis of comparison, the analysis becomes susceptible to factors affecting the evolution of this group. For example, from 2003 to 2011, the labour market was on the rise. Therefore, there may have been a flow of self-employed workers into the group of wage-earning employees for lack of a better option.

FIGURE 1

Evolution of the Proportion of Individuals Eligible for the Programme in the Total Number of Entrepreneurs and Total Number of Employed People (2001–2011)



Source: PNAD.

Prepared by the authors.

The results are more significant for the two measures of formalisation. Table 2 shows that both the percentage of entrepreneurs who do not hold a CNPJ and of those who do not contribute to social security dropped between 2009 and 2011, in all categories considered. In terms of the CNPJ, however, there is no evidence that there has been a particularly sharp drop for those eligible for the MEI policy, since ineligible employers also showed a strong drop in the degree of informality. In terms of social security contributions, the results are more favourable to the policy, since small employers—those with only one employee—show the sharpest drop in the degree of informality.

TABLE 2

Degree of Informality, Based on not Having a CNPJ Number and not Contributing to Social Security (2009–2011)

	No CNPJ (%)		No social security (%)	
	2009	2011	2009	2011
Self-employed	83.4	80.7	82.0	75.0
Small employer	43.1	34.9	52.4	40.3
Other employers	6.3	3.6	21.2	18.3

Source: PNAD.

Prepared by the authors.

Another way to assess the potential influence of the MEI policy is to examine the evolution of the correlation between both measures of formalisation between 2009 (before the policy) and 2011 (after the policy). This correlation is central in this context, as the MEI policy introduces joint incentives for increasing formalisation. If the policy was, indeed, effective, it should have increased the correlation between the two measures of formalisation—having a CNPJ number or not and contributing or not to social security. Table 3 shows that the correlation did actually increase for all entrepreneur categories, but more sharply so for the self-employed. Therefore, the evidence presented in Table 3 suggests that the policy may have really had an effect on the decisions of micro-entrepreneurs about formalisation, in both dimensions.

In summary, the evidence presented in this section indicates that the MEI policy may have influenced the decision about company size, conditional on the individual being an entrepreneur, but there is no evidence of changes in the evolution of the broader pattern of individuals' occupational choices. The evidence also suggests that the policy may have had an impact on the decisions of individuals whether or not to formalise their businesses and whether or not to contribute to the social security system.

TABLE 3

Correlation Between Formalities Measured by CNPJ and Social Security Contributions (2009–2011)

	2009	2011
Self-employed	0.302	0.420
Small employer	0.394	0.484
Other employers	0.325	0.383

Source: PNAD.

Prepared by the authors.

So far, the analysis has focused only on general, stylised facts and aggregate indicators, without any econometric analysis enabling us to control for other factors that may be related to the timing of the policy and also influence the indicators being analysed—composition of the workforce, for example. The next section takes an additional step in that direction; we draw on simple econometric methods to try to delineate the possible effects of the programme more precisely, as discussed in Section 2.1.

We shall first analyse the occupational choices of individuals and then examine the effects on decisions about formalisation. As will become clear throughout the text, however, we do not intend to identify the causal effect of the MEI policy, only establish associations between the policy and the highlighted variables.

3 ASSOCIATIONS BETWEEN THE MEI PROGRAMME AND OCCUPATIONAL CHOICES

As previously discussed, associations between the programme and the movements reported in Figure 1 should be made with caution, since their trajectories may be influenced by other factors such as changes in workforce composition, for example. A given characteristic

mostly associated with the self-employed group may have become more frequent, and this may have led to this group accounting for a greater share of the working population. For example, young people are less likely to be self-employed workers. Therefore, a smaller inflow of young people into the labour market in a given period may contribute to an increase in the share of self-employed workers during that same period.

Evidence that is immune to this type of problem can be obtained through the following probit model:

$$\Pr(Y_i = 1|X_i) = \Phi(T_i\beta + X_i'\gamma) \quad (1)$$

where Φdenotes the cumulative density of the standard normal distribution; Y_i is a binary variable (a dummy) assigned the value of 1 if an individual *i* is self-employed or an employer with only one employee, and 0 if the individual has another type of occupation. In turn, T_i is a vector of temporal dummies, indicating the year when the information for individual *i* was collected—2009 is the omitted dummy. Finally, X_i denotes a vector with a series of controls of individual and occupation characteristics.[10] By incorporating the control variables denoted by X_i, β can be interpreted as the temporal evolution of the probability of being an MEI, when X_i is kept constant.

TABLE 4

Evolution in the Probability of Being an MEI *versus* other Occupational Categories (2005–2011)

	MEIs versus other entrepreneurs	MEIs versus other occupations
Dummy (year)		
2005	0.000356***	0.0236***
	(9.56e-05)	(8.56e-05)
2006	-0.00581***	0.0132***
	(9.69e-05)	(8.35e-05)
2007	0.00920***	0.0123***
	(9.08e-05)	(8.28e-05)
2008	-0.00774***	-0.00540***
	(9.68e-05)	(7.98e-05)
2011	0.0165***	-0.0160***
	(8.67e-05)	(7.77e-05)

Source: PNAD.

Prepared by the authors.

Note: 1. The following variables were used as controls: gender, age, educational level, race, position within the family, number of children and elderly individuals in the household, industry and region.

2. *** represents a p-value less than 0.001.

3. Numbers in parentheses correspond to standard errors.

Model 1 was estimated with two different samples: i) employers only; and ii) all types of occupation. The first column of Table 4 shows the results for employers. In this case, the relative likelihood of joining the MEI group fluctuates very close to zero until 2009, and then the number rises a bit between 2009 and 2011. Thus, there was an increase in

the probability of an individual being an MEI, rather than a larger-sized employer, after the implementation of the programme. The second column shows the results when employed workers are also included in the sample. This broader context significantly alters the evolution of the relative likelihood of joining the group of MEIs. Table 4 shows that there has been a downward trend in the probability of being an MEI, compared to all other occupational groups throughout the period, including between 2009 and 2011.[11]

Therefore, it can be said that there was a decrease between 2009 and 2011 in the probability of an individual being an MEI, rather than having any other occupation. However, such a decrease had already been recorded in a previous period and, therefore, cannot be attributed to the programme.

Additional evidence for this hypothesis may be obtained through another regression model, wherein *Y* has more than two categories. In particular, we specify a multinomial logit model in which *Y* can assume four values referring to the following occupational categories: MEI (reference category); employers with two to five employees; employers with more than five employees; or employees. With the exception of this adaptation in the dependent variable, the specification of this model is similar to that of the previous model, except for the hypothesis about the distribution of residuals, which becomes a standard type 1 extreme value: $\varepsilon_i \sim EV_1(0;1)$. The results are shown in Table 5.

TABLE 5

Evolution in the Probability of Being an MEI *versus* other Occupational Categories (2005–2011)

	Entrepreneurs with two to five employees versus MEI	Entrepreneurs with more than five employees versus MEI	Employee in a firm with up to five employees versus MEI	Employee in a firm with more than five employees versus MEI
2005	-0.000404	-0.0788***	-0.129***	-0.156***
	(0.00104)	(0.00103)	(0.000655)	(0.000501)
2006	0.0846***	-0.0449***	-0.0965***	-0.0885***
	(0.00102)	(0.00102)	(0.000652)	(0.000497)
2007	-0.0947***	-0.0338***	-0.0779***	-0.0718***
	(0.00105)	(0.00101)	(0.000646)	(0.000493)
2008	0.0990***	0.00249**	-0.0196***	0.0398***
	(0.00101)	(0.00101)	(0.000643)	(0.000490)
2011	-0.169***	0.175***	0.0763***	0.119***
	(0.00105)	(0.000990)	(0.000634)	(0.000485)

Source: PNAD.

Prepared by the authors.

Note: 1. The following variables were used as controls: gender, age, educational level, race, position within the family, number of children and elderly individuals in the household, industry and region.

2. *** represents a *p*-value less than 0.001; for ** it is less than 0.05.

3. Numbers in parentheses correspond to standard errors.

According to the first column, the trend of the probability of being a small entrepreneur—rather than an MEI—fluctuated until 2009. From that point forward, it drops more sharply. That is, after the programme came into effect, the choice for an occupational category to which workers are eligible has increased relative to the choice of being a small entrepreneur. The evolution in the probability of being a larger-sized employer relative to

being an MEI experienced an upward trend between 2005 and 2007. From 2008 on, this trend is reversed, and in 2011, after programme implementation, it intensifies. The same applies to both employee categories analysed here. In summary, one can say that, after implementation of the programme, and with the exception of small entrepreneurs, all occupational categories attract individuals more intensely in comparison to the class benefited by the programme. However, this trend had begun in 2008; therefore, we cannot establish a more immediate relationship between the timing of the introduction of the programme and the reversal of the trend.

4 ASSOCIATIONS BETWEEN THE MEI POLICY AND FORMALISATION

In this section, we analyse the evolution of the formalisation of the MEI group, comparing the periods before and after the introduction of the policy (2009 and 2011, respectively), using the two dimensions related to the programme: contribution to social security and registration in the CNPJ. Table 6 shows estimates of the coefficients of a model that explains the probability of being a formal worker, conditioned to a series of controls. In this model, depicted subsequently, *Y* becomes a variable representing the formality of the business, according to each of the criteria—contribution to social security and registration in the CNPJ:

$$\Pr(Y_i = 1|X_i) = \Phi(T_i\beta + X_i'\gamma + \delta g_i + \theta . T_i . g_i)$$

where *Ti* and *Xi* have an interpretation analogous to that of Model 1, and *g* is an indicator for the reference group for which we want to assess the evolution of the probability of someone being a formal worker, between 2009 and 2011. The parameter θ in the model represents the difference between the reference group and the comparison group in the evolution of the probability of being a formal worker, between 2009 and 2011.

Reference and comparison groups vary across columns according to the sample definition. The first and third columns report results for model specifications with the sample restricted to individuals eligible for MEI. For this sample, we define reference and comparison groups according to the formal status dimension not used to define *Y*. The second and fourth columns report results for model specifications with a broader sample which also includes employers in business with two to five employees. This is the comparison group for that specification.

The positive and significant result of the year/pension interaction term, in the first column of Table 6, informs us that the probability of having a CNPJ registration number grew relatively more for MEIs who contribute to social security than for MEIs who do not contribute. That is, the increased association between the two dimensions of formality coincides with the introduction of the programme—and more so among potential beneficiaries—which indicates that the programme may have had an impact on formalisation. The results in the third column show that this is also valid when we switch formalisation dimensions in *Y* and *g* variables.

In the second and fourth columns, we have the results of a comparison between MEIs and small entrepreneurs (with two to five employees). It is interesting to note that the results in this comparison are sensitive to the formalisation dimension used. The second column shows that the probability of having a CNPJ grew less for MEIs than for small entrepreneurs, between 2009 and 2011. The fourth column shows that the probability of contributing to social security grew more for MEIs than for small entrepreneurs, between 2009 and 2011.

TABLE 6

Evolution in the Likelihood of Being Formal (2009–2011)

	CNPJ		Social security contributions	
Year = 2011 (dummy)	-0.0319***	0.0490***	0.0297***	0.0481***
	(0.000164)	(0.000508)	(0.000174)	(0.000491)
Social security (dummy)	0.215***			
	(0.000293)			
Social security x year	0.0808***			
	(0.000345)			
CNPJ (dummy)			0.252***	
			(0.000320)	
CNPJ x year			0.103***	
			(0.000400)	
MEI		-0.480***		-0.346***
		(0.000458)		(0.000451)
MEI x year		-0.0359***		0.0167***
		(0.000525)		(0.000517)
Sample	MEIs	MEI + entrepreneur with two to five employees	MEIs	MEI + entrepreneur with two to five employees
Observations	31,373,836	34,107,651	31,238,469	33,972,284
Pseudo-R2	0.247	0.252	0.225	0.1907

Source: 2009 and 2011 PNADs.

Prepared by the authors.

Note: 1. Controls used in all regressions: sector of activity, region, educational level, age, condition within the household, gender, race/colour, and number of children and elderly individuals residing in the household.

2. *** represents a p-value less than 0.001.

3. Numbers in parentheses correspond to standard errors.

These results are apparently contradictory. However, we must recall that CNPJ registration has a growing influence on business size (due to the ability to issue invoices, access to the credit market, among others), while the opposite is probably true for the social security dimension. Furthermore, the association between social security contributions and a CNPJ number exists only in the context of the programme and is relevant only to those who are eligible for it. It is possible, therefore, that factors outside the programme may have encouraged the formalisation of larger-sized entrepreneurs in the CNPJ dimension more intensively than in the social security dimension between 2009 and 2011. This does not happen to micro-entrepreneurs, since the MEI policy makes the decision to formalise an inseparable and joint decision in both dimensions.

The aforementioned results use data pertaining to only two years; therefore, we cannot distinguish whether the effect found in 2011 reflects merely a pre-existing trend. In other words, it is possible that the increase in formalisation detected between 2009 and

2011 is only a part of a longer-term trend that began before the MEI policy came into effect. To examine this possibility, we estimate the same model with a sample expanded for the period between 2005 and 2011. Note that, as there is no information available about CNPJ for most of this period—only for after 2009—the analysis is restricted to formality based on social security contributions.

When specifying this model, we included one dummy for each year, with five temporal dummies—the 2009 dummy was omitted to avoid multicollinearity, and in 2010, PNAD did not go into the field. This specification can be represented as follows:

$$\Pr(Y_i = 1|X_i) = \Phi\left(\sum_j \beta_j T_{j,i} + X_i'\gamma\right), \quad j = 1, \dots, 5 \qquad (2)$$

TABLE 7

Evolution in the Probability of Contributing to the Social Security System (2005–2011)

	MEIs	MEIs and entrepreneurs with two to five employees
Year = 2005 (dummy)	-0.00583***	0.000127
	(0.000135)	(0.000429)
Year = 2006 (dummy)	-0.00863***	-0.000285
	(0.000133)	(0.000419)
Year = 2007 (dummy)	-0.00665***	-0.0190***
	(0.000133)	(0.000410)
Year = 2008 (dummy)	-0.0106***	-0.0298***
	(0.000131)	(0.000384)
Year = 2011 (dummy)	0.0568***	0.0464***
	(0.000148)	(0.000486)
MEI x 2005		-0.00698***
		(0.000447)
MEI x 2006		-0.00956***
		(0.000436)
MEI x 2007		0.0120***
		(0.000467)
MEI x 2008		0.0193***
		(0.000458)
MEI x 2011		0.0154***
		(0.000482)
MEI (dummy)		-0.329***
		(0.000449)

Source: PNAD.

Prepared by the authors.

Note: 1. The following variables were used as controls: gender, age, educational level, race, position within the family, number of children and elderly individuals in the household, industry and region.

2. *** represents a *p*-value less than 0.001.

3. Numbers in parentheses correspond to standard errors.

The results are shown in Table 7. They show the same results for 2011 compared to 2009 as the ones presented in Table 6, but with slightly lower intensity—as expected. What is interesting about the result is that the group of entrepreneurs eligible for the MEI policy had already been showing a greater trend towards formalisation since 2007, compared to entrepreneurs with two to five employees. Thus, these results spell caution when concluding that the MEI programme induced the results for 2011.

While the use of PNADs for longer periods allows us to examine the existence of a formalisation trend before the introduction of the MEI programme, the PNAD does not allow us to capture monthly variations or extend the analysis to a more recent period. Thus, we use PME data from 2004 to 2012 and estimate a probit model analogous to that expressed in Equation 2,[12] but we explore the monthly frequency of PME and create dummies for the periods specified in Table 8. Like the PNAD prior to 2009, the PME does not say whether the entrepreneur has a CNPJ, so the regressions consider only the social security dimension.[13] The results indicate a clear change in the trend since the introduction of the Individual Entrepreneur Law in July 2009, with growing probabilities of contributing to social security among those eligible for the policy.

TABLE 8

Evolution in the Likelihood of Being a Formal Worker for MEIs (2009–2011)

	Coefficient	Standard deviation
July 2004 – June 2005	-0.100**	0.011
July 2005 – June 2006	-0.025**	0.010
July 2006 – June 2007	-0.038**	0.010
July 2007 – June 2008	-0.022**	0.010
July 2009 – June 2010	0.070**	0.010
July 2010 – June 2011	0.175**	0.010
July 2011 – June 2012	0.373**	0.010
After July 2012	0,492**	0,014

Source: PME.

Prepared by the authors.

Note: ** represents a *p*-value less than 0.05.

In short, the results using data from PNAD suggest that, between 2009 and 2011, MEIs showed an increase in their formalisation rates, and the same occurred among other small entrepreneurs. However, MEIs showed a smaller increase in their formalisation rates than small entrepreneurs based on the CNPJ criterion, and a slightly larger increase based on the social security contribution criterion. However, this trend in the social security criterion had been observed since 2007, which contradicts the interpretation that the programme induced the 2011 results. Nevertheless, the PME data suggest that there was a change in the evolution of the rate of formalisation of self-employed workers immediately after the policy was introduced, becoming increasingly positive after July 2009 (Table 8).

5 FLOW ANALYSIS

So far, the analysis has focused on the behaviour of stocks. Also important are the flows—i.e. the extent to which the policy has changed transitions in the labour market. The longitudinal nature of the PME allows us to identify the movements of workers between the different occupational modalities considered here.

Once again, given the limitations of the PME—the fact that it does not ask if the employer has a CNPJ number or not—the analysis will focus on the social security dimension. The PME also does not allow us to separate entrepreneurs who have only one employee from those who have two to five employees. Consequently, the authors restricted the reference group to self-employed workers. We begin the flow analysis by presenting simple transition matrices between the different types of occupation status and the unemployed. Then we examine the evolution of the flow of individuals into the reference group and try to identify any changes in flow pattern after the introduction of the policy. Finally, we look at the destination of those who belonged to the reference group but were informal workers—i.e. they did not contribute to social security.

5.1 TRANSITION MATRICES

In this section, we present two transition matrices, for the periods before and after the implementation of the MEI policy.[14] These matrices show the destinations broken down by the size of the business and by formal or informal status. For example, the first cell in the first matrix, related to the period after the inception of the MEI policy, indicates that the probability of being a contributing self-employed person and remaining as such after 12 months was 51.88 per cent. Coincidentally, the same number can be found in the same cell in the second matrix, for the period prior to the implementation of the MEI policy, which suggests that the change in legislation did not affect the likelihood of remaining a contributing self-employed person.

In turn, flows from informal to formal self-employment become more likely, increasing from 5.6 per cent to 8.2 per cent. The same is observed, to a lesser extent, in flows from small employers (up to five employees), both formal and informal, to contributing self-employment. As such, these transition matrices suggest that the MEI policy may have had a downscaling impact, although the analysis so far does not control for any observable characteristic of individuals, nor does it allow for statistical inference. The same pattern of moderate increase in flows into the contributing self-employed category is reported for all other origins, except for informal employers with more than five employees.

TABLE 9

Transition Matrices — Before and After the Introduction of the MEI Policy (2005–2012)

	Formal self-employed	Informal self-employed	Formal employer (fewer than five employees)	Informal employer (fewer than five employees)	Formal employer (more than five employees)	Informal employer (more than five employees)	Formal worker (small business)	Informal worker (small business)	Formal worker (other businesses)	Informal worker (other businesses)
	Post-MEI: September 2009 – October 2012									
Formal self-employed	**51.88**	18.79	5.68	1.18	1.48	0.28	9.60	2.71	1.36	0.18
Informal self-employed	**8.23**	**58.52**	1.02	2.37	0.23	0.18	7.09	6.57	0.31	0.29
Formal employer with fewer than five employees	**16.00**	6.45	**46.47**	6.67	7.29	1.52	8.87	2.10	0.00	0.00
Informal employer with fewer than five employees	**6.51**	26.11	14.92	**27.13**	2.78	1.62	6.85	4.55	0.00	0.00
Formal employer with more than five employees	**4.55**	2.56	7.37	1.55	**60.89**	5.94	0.00	0.00	10.41	1.83
Informal employer with more than five employees	**3.67**	8.75	6.20	4.15	27.46	**27.43**	0.00	0.00	7.68	5.29
Formal worker (small business)	**3.76**	3.73	1.56	0.38	0.54	0.11	**72.62**	7.42	0.00	0.00
Informal worker (small business)	**1.86**	12.36	0.64	1.30	0.20	0.11	20.39	**43.84**	0.00	0.00
Formal worker (other businesses)	**1.05**	1.80	0.22	0.14	0.29	0.07	0.00	0.00	**84.35**	3.49
Informal worker (other businesses)	**1.89**	7.82	0.48	0.52	0.37	0.21	0.00	0.00	34.93	**36.49**
	Pre-MEI: September 2005 – August 2009									
Formal self-employed	**51.88**	19.09	5.67	1.55	1.37	0.22	9.99	2.49	1.06	0.25
Informal self-employed	**5.63**	**61.43**	0.86	2.63	0.18	0.19	5.95	7.52	0.31	0.36
Formal employer with fewer than five employees	**13.31**	6.69	**51.03**	7.76	8.00	1.13	6.53	1.78	0.00	0.00
Informal employer with fewer than five employees	**5.05**	29.35	11.05	**32.39**	1.93	1.66	5.20	5.76	0.00	0.00
Formal employer with more than five employees	**3.45**	2.78	9.14	2.12	**61.72**	6.04	0.00	0.00	9.19	1.98
Informal employer with more than five employees	**3.78**	10.04	5.75	7.74	25.54	**25.29**	0.00	0.00	7.14	6.31
Formal worker (small business)	**2.43**	3.05	1.34	0.51	0.39	0.08	**75.64**	7.52	0.00	0.00
Informal worker (small business)	**1.19**	11.86	0.41	0.98	0.14	0.08	17.88	**47.45**	0.00	0.00
Formal worker (other businesses)	**0.77**	1.73	0.22	0.12	0.29	0.04	0.00	0.00	**84.16**	3.96
Informal worker (other businesses)	**1.34**	7.72	0.20	0.42	0.38	0.17	0.00	0.00	31.78	**40.48**

Source: PME.

Prepared by the authors.5.1 Analysis of the origin of formal MEIs.

To test the statistical significance of the changes in transition probabilities and control for the socio-economic characteristics to better isolate the possible effects of MEI,[15] we have estimated a separate multinomial logit for each row of the transition matrix. Thus, for a given individual *i* in occupational category *k* at period *t*, we estimate the probability that he/she will be in category *j* at *t*+12. The model can be described as follows:

$$\Pr\left(Y_i = j \middle| X_i, T_{i,k}\right) = \frac{exp\left\{X_i'\gamma_j + \sum_k \beta_{j,k} T \right\}}{\sum_j exp\left\{X_i'\gamma_j + \sum_k \beta_{j,k} T \right\}}, \quad j,k = 1, \ldots, 10.$$

where $j = 1, \ldots, 10$ indicates the target category of individual *i*, which corresponds to the rows or columns in the transition matrix. The dummy variable *T* denotes the post-MEI period, as shown in Table 9.

To keep the analysis concise, we reported only the coefficients relative to the probability of preserving the same occupational status in the final period as in the initial period. Since the category omitted in the multinomial logit is self-employed and contributing workers, the probability of surviving in a given category is related to that of migrating to self-employed worker status, contributing to the social security system. Heuristically, the estimate deals with how the MEI policy has affected the (relative) occupational risk—i.e. the likelihood of remaining in the same occupational status relative to flowing to contributing self-employment.

TABLE 10

Likelihood of Remaining in the Same Position — Diagonal Transition Matrix (2005–2012)

	Estimate	Standard error	Conditional chance ratio
Informal self-employed	-0.457	0.000	0.630
Formal employer with fewer than five employees	-0.339	0.055	0.710
Informal employer with fewer than five employees	-0.405	0.097	0.670
Formal employer with more than five employees	-0.095	0.001	0.910
Informal employer with more than five employees	-0.109	0.002	0.900
Formal worker (small business)	-0.465	0.001	0.630
Informal worker (small business)	-0.381	0.001	0.680
Formal worker (other businesses)	-0.271	0.000	0.760
Informal worker (other businesses)	-0.580	0.076	0.560

Source: PME.

Prepared by the authors.

In all cases, the coefficients are statistically significant and negative, so the likelihood of maintaining the same occupational status after the introduction of the MEI policy relative to migrating to contributing self-employment is smaller than 1. For example, the likelihood of maintaining the non-contributory self-employed position *vis-à-vis* migrating to a contributory position is 37 per cent lower in the period following the introduction of the MEI policy.

This implies a **formalisation effect**—i.e. it is increasingly likely, after the enactment of the MEI policy, that a self-employed worker will become a formal worker, as previously pointed out.

Table 10 shows a reduction in business size, as there is an increased relative chance of migrating from larger, formal enterprises to formal, self-employed companies. For example, the relative likelihood of keeping the initial status of formal employers with one to five employees or with five or more employers and that of migrating to formal self-employed worker status becomes, respectively, 29 per cent and 9 per cent lower after the introduction of the MEI policy. This is what one might call a **scale-reduction effect**.

We also observe the joint occurrence of scale and formalisation effects. The relative likelihood of an individual preserving his/her formal employer status drops after the introduction of the MEI policy, compared to the chance of becoming self-employed during that same period. The magnitude of this drop is 23 per cent for informal entrepreneurs with one to five employees and 10 per cent for those with more than five employees. Finally, there is an increase in the likelihood of formal and informal employees becoming formal self-employed workers after the introduction of the MEI policy. Regarding the first effect, the likelihood of maintaining formal employment drops by 37 per cent and 24 per cent for those initially in businesses with up to five employees and those with more than five employees, respectively. The likelihood that informal employees in companies with up to five employees or more than five employees will maintain their status drops by 32 per cent and 44 per cent, respectively. These results suggest a relative decrease in the number of wage-earning occupations in every combination of the formality-scale binomial for formal self-employed workers.

In short, all occupational statuses considered became less-absorbing states with regard to the option of becoming formally self-employed. This includes various movements—not just the formalisation of workers who were already self-employed, but also effects leading to the downscaling of businesses and a relative reduction in the number of wage earners in the workforce.

6 CONCLUSION

This paper presented an exploratory analysis of the potential impacts of the Individual Entrepreneur Law introduced in July 2009. As highlighted throughout this paper, the objective was to demonstrate evidence that helps clarify, albeit only partially, whether the policy was successful in promoting: i) micro-entrepreneurship in Brazil; and ii) the formalisation of entrepreneurs. To achieve this goal, we proceeded in two alternative ways. First, we gathered evidence for each of these two issues, using specific methodologies for each one. Second, we conducted an integrated analysis of these two issues, by tracking the transitions of individuals through different labour market situations, including their occupations and formalisation status.

This integrated analysis also contributed to a third issue, namely: can employers use the MEI policy to avoid paying labour taxes, by replacing labour contracts with service contracts signed with alleged individual entrepreneurs?

The results on promoting entrepreneurship suggest that the MEI policy may have had a reduction-of-scale effect on those who were already entrepreneurs, but there is no evidence of changes in the pattern of occupational choice between being a small entrepreneur and

holding other positions. Regarding the decision to formalise, results suggest that the policy may have had a positive impact on the decision by individual entrepreneurs to contribute to the social security system.

Finally, an integrated analysis of labour market flows based on PME data reveals that all occupational positions became less-absorbing states when compared to the option of being a contributing self-employed person. This includes both the formalisation of workers who Ewere already self-employed as well as effects on the reduction of the scale of businesses. Furthermore, we also observe flows away from wage-earning positions into contributing self-employment, particularly in formal employment.

This latter result is consistent with the hypothesis that certain companies, particularly smaller ones, are using MEIs to change the employment status of workers from wage-earning work to the provision of services. The authors have no way of proving this, since the PME does not provide enough information to identify individuals' workplace. The other flows that also involve a relative increase in the likelihood of employees moving into the category of self-employed contributors include informal employees. These movements contribute to a reduction in informality but can also be motivated by the replacement of wage-earning employment relationships by service-provision contracts.

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NOTES

1. Maloney (2004) is frequently cited as a reference in this interpretation of the identity of the self-employed. It is worth mentioning that this interpretation is disputed by authors such as Naudé (2010), who argue that a significant number of self-employed workers in developing countries are not in this condition because they have an entrepreneurial spirit but, rather, as a survival strategy.

2. PNAD data for Brazil show an 11 per cent drop in the proportion of working persons who are either self-employed or have only one employee, between 2003 and 2008. This figure fell from 23.7 per cent in 2003 to 21.3 per cent in 2008 (see Figure 1).

3. Originally, the income threshold for eligibility was BRL36,000. It became BRL60,000 through Provisional Measure (*Medida Provisória* — MP) no. 529 of November 2011.

4. The rate of contributions to the National Institute of Social Security (INSS) was initially 11 per cent of the minimum wage. It became 5 per cent in 2011.

5. Bruhn (2011) analyses the same programme and finds stronger effects. However, Kaplan, Piedra and Seira (2011) present compelling criticisms of the identification strategy used by Bruhn.

6. In parallel to this paper, Rocha et al. (2013) are conducting a study to identify the causal effect of the MEI policy on micro-entrepreneur formalisation and the effect it has on income. The two studies are, thus, complementary, as the present paper contains a pioneering exploratory analysis of the effects of the programme, while Rocha et al. (2013) make progress in their attempt to identify the causal effect of the policy.

7. The exclusion of the Federal District was motivated by methodological aspects. The method used in this paper compares the situation before and after the programme was implemented. For PNAD, the pre-programme reference date is September 2009, the date of the 2009 PNAD. The Federal District was the only Unit of the Federation where the programme began before that date — hence its exclusion.

8. About this point, it is worth noting that the groups should be similar in both their observable and unobservable characteristics.

9. PNAD data used in this section exclude the Federal District, the agricultural sector, those younger than 10 years of age, unpaid employees, domestic employees, relatives of employees and pensioners.

10. The following variables were used as controls: gender, age, educational level, skin colour, position within the family, number of children and elderly individuals in the household, industry and region.

11. It is worth noting that 2009 is a year that stands out in the recent evolution of unemployment and informality — it marks the interruption of the strong downward trend in these indicators.

12. The same variables used in the models mentioned within PNAD were maintained in the PME estimates. The only difference is that geographical control is done by metropolitan regions.

13. According to Corseuil, Reis and Brito (2013), the profile of informal entrepreneurs is very similar when they are classified as such, by whether they have a CNPJ number or contribute to the social security system.

14. The pre-MEI period ranges from September 2005 to August 2009, and the post-MEI period ranges from September 2009 to October 2012.

15. The same variables used in the models mentioned within PNAD were maintained in the PME estimates. The only difference is that geographical control is done by metropolitan area.

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