

A map of firm mortality and job loss between 2008 and 2018

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preliminary

Abstract

Data available at INPS allows to look at the geographic impact of the 2009 crisis. We look at the pattern of firm mortality and at the cost of job loss relative to the geographic latitude (north-south) and to the population gradient (population density of the city). We find that while the costs of firm mortality (and of net mortality) and of individuals' job loss were clearly higher the lower the latitude of residence, the pattern relative to the gradient centre-periphery is not so clearcut. We try different measures of distance from the centre of economic activity: the simple population density of the city of residence of the individual and a definition of centrality of economic and social activity which takes into account the availability of many services. Only this last measure gives clear results: remote areas in the periphery suffer from higher firm mortality in the post-2008 period, higher separation rate and longer time to find a new job.

JEL Codes:

Keywords:

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1 Introduction

There is a recent literature on places that "don't matter" (Rodriguez-Pose, 2018) which claims that the real cleavage in today's societies is not much between rich and poor but between declining regions against more prosperous ones (Gordon, 2018). There are many examples of this conflict which gained much visibility with the Brexit vote in the UK, the election of Donald Trump in the USA in 2016, and the "Jilet Jaunes" phenomenon in France in 2018/2019. The revolt of the periphery against the centre has taken the shape of the electoral vote but the elections results have probably followed a period of economic distress that affected peripheral areas more than central ones. Much of the territorial differences have cumulated during the years of the economic crisis after 2008 and the growth years from 2014 to 2018 did not make up the difference. In this paper we use administrative data on individuals and firms in each of the 8000 administrative cities across Italy to show the pattern of firm mortality and the cost of job loss along two dimensions: latitude of the city of residence (the difference between north and south) and the centre-periphery gradient. While latitude is a simple and objective measure, the measure of the centre-periphery gradient is more open to discussion. We use three different measures at the city level: population density; the distance of the city from the centre of the local labor market; a measure of periphery which takes into account the presence of services in a city such as hospitals and schools (Barca, 2011).

Section 2 describes the data, section 3 shows the preliminary results on firm birth and firm mortality, Section 4 looks at individual data and the pattern of hiring and separations, Section 5 studies the cost of job loss at the individual level in terms of both time to find a new job and wage loss upon dismissal. Section 6 focuses on the measures of the centre-periphery gradient and summarizes the results in terms of firm mortality, hiring and separations and costs of job loss with respect to this gradient.

2 Data

This paper is being written thanks to the VisitINPS project. We merge data on the record of firms which contains data on the date of foundation and death of firms with UNIEMENS data on the duration of contracts of each individual. Finally we also use an extract of social security records of all individuals born in two dates. This final sample allows us to look at individuals who lose their jobs because of an episode of mass layoff and (through a period of unemployment benefits or not) are rehired in another job. These three datasets are joined together and with information on the city of residence of workers (or the city of the legal basis of firms): in this way we can analyze the effects of the crisis on cities of different latitude and different "centrality".

3 Firm birth and firm mortality

3.1 Preliminary results

The preliminary results confirm that the effects of the economic crisis of 2009 are very heterogenous. Firm mortality and firm birth are studied looking at administrative data which indicate the dates of birth and of formal death of firms. We find that firm mortality rate (the number of ceased firm

divided by the number of firms in year t) grows after 2009 and again after 2012 (and the birth rate goes down)(Figure 1).

This pattern is not affected by the legal status of the owner: it is common to unlimited and limited companies. This is reassuring because a *fake* death of an limited responsibility company is an unlikely event (right panel) while unlimited companies are subject to a much higher turnover (Figure 2).

The sectors that are mostly affected by firm mortality are restaurant services, construction and textile production but at different times: first construction was hit in 2009, then commerce in 2012 and only last restaurant services (Figure 3). However for restaurant services the birth rate has also risen in tandem with firm mortality and therefore the result is higher turnover and a positive net birth rate (death-birth) (Figure 4).

Interestingly the average age (in the data we have the year of foundation of the firm) of failed firms increases with time: after the second crisis of 2012 the average age increases by one year (from 8 to 9) sign that the 2011 crisis affected more established firms which had withstood the 2009 crisis (Figure 5).

Italy is home to one of the widest regional differences within the same country: Italian South has a GDP procapita 60% of the North. To show the gradient north-south graphically we group the 8000 cities in 20 percentiles according to their latitude. We show the gradient in 2006 (before the crisis) and in 2014 (after the crisis). Both firm birth and death rate tend to be higher in the south (where average firm size is lower, turnover (birth+death) is higher), but the drivers of the change induced by the crisis are different: in the North firm birth rate declined in 2014 with respect to 2006; in the South firm mortality has risen thus increasing firm turnover (birth+death) (Figure 6, Figure 7, Figure 8).

4 Hiring and separation

One of the contributions of this paper is using combined datasets to shed light on both firms and workers dynamics: with individual data we can look not only at the extensive margin (opening and closing of firms) but also at the intensive margin (hirings and separations) measured with the usual method of Davis and Haltiwanger (Davis and Haltiwanger, 1992): -2 indicates a disappearing firm (with no employees in the dataset in year t) and 2 indicates an appearing firm. A hiring is defined with the starting date of a contract and the separation with an end date of a contract: the hiring rate is the number of hires over the number of workers in year t ; the separation rate the number of separations over the number of workers in year t .

Using individual data we show that data on firm mortality drawn from administrative measures are consistent with data at the individual level. One may wonder whether an administrative measure of the death of a firm is reliable because many firms are actually "dead" much before declaring formal bankruptcy (the date of birth of the firm instead is not an issue). To verify the reliability of administrative information we also use individual data on hiring and firing and the pattern of firms that appear in the dataset (2) or disappear (-2) is similar to the pattern revealed by administrative data (Figure 9): firm birth and mortality rates are around 10% per year i.e. 10% of the outstanding stock of firms are approximately borne and dead each year. The total hiring and separation rates (including the intensive margin and not only birth and death) is higher

(Figure 10).

Hiring and separation rates of individual workers are higher in the South than in the North but the big difference is that during the crisis individual turnover (hiring + separation) went up in the south because separation increased (Figure 11) while in the north the action was driven by a decline in hiring. The pattern in hiring and separations of individuals is consistent with the pattern of firms: in the South the driver of the crisis is an increase in separations, in the North a decline in hirings: the result is an increase in job turnover in the South (Figure 12).

4.1 Regressions TBW

5 Cost of job loss

Finally using detailed data on workers' social security accounts we can look at the cost of job loss in terms of wage differences between the wage lost and the wage at rehiring and in terms of time to find a new job (Farber, 2017) (Hall and Kudlyak, 2019). We first define mass layoffs in the way that is common in the literature (Huttunen, Møen, and Salvanes, 2018) and then we measure the wage loss upon firing. The wage loss (or gain) is defined as the difference between the hourly wage in the last spell of employment before firing (we also have an indicator to understand if the workers is a firing for economic reasons) and the hourly wage in the next job. The median wage loss moves with the business cycle, it is declining (more negative) in the post-2009 crisis period and it reaches -12% in 2011 and then improves in later years although it is always around -9% (Figure 13). The median time to finding a new job is 130 days in 2009, goes up to 160 days in 2013 and then improves in later years (Figure 14).

In the south of Italy the time to find a new job is double as much as in the North but the median wage loss instead is similar (Figure 15, Figure 16).

5.1 Regressions results TBW

6 Inner areas

So far we have shown that the difference North-South (in terms of firm mortality and separation rate of workers) has increased during the 10 years of the crisis, but the real contribution of this paper is assessing if the same difference has grown between the centre and the periphery. The issue is measurement of the centre-periphery gradient: the easiest measure is arguably population density, cities can be grouped in 20 percentiles of population density and the same graphs that we showed before can be replicated with the population ventiles on the X axis. According to the measure based on population density we find no change in the gradient centre-periphery over the 10 years of the crisis and we do not show the graphs. A second possible measure is using commuting zones (or Sistemi Locali del Lavoro -SLL) defined on the basis of commuting time. This also gives very little result in terms of changes before-after the 2009 crisis. We prefer using a third measure based not on demographics but on the distance from service centres: work done at the Italian Treasury classified all Italian cities according to the availability of basic services (Barca, 2011). This measure does not take into account demography at all, but gives a better idea of urban centres that may be big in terms of population but poor in terms of services. The idea is

that The Italian territory is characterized by a network of urban centers which offer a wide range of essential services like healthcare, education, and transport. These centers represent a 'point of convergence' for people living in remote areas. The distance from these urban networks prevents them from benefiting of these essential services and increases the sense of social exclusion affecting negatively their quality of life. This measure ranks cities in 5 categories: Service Centers are those municipalities that offer an exhaustive range of secondary schools; at least a 1st level hospital; at least a "Silver - type" railway station. Cities are ranked according to the travel-time from the Service Centers as: Belt areas (up to 20 minutes far from the centers); Intermediate areas (from 20 to 40 minutes); Remote areas (from 40 to 75 minutes); Ultra remote areas (over 75 minutes far -territories characterized by an inadequate access to essential services). In Italy inner areas covers almost the 60% of the whole national territory embracing about the 23% of total population.

According to this ranking of cities:

- remote areas have higher firm mortality rates which increased during the crisis and determined the increase distance of the periphery from the centre in the net birth rate of firms (birth-death) (Figure 17, Figure 18).

- remote areas have higher separation rate of workers and higher turnover (hiring+separation) but the distance from the centre did not increase over the post-2009 crisis. (Figure 19, Figure 20).

- remote areas have lower median wage losses upon job loss but higher time to new job (the distance from service centres reduced during the crisis as the median number of days increased more in centres rather than in remote areas after 2009) (Figure 21, Figure 22).

7 Conclusion TBW

Up to now we have shown a rich pattern of descriptive statistics of the evolution of firm mortality (and birth), of hiring and separation of workers and of the costs of job loss. We have shown that the South of Italy has seen worse numbers in terms of firm mortality and workers' separation. The most novel results regard the behavior of inner areas (cities of various population size far away from service centres endowed with hospitals, schools and means of transportation) which have seen a rise of their disadvantage with respect to the centre in terms of firm mortality but limited the damages for their resident workers who apparently did not see an increase of their hiring and separation rates with respect to residents of service centres (who instead suffered an increase in the time spent to find a next job after firing).

8 Tables and figures

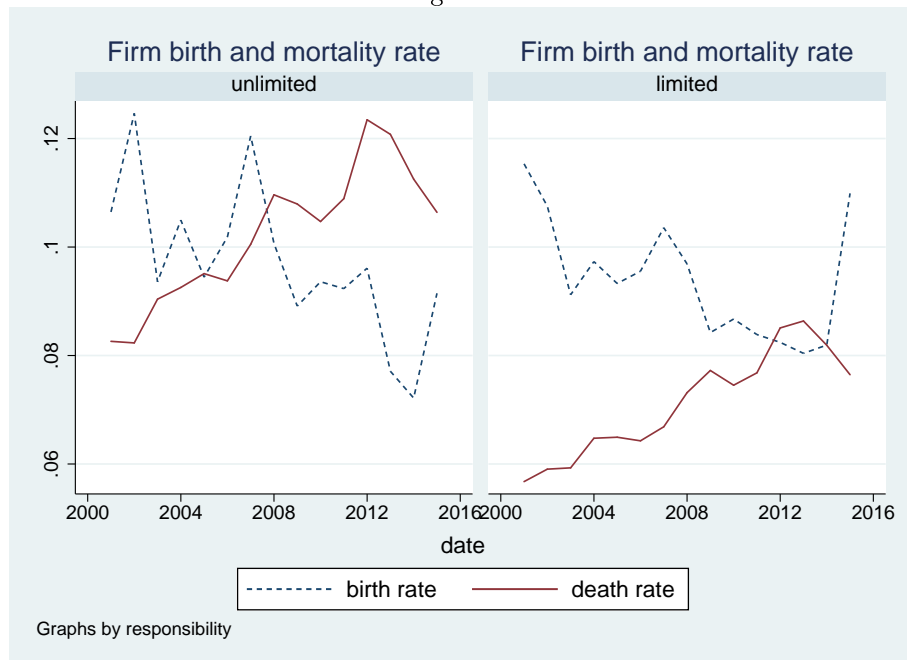
8.1 Firms' birth and mortality rate

Figure 1:



Notes

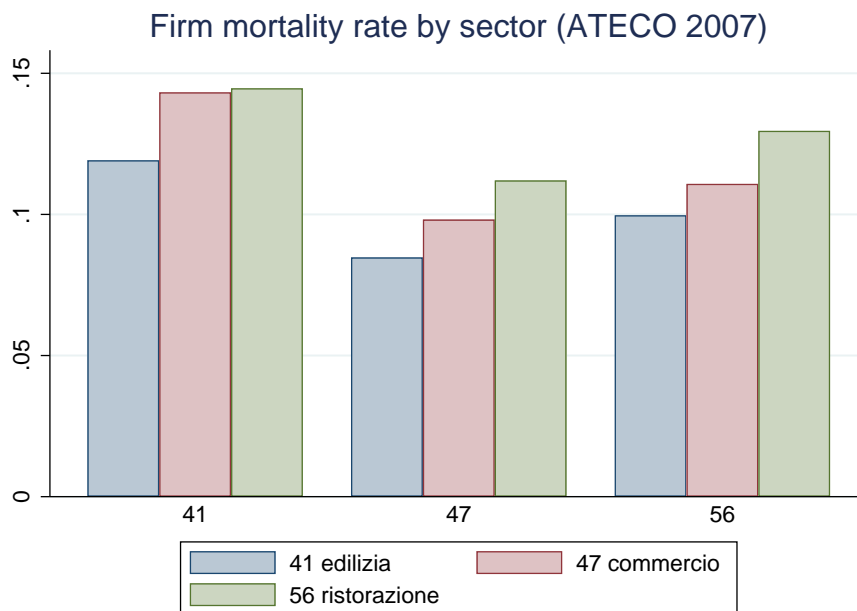
Figure 2:



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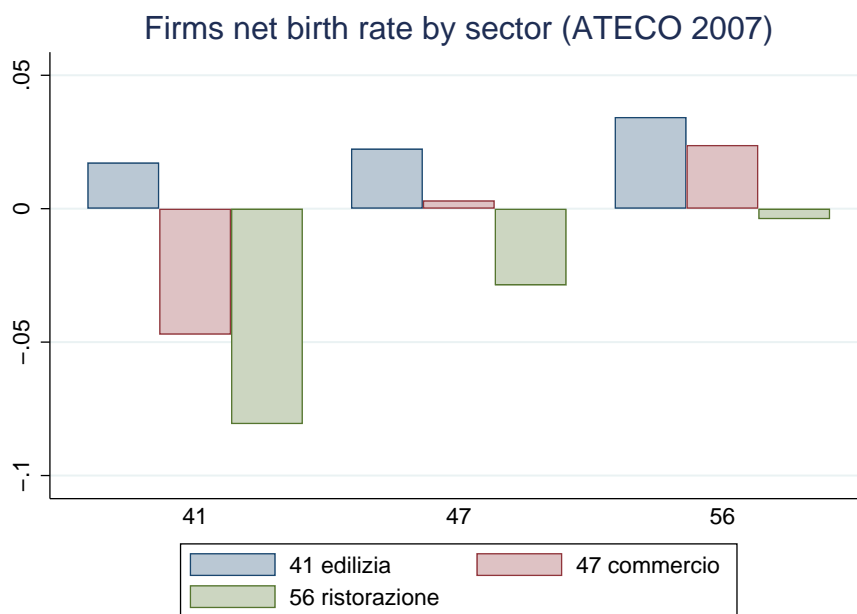
8.2 Firms' birth and mortality rate by sector

Figure 3:



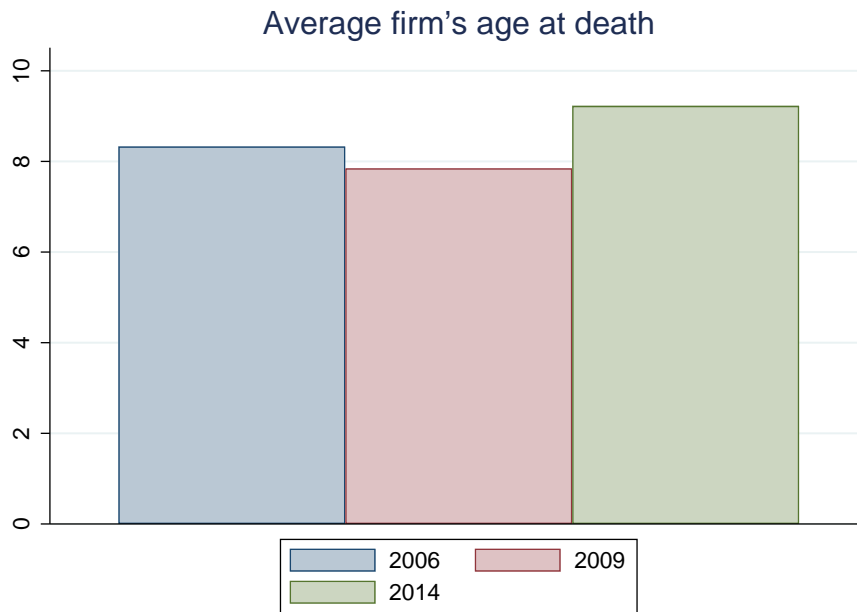
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Figure 4:



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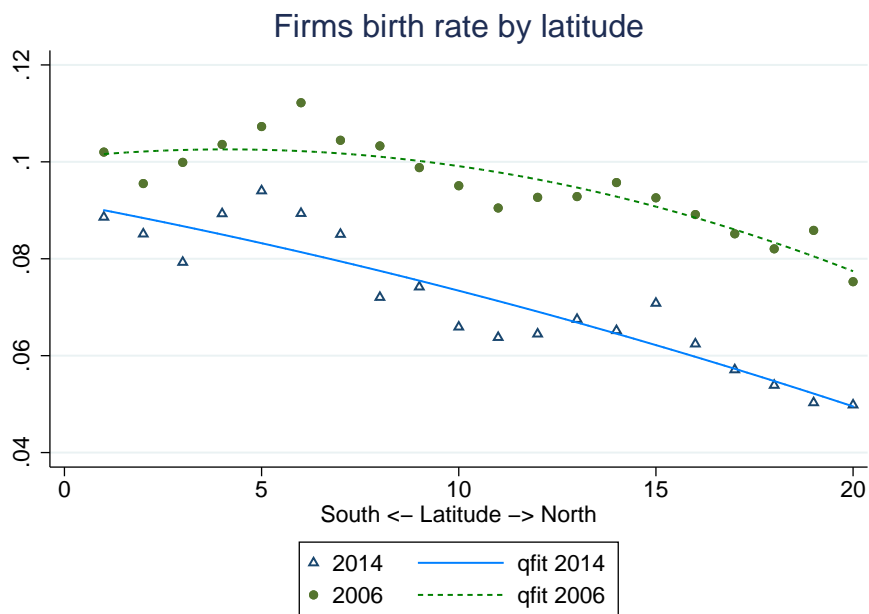
Figure 5:



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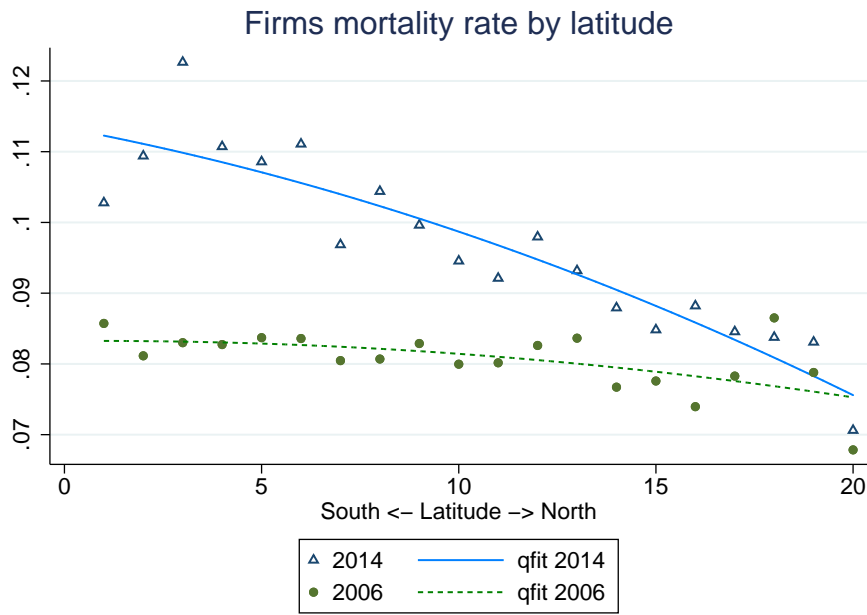
8.3 Firms' birth and mortality rate by latitude

Figure 6:



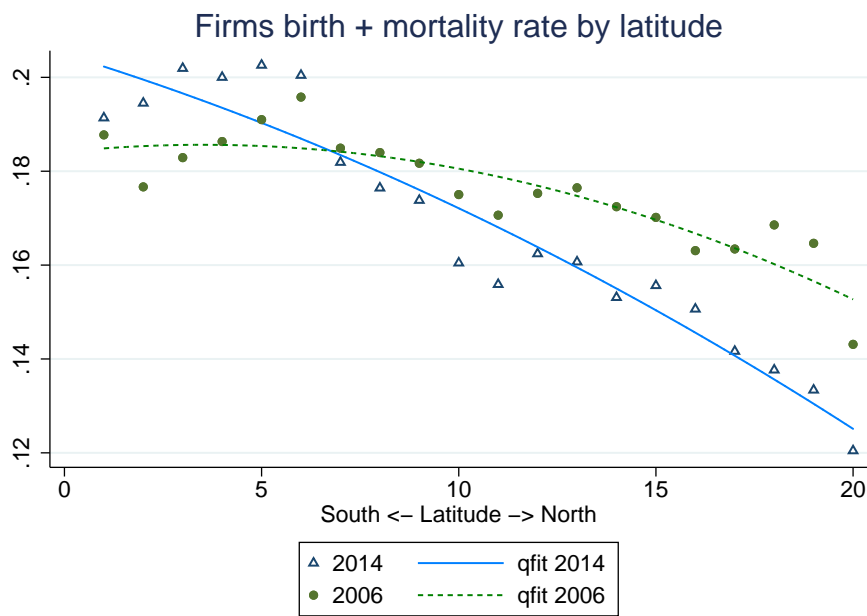
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Figure 7:



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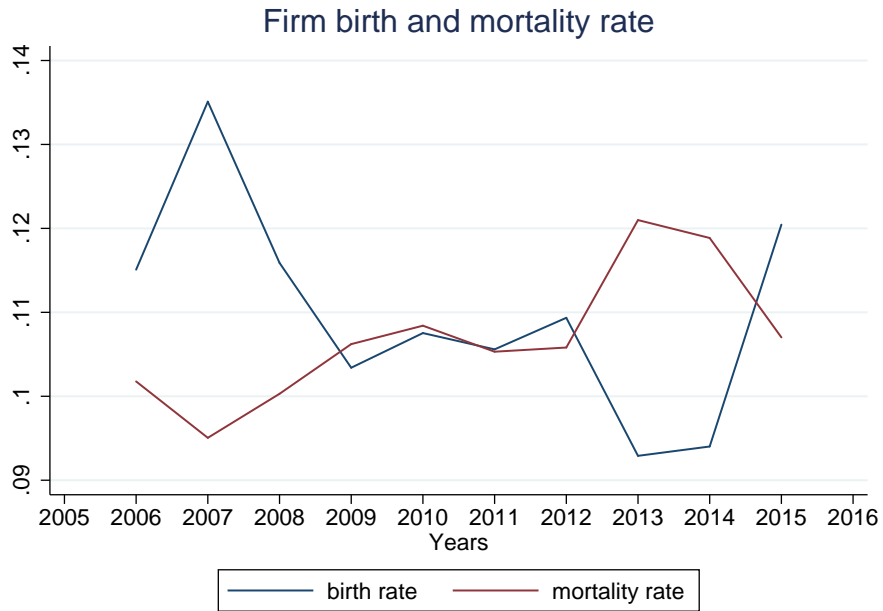
Figure 8:



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8.4 Uniemens: individual data

Figure 9:



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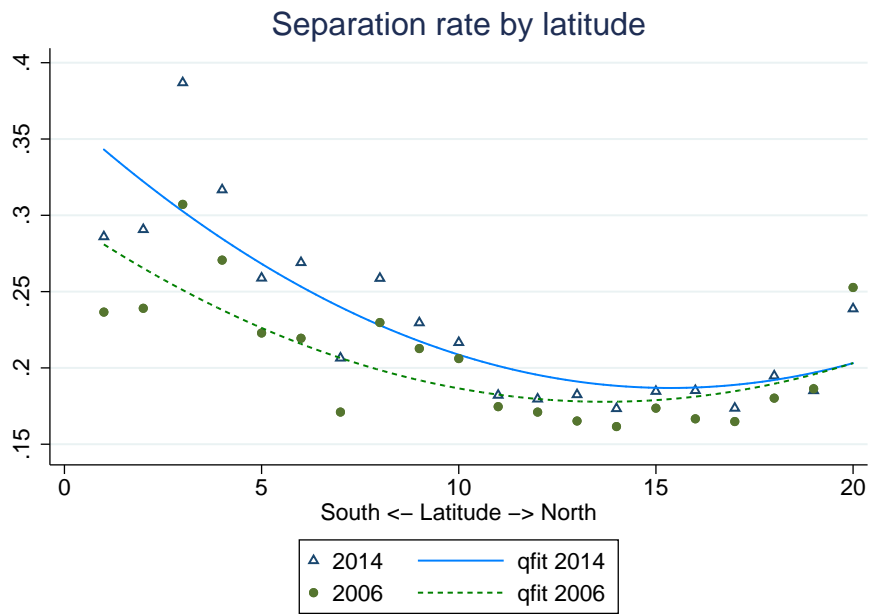
Figure 10:



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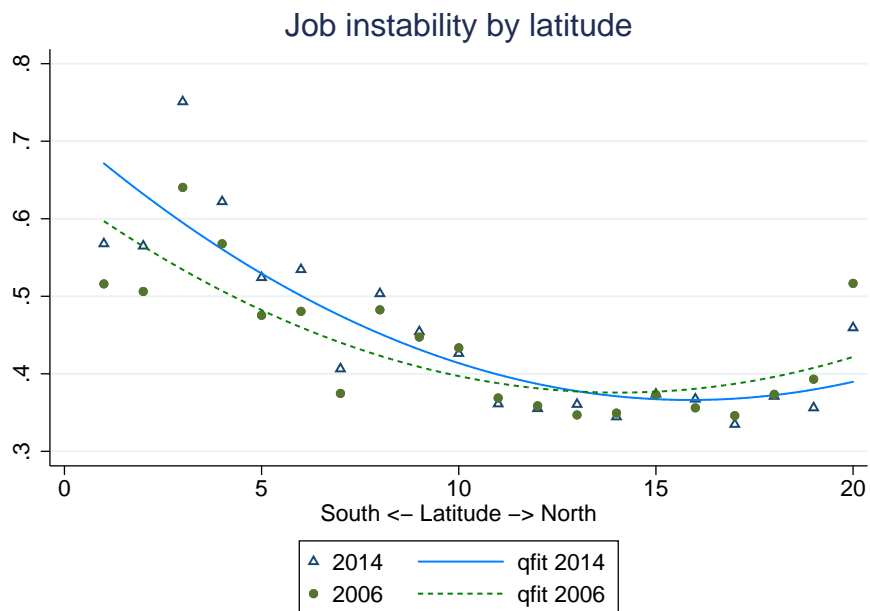
8.5 Hiring and separation rate by latitude

Figure 11:



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Figure 12:



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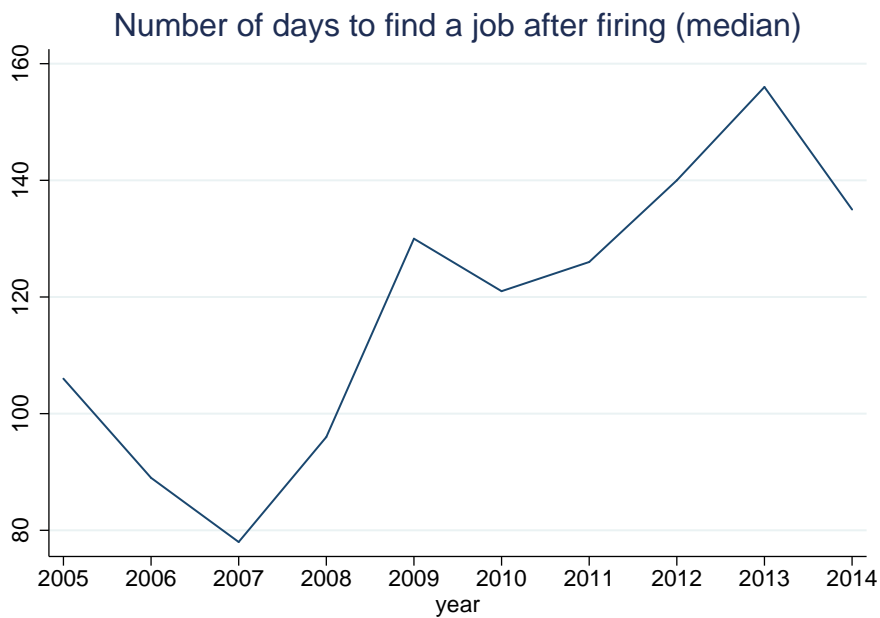
8.6 Wage loss and time to find a new job upon mass layoff

Figure 13:



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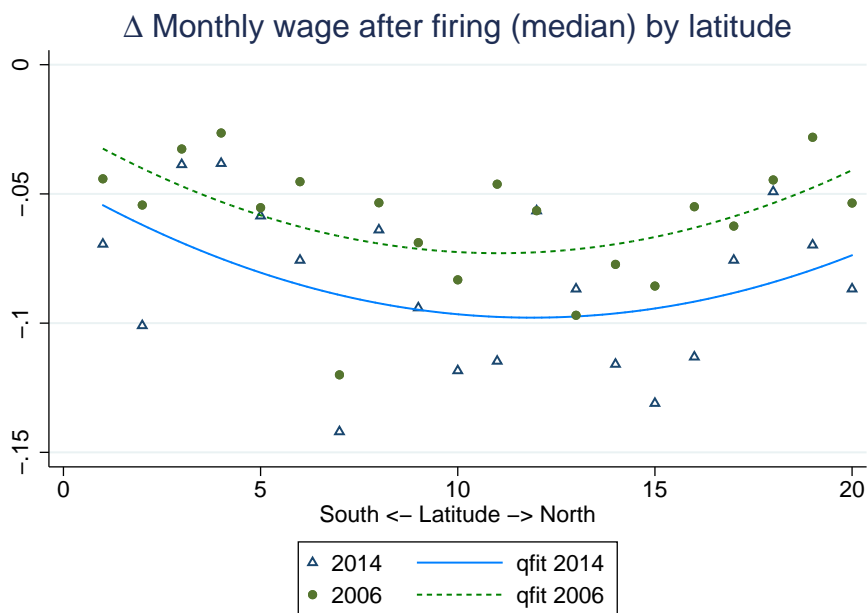
Figure 14:



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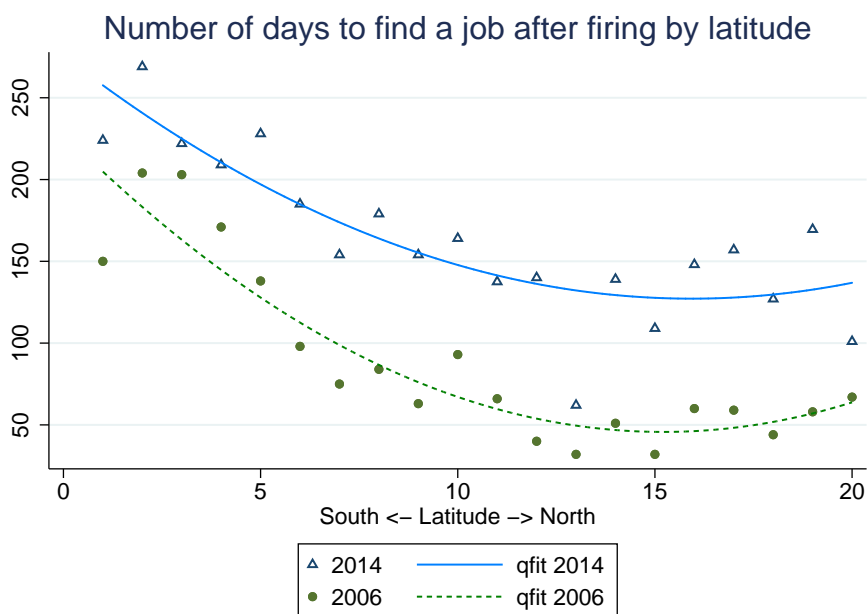
8.7 Wage loss and time to find a new job upon mass layoff by latitude

Figure 15:



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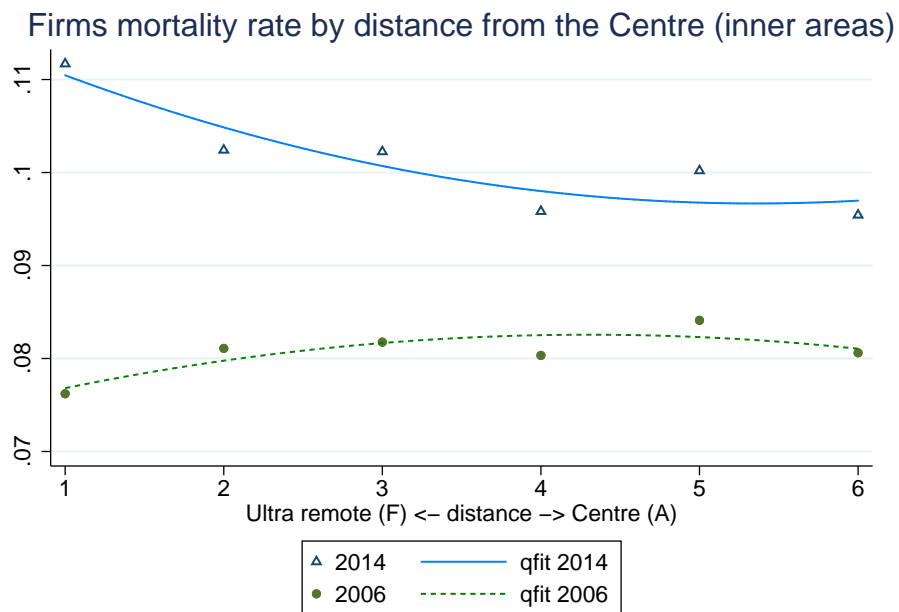
Figure 16:



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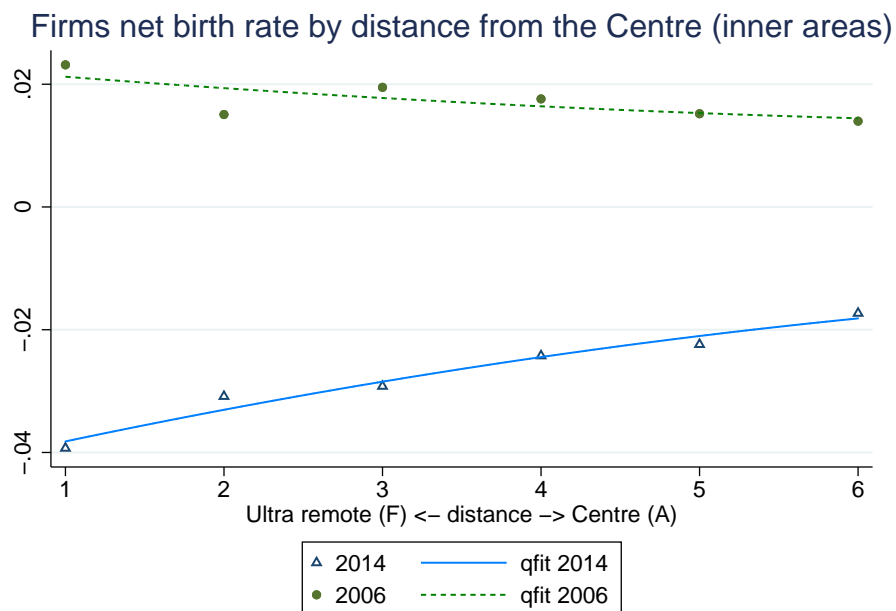
8.8 Firms' birth and mortality rate by distance Centre-Periphery (inner areas)

Figure 17:



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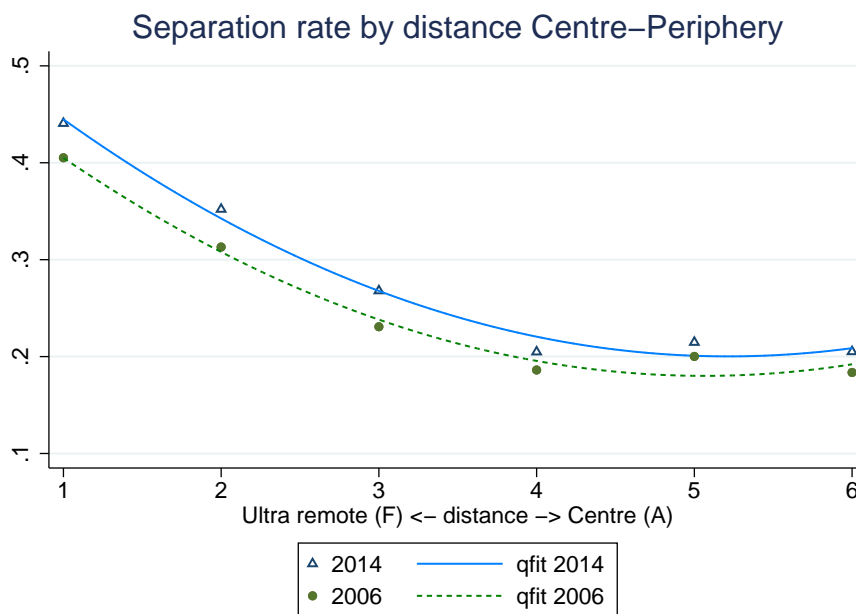
Figure 18:



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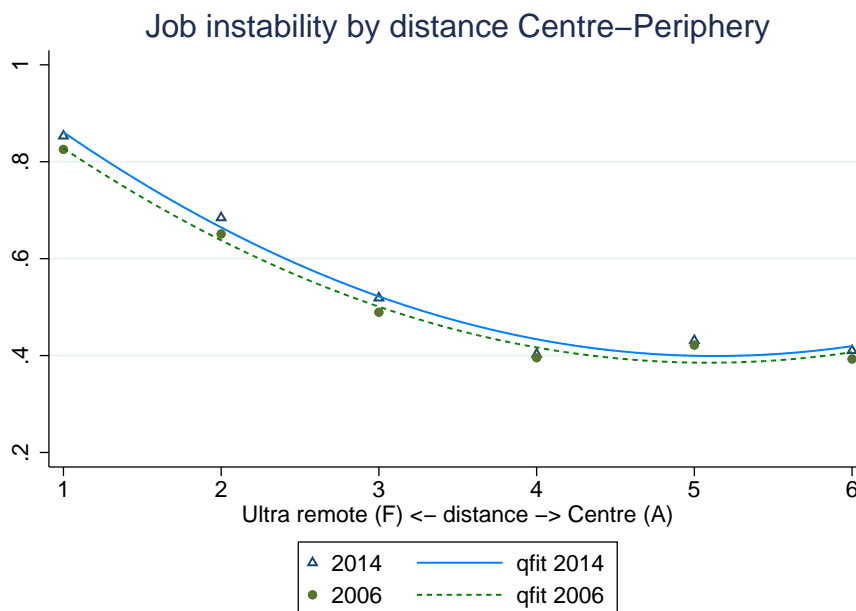
8.9 Hiring and separation rate by distance Centre-Periphery (inner areas)

Figure 19:



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Figure 20:

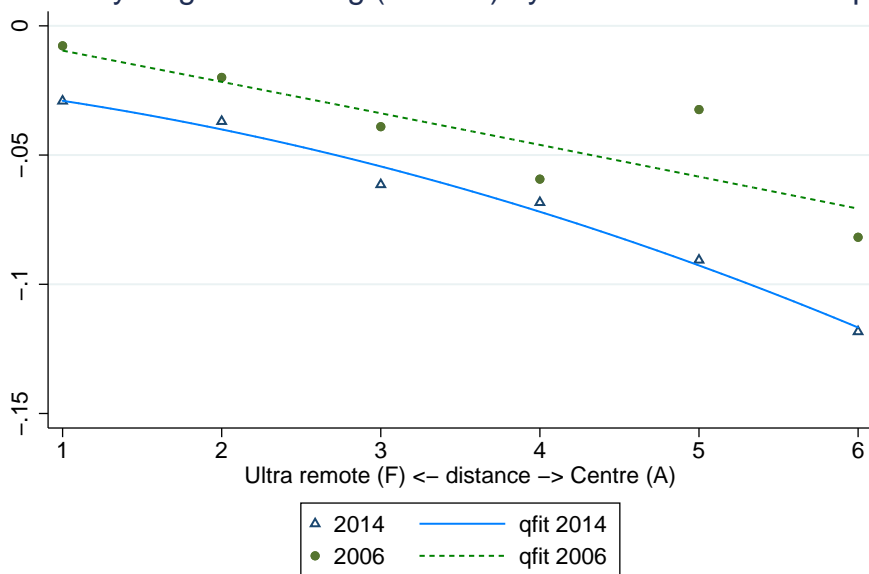


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8.10 Wage loss and time to find a new job upon mass layoff by distance Centre-Periphery (inner areas)

Figure 21:

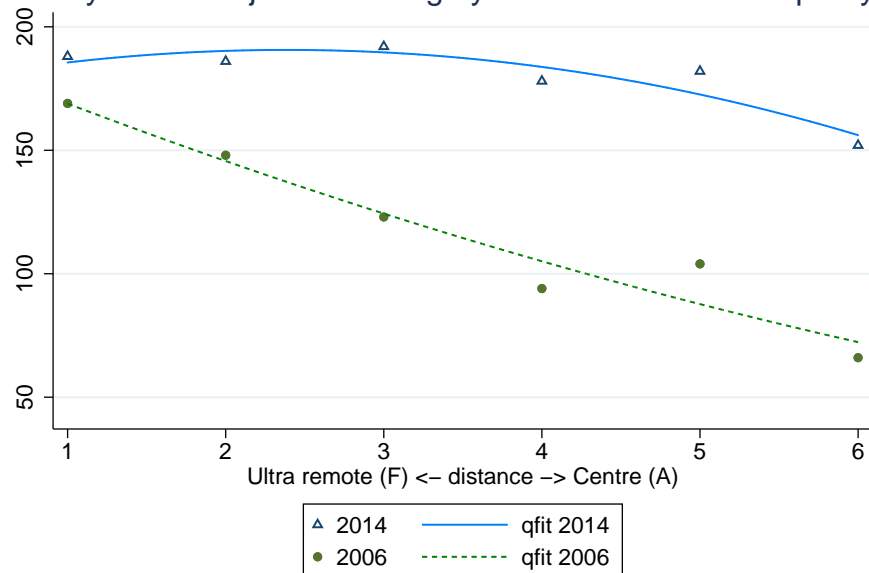
Δ Monthly wage after firing (median) by distance Centre-Periphery



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Figure 22:

days to find a job after firing by distance Centre-Periphery



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A Appendix