

ATYPICAL EMPLOYMENT INCREASING THE FLEXIBILITY OF AN ORGANIZATION. A STUDY OF GREEK MANUFACTURING AND SERVICES*

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Abstract: This paper examines the employment situation as well as the factors that influence flexible employment in a variety of Greek organizations. Integration costs focused on training, the external environment, specific characteristics of the firms and the firms' tasks are studied as the factors that affect the use of flexible employees.

Data from a sample of Greek manufacturing and services firms are used for the hypothesis verification.

Keywords: Flexible employment, functional flexibility, numerical flexibility, internal and external flexibility.

1. INTRODUCTION

Since the end of the 70's we have followed the growth of atypical employment in the interior of organizations that have till this moment developed internal labor markets. Conventionally we will name atypical or flexible workers all forms of employment externalization such as temporary workers, part-timers, independent contractors and subcontractors. The development of atypical employment forms in Europe can be explained by the intensification of research into increasing flexibility (productive, payment, manpower).

During the last decade we have witnessed not only a tremendous increase [6], [5] but also a spectacular change in the use of the atypical employees [3]. The majority of flexible workers no longer perform unskilled tasks. Some of them are qualified professionals, ready to perform specific tasks.

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Augmentation of the number and responsibilities of atypical employees creates questions such as: Why do firms favor atypical employment? What are the determinants of the use of flexible workers?

To date empirical research on the use of flexible employees has been primarily descriptive [14], reporting statistics on the demographic characteristics of flexible workers. There are some studies that attempted to predict the use of flexible workers, [1], [2], but they are mostly restricted.

In Greece there have been very few attempts to study flexible employment. Lyberaki, [9] studied the employment model in small-medium enterprises for both metallurgic and textile sectors. Lyberaki and Mouriki, [10] analyzed a sample of 75 Greek firms in order to detect the level of production and labor flexibility.

The aim of this paper is to recognize flexible organization in Greek industry and to detect the factors that affect it.

2. FLEXIBLE EMPLOYMENT - WHY?

Piore, [15] is one of the pioneers in studying atypical employment. Trying to explain how firms adapt to the instability and variability of the market, he studied a sample of manufacturing firms. He observed that in order to adjust to demand variability firms: 1) maintain a core of permanent employees for stable activities and for their core competence activities, 2) use subcontractors in order to externalize precarious activities, and 3) use temporary workers to absorb the rest of the instability.

During the 80's we witnessed a lot of changes that forced firms to modify the structure of their workforce. We report, in short, most of these changes:

1. The dimensions of the markets changed. Competition became international, [11]. Firms had to react in order to avoid their decline. They often had to change their structure, moving from vertical integration towards outsourcing and externalization. They had to create strategic alliances and to exploit networks in order to gain knowledge, technology, adaptability;
2. The conditions of competition became increasingly harder. The variability of product demand made them transient. Firms, trying to be competitive, had to respond with innovation [16]. They needed therefore to focus on employees skills;
3. The need for innovation and the fast replacement of products drove firms to the minimization of their stocks. Demand variations had to be absorbed by employment variations;
4. The high cost of the new technology and modern equipment forced firms to maximize their use. Firms needed to find new ways to divide working time, so

as to enable the continual flow of production [7]. On the other hand, the development of technology and the use of computers contributed to the automation of work and a decrease in employment;

5. The workforce moved from the manufacturing industry to the service industry. Almost two-third of the employees in the European Community dealt with services in 1990. In the service sector demand and supply are usually simultaneous. A successful response to demand normally depends on human capacities. The capacity of human resources in services is often difficult to plan. Firms therefore frequently turned to the use of flexible workers. We have to mention that there is a factor that helps the use of flexible workers in the service industry: the increase of the educational level of workers. Firms therefore had the possibility to find external workers for the realization of tasks that till then belonged to permanent employees.

3. THE FLEXIBLE FIRM

The debate for the flexible firm made its first appearance in Britain. Atkinson and Meager [4], concentrated their study on specific employment contracts like: part-time, temporary, short-term contracts (which were traditionally allocated to the secondary sector) and compared them to permanent multiskilled employees (who are traditionally located to the primary sector). The model of the flexible firm focuses on employment status rather than on the specific social characteristics of flexible workers. Their work provides a break from the previously well established dual and segmented labor market approach. The flexible firm approach focuses on the firm and identifies the possibility of choice between different forms of flexibility in the core and periphery sectors [13].

Two types of labor flexibility are found in the international literature.

Functional flexibility is a strategy used to broaden the range of skills among the permanent, core work force to meet changing market demands. Functional flexibility presupposes highly qualified, multiskilled employees with great collaboration capacity. The principal characteristics of this type of flexibility are: broadening job boundaries, job rotation, mobility of the employees to more than one task. The continual improvement of the employees' qualifications is achieved through continual training. Work-autonomy and self-management of the employees are indicators of functional flexibility [17]. The concept of **numerical flexibility** explains how employers match workers to work-load fluctuations. Numerical flexibility entails "change to the quantity" and may comprise: 1) change to the number of workers, 2) change to the working time, 3) use of overtime, 4) use of part-timers, temporary workers, subcontractors or independent contractors.

We mention that there is a second definition of labor flexibility, which distinguishes **internal** from **external flexibility**. There is an overlapping between internal and functional and between external and numerical flexibility.

4. EMPIRICAL RESEARCH

The aim of this research was:

- to collect the primary elements of the current situation in Greece in order to describe the phenomenon of flexibility of the labor organization in Greece,
- to find the factors (internal and external to the firm) that influence the use of flexible workers.

The situation in Greece may to be explained by an intermediary (catch-up) approach to flexibility (according to the classification of OECD [12]). Greece together with Ireland, Italy, Portugal, and Spain, presents a melting of different approaches of flexibility. In these countries, firms (not so advanced technologically) have not adopted all the new organizational methods. The institutional characteristics of the countries are traditional and often rigid. This obliges firms to adjust their workforce internally. This effort often fails because of the lack of multiskilled employees and poor investments in training. Finally these firms present elements of both functional and numerical flexibility but to a low degree.

4.1. Method of data collection

In order to collect the data for this research we proceeded to multiple interviews with upper level managers. The appropriate person finally filled a questionnaire.

4.2. Sample Identity

The sample of this survey is composed of 75 firms located in various regions of Greece. The firms are drawn from three industrial sectors (mining/metallurgy, oil/chemical, electric/electronic material) and a service sector (construction/engineering): 29% of the firms that participated in our survey belong to the 200 most profitable firms in their sector; 5% of the firms from our sample belong to the 200 firms that suffer the greatest losses in their sector. Table 1 gives the size of the firms as the number of permanent employees. Table 2 denotes the firms of our sample according to their status.

Table 1: Size of the firms

	<i>N</i>	%
10 – 50 employees	23	30
51 – 100 employees	8	11
101 – 500 employees	32	43
More than 501 employees	12	16

Table 2: Firms typology

	<i>N</i>	%
Individual/family firms	31	42
Members of Greek groups	29	38
Public firms	9	12
Subsidiaries of multinationals	6	8

All the firms had to report the number of permanent employees, part-timers, temporary workers, independent contractors and subcontractors for six job categories: 1) engineers, 2) financiers, managers or counsels, 3) technologists, administrative personnel, 4) workers or technicians and 6) subsidiary personnel.

4.3. Presentation of the results

The first general conclusion coming from the analysis of the data is that both traditional and flexible elements of organization coexist in the interior of the firms of our sample. It seems that firms adopt the new organizational methods constantly but with reservations.

Overtime (traditional organizational element) seems to be the most popular way of adjusting to variations in demand. Overtime may vary in accordance with the season and demand and may take values between less than 5% and more than 20% of the total working time.

Table 3: Overtime

	<i>N</i>	%
0 - 5 %	21	28
6 - 10 %	22	29
11 - 20 %	25	33
More than 21%	7	10

A lot of firms, however, use flexible workers (we will use the term workers instead of the term employees because not all are employed by the firm) in order to cope with demand variations.

Table 4 shows the number of firms that resort to the use of temporary workers, part-timers, subcontractors or independent contractors. It is interesting to note that the use of temporaries normally occurs in workers/technicians, technologists and sometimes administrative personnel. Part-timers appear very seldom and are normally mothers of babies or little children. Subcontractors are used to fill both unskilled tasks and very specialized tasks. Independent contractors are highly skilled people who realize specific tasks.

Figure 1 presents the distribution of the workforce in the four sectors that we studied: 74.2% of the employees working in the firms of our sample were permanent, 14.5% were temporaries at the moment of the survey, only 0.6% worked part-time, 7.9% were subcontractors and 2.9% were independent contractors.

Table 4: Use of flexible employment

	<i>N</i>	%
Temporaries	43	57
Part-times	23	31
Subcontractors	37	49
Independent contractors	63	84

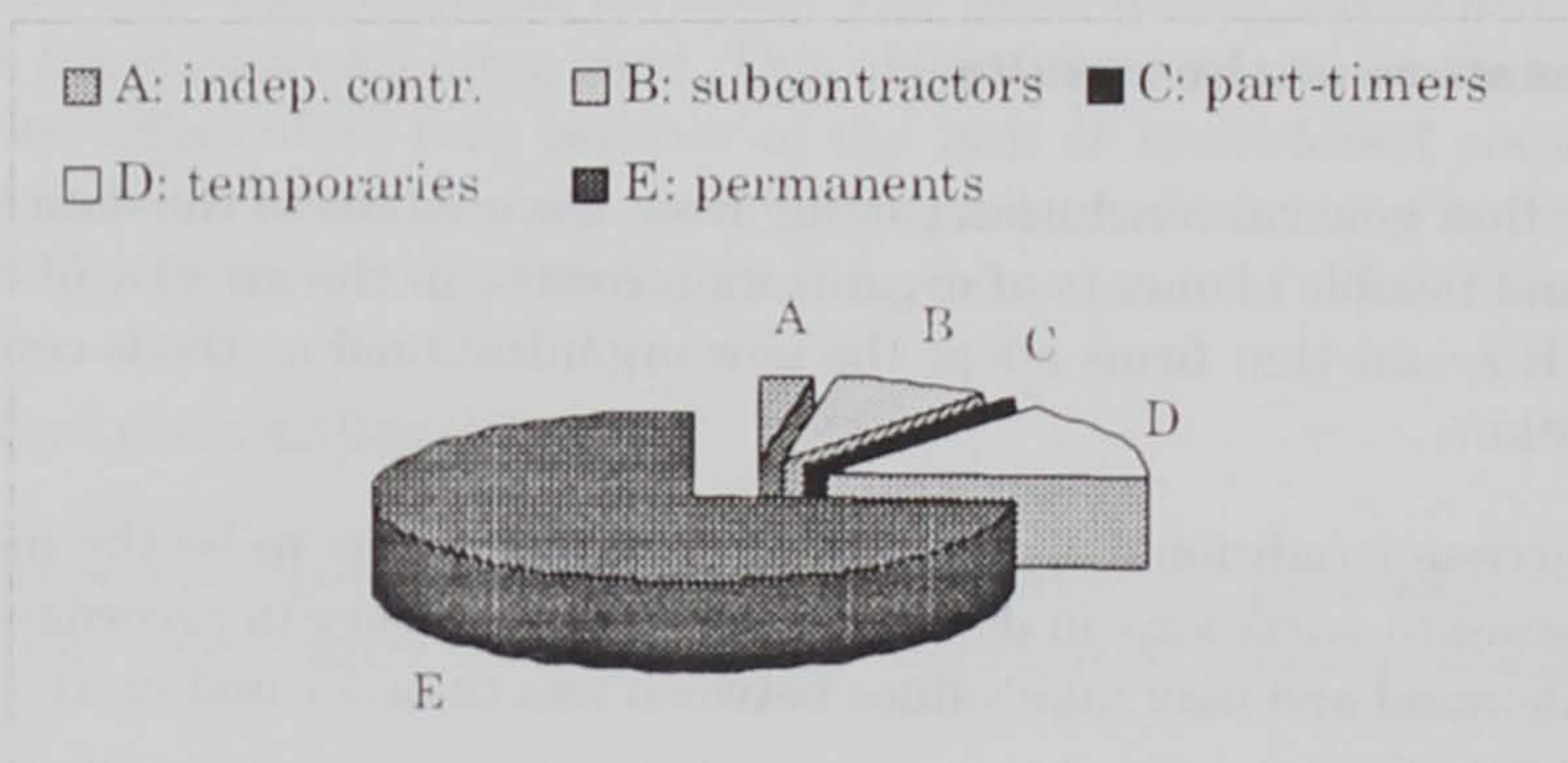


Figure 1: Distribution of the workforce

We tried to correlate the use of flexible workers to some characteristics of the firms and their environment, such as the size of the firm, integration costs, some factors related to internal and external control (such as unionization, demand variability), some characteristics of the tasks realized in the interior of the firm.

While trying to relate the use of flexible workers to the factors cited above we will give a general description of the organization (both labor and production) of our sample.

Table 5: Labor organization

	<i>N</i>	%
Rigorous job description	33	44
Jobs rotation	18	24
Possibility of mobility	31	41
Other	16	21

According to Table 3, 24% of the firms declare that they have highly-skilled, polyvalent employees, 41% of the firms declare that there is the possibility of employee mobility in more than one jobs. Both these observations constitute elements of functional flexibility even though an employee's transfer usually is not planned but follows a particular need.

The possibility of employees mobility is related to their qualifications and skills that are related to their education and training. From the cost perspective firms view training as an investment that they desire to recoup through internalization.

Table 6: Training

	<i>N</i>	%
Seminars from time to time	53	71
Seminars of continuous training	40	53
On-the-job training (by colleagues)	71	95
No effort for training	22	29

Most of the firms from our sample favor some training politics. The time spent for the training of the employees depends on their specialization and their qualifications. Almost all the firms from our sample recognize the necessity of "on-the-job training" of their employees. Seminars in-house or abroad are often held (often they are based on financial resources of the European Community). There is however a minority of firms that exist in an out-dated economic reality. Those traditional and rigid firms show no interest in the training of their employees, condemning them to stagnation.

We have measured training as the sum of the number of hours of three types of training: 1) formal training (seminars), 2) informal training by co-workers, 3) informal training by managers. We have tried to relate training to the use of flexible workers.

We established that there is a negative correlation between the percentage of flexible workers and training.

From the control perspective we examined three factors related to internal control problems or to external control dependency.

We first of all examined the influence of the monitoring problems on the use of flexible workers. We hypothesize that tasks that are not easily reviewed or verified will be less likely to be given to flexible workers. We associate the control problems to: 1) the difficulty of controlling the workers' efficiency, 2) the difficulty of detecting a worker's error and 3) the difficulty of detecting bad functioning.

We established that there is a negative relationship between the difficulty of monitoring and the percentage of flexible workers.

The use of flexible workers also depends on the relationship with unions. Although the power of unions seems to have a strong effect on the use of external workers, the direction of this effect is not clear. There are two viewpoints of this matter. The first wants firms with strong unions to be attracted by the use of flexible workers in order to decrease the influence of unions on the employees. The second and contrasting viewpoint wants the unions to stand out against and finally to decrease the use of flexible workers.

The proportion of unionized workers in an establishment was found to negatively correlate with the establishment's use of flexible workers.

We tried to search for the variation in employment needs. We also examined the possibility of demand forecasting for our firms.

Organizations with highly variable employment needs are likely to be dependent on a continual flow of new employees. Each time employment needs increase, the organization must hire new workers, who may then be let go when employment needs decrease. One method of managing this dependence on the available supply of new employees is to rely on external rather than permanent workers. Continual hiring and firing of workers who are hired as permanent may jeopardize the organization's ability to recruit permanent employees in the future. External workers, however, are hired with the explicit understanding that their employment will be for a limited duration. Therefore they can be easily added to or dropped from the workforce.

We established a positive relationship between the variability in organizational employment levels and the use of flexible workers.

Organizations that cannot predict with certainty their employment needs for the future are likely to be dependent on last-moment external workers.

We measured the possibility of demand forecast for the following: 1) one month, 2) one year, 3) two years, and 4) five years.

We observed a negative relationship between the forecast level of employment needs and the use of flexible workers.

As far as the organization of production is concerned most of the firms have adopted elements of flexibility. The firms from our sample seem to have realized the challenge of the times for quality and innovation. Quality is the paramount element for competition according to most of the firms.

Table 7: Quality systems

	<i>N</i>	<i>%</i>
Total quality management	25	33
They have the ISO 9000 certificate	28	37
They prepare the ISO 9000 certificate	24	32
They don't use the new quality systems	23	31

As far as the renewal and improvement of equipment is concerned we have witnessed a considerable development. Greek firms seem to have recognized the necessity of the new technology, based on the computer and telecommunications.

Table 8: Technology

	<i>N</i>	<i>%</i>
Computer use	61	81
CAD/CAM, CIM systems	43	57
Automation, new production processes	19	25
Specific equipment use	54	72
Use of new technologies	23	31
Reengineering	47	63

We have to mention that the results indicated in Table 8 are mostly indicative and not representative of Greek industry. That is because the sectors from which the firms of the sample are drawn are highly technological sectors. However even small firms showed a tendency to equipment modernization.

Technically complex jobs often involve both high skill levels and multiple types of skills. Firms usually seek multiskilled workers among their core employees. Therefore firms with a lot of technically complex jobs normally favor permanent employees.

We measure technological complexity as the average of 1) computer use, 2) specific equipment use and 3) the use of new technologies.

We established a negative relationship between technological complexity and the use of flexible (especially temporary) workers.

Another influence on the use of flexible workers is the scale of in-house operations and how frequently work is needed. The ability of a firm to efficiently use productive assets, like specialists, will depend on how large the firm is and how often a particular specialist's services are needed. The larger the firm and more frequently tasks are performed, the more likely the firm is to achieve efficiency in-house.

We first of all tried to associate the use of flexible workers to the growth of the firm.

We found out that the larger the size of the establishment the less it uses temporary workers.

However, the larger the establishment is the more it uses subcontractors and independent contractors.

Large firms are less likely than small ones to require the rapid growth and contraction of the workforce that can be provided by temporary workers. Because large firms have more employees and slack than small firms, they are likely to have employees available to meet temporary needs. Although large firms are unlikely to need the kind of employment flexibility that temporary workers provide they have a greater need than small firms for access to specialized worker capabilities on a short-term basis. These specialized skills are often provided by independent contractors and subcontractors.

Finally we investigated the influence of the frequency of the tasks on the use of flexible workers.

We established that a high level of tasks not frequently performed is positively related to flexible workers.

The variables that we used and how they were measured are resumed in the next table. The correlation coefficients between the variables are shown in Table 10.

Table 9: Description of variables

Variable	Description
Flexible	Percentage of flexible workers
Training	Composite variable indicating the time spent to train an employee
Control (hard to control)	Composite variable measuring the difficulty to verify workers' efficiency and problems as soon as they occur
Union	Percentage of unionized workers
Vardemt	Variability in organizational employment needs
Demfor	Composite variable measuring the possibility of demand forecast
Techcomp	Composite variable measuring the level of technological complexity
Size	The number of permanent employees
Frequen	Tasks not frequently performed

Table 10: Correlation Coefficients

	flexible	training	control	union	vardemt	demfor	techcomp	frequen
flexible	1.0000							
training	-0.1301 (0.280)	1.0000						
control	-0.1778 (0.130)	0.0182 (0.880)	1.0000					
union	-0.1390 (0.237)	0.0949 (0.431)	0.2473 (0.032)	1.0000				
vardemt	0.6823 (0.000)	-0.0502 (0.687)	-0.1979 (0.098)	0.3192 (0.007)	1.0000			
demfor	-0.2942 (0.011)	0.2284 (0.055)	-0.0105 (0.928)	0.4079 (0.000)	0.0757 (0.530)	1.0000		
techcomp	-0.4814 (0.000)	0.2785 (0.020)	0.2743 (0.018)	0.2868 (0.013)	-0.2421 (0.043)	0.2282 (0.051)	1.0000	
frequen	0.3280 (0.004)	-0.0769 (0.524)	-0.0975 (0.405)	-0.2346 (0.043)	0.1932 (0.106)	0.2284 (0.055)	-0.3491 (0.002)	1.0000

5. CONCLUSION

Two major conclusions can be drawn for the overall pattern of this research.

First, our results show the mobilization of Greek industry towards the demands of the new economic era. A lot of firms often use new methods of labor organization and production organization. They combine elements of manufacturing flexibility with elements of functional and numerical flexibility.

Second, the use of flexible workers is determined by multiple factors and is affected by costs (training), by the nature of the firm (size, technological complexity) and of its environment (demand variability), by some task characteristics (frequency, monitoring problems) and by the dependence of groups (unionization).

Specifically, we found that the use of flexible workers is: a) negatively related to training that is an element of functional flexibility, b) negatively related to monitoring problems and unionization that constitute elements of control, c) positively related to demand variability and negatively related to demand forecast, d) negatively related to technological complexity, that constitutes an element of the firm's specific assets, e) positively related to tasks not often carried out and related to the size of the firm, that constitute elements of economies of scale.

This paper tried to approach the flexibility question in Greek industry. Its results contribute to the literature by identifying the decline of the rigid model of employment and its gradual substitution by a more flexible model.

The paper identifies factors that affect the use of flexible workers. It has not considered the effect of externalization on the performance of firms. It would be interesting to further investigate the use of flexible workers and their relation to firms' performance.

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