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"IT experts in flexible forms of employment":

Activity Theory as a description tool of IT freelancers' everyday practice and experience

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Introduction

The present paper is concerned with the conditions associated with the emergence of contingent employment forms of high-skilled IT workers in Greece. Examining the everyday practices of IT experts who work as contract-based workers and taking into account the special features of Greek workplace, it attempts to shed light to the terms and conditions that make the contingent work arrangement beneficial and desirable for both parties (the individual and the organization).

In knowledge-intensive sectors of the economy, such as high technology and entertainment, stable employment seems to be declining and contingent work seems to be on the rise even among professionals and managers (Barley 1996). Both organizations and high skilled employees seem to display a significant preference towards this kind of non-standard working arrangements each one for one's own reasons.

On the one hand enterprises desire and favour the use of contractors in order to decrease fixed costs and increase organizational flexibility. In that way they attempt to maximize their ability to respond successfully and adapt quickly to the shifting demands of the market that current competitive forces impose (Wysocki 1996; Abraham and Taylor, 1996; Davis-Blake and Uzzi, 1993; Matusik and Hill, 1998).

On the other hand, contingent workers and particular technical experts and professionals seem to prefer the possibility of flexibility, accumulation of general skills, experience, variety and wealth which is associated with the participation in diverse and simultaneous projects and tasks (Sullivan, 1999; Lawler and Finegold, 2000; Marler et al., 2002). Other scholars found that technology contract workers liked working outside organizational boundaries because of the flexibility provided and the ability to distantiate themselves from organizational politics, incompetence and inequities (Kunda et al., 2002).

As far as Greece is concerned, its business economy has always displayed a long tradition in self-employment and the proliferation of private entrepreneurial initiatives

In the latest years, we witness a remarkable increase in the number of IS graduates who were till recently hired as salaried workers to show their preference to enter the free-lancing or consulting market.

Taking into account that most of the conducted research in contingent work arrangements tackles mainly with the reasons that lead to the above phenomenon, (and not with the practicalities and lived experience of people who participate and form this kind of relationship) and that the Greek case seems to be a good example for the investigation of the IT professionals' rise, we tend to believe that the current study could possibly produce really fruitful outcomes.

In the context of present article, we will attempt to shed light and understand: *how this contingent employment relationship is enacted and sustained in practice*; we will investigate into the nature of their work and work practices, their communication and collaboration patterns, the emerged learning processes, the observed socialization processes, the role of information and communication technologies and other features that shape and underline the so much controversial phenomenon of contingent work arrangements.

Drawing upon Activity Theory theoretical concepts, we aim to provide a general description of the context within which the IT person performs his/her work in a contingent basis. The analysis that follows is relied upon 20 preliminary in-depth interviews that have been held in Greece during the last three months.

Choice of an appropriate conceptual framework

Taking into account the complex and multi-dimensional nature of our research, we attempted to choose a kind of theoretical lenses that combine different scientific traditions and display a significant level of flexibility in the interpretation and manipulation of research variables. Rather than being accidental, our preference about activity theoretical model originates from the belief that "Activity Theory provides an exceptionally comprehensive basis for understanding the human, technological, temporal and organizational aspects of work as a systemic whole" (Korpela et al. 2002). The multi-disciplinary nature and "malleable" structure of the Activity Theory

model seems to provide important guarantees for an in-depth understanding and fruitful analysis of a complex and dense phenomenon, namely "IT experts in flexible forms of employment".

In the following pages, we will endeavor to make a brief presentation of the basic Activity Theory concepts, trying to explain as explicitly as possible the reasons that led us think that Activity Theory is a very promising tool for analyzing IT experts-client firm employment relationship. To end with, we will make an effort to adjust and apply the Activity Theory model into our findings, derived from in-depth, semi-structure interviews with Greek IT freelancers.

An introduction to Activity Theory

Activity theory is not a "theory" in the strict interpretation of the term, but rather a set of basic principles that constitute a general conceptual system (Bannon, 1997) which evolves around the notion of the human activity. "Activity Theory is a philosophical framework for studying different forms of human praxis as developmental processes, both individual and social levels interlinked at the same time" (Kuuti and Arvonen, 1992).

Human activity is always undertaken by somebody (an agent or a subject) and is directed at something (an aim or an object). "Transforming the object into an outcome motivates the existence of an activity" (Kuuti, 1995). The same scholar argues that an object can be a material thing, but it can also be less tangible (e.g. a plan) or totally intangible (e.g. an idea). According to Vygotsky, an individual never reacts merely directly to the environment that surrounds him/her. In most cases, human activities are accomplished or *mediated* by the use of culturally established tools or *artifacts*.

A "tool" or artifact that mediates human thought and behavior is anything which can be used in the transformation process of the object into the outcome. Vygotsky distinguishes two kinds of tools (Engestrom, 1987): the technical ones and the psychological ones. Technical tools are intended to act upon and transform physical material (e.g. a hammer), while the psychological tools are used by individuals to influence other people or themselves (e.g. language, a calendar, an advertisement, a

theory, skills, etc.). These artifacts have both an enabling and a constraining function which is substantially defined by the particular context within which they are used (Bannon, 1997; Engestrom 1999b). While tools expand our possibilities to manipulate and transform objects, they also set the limits within which the notion of the object is perceived and socially constructed into our mind. Artifacts embody the collective experience of a whole community of people and as a result they are not static entities, but are continuously transformed to meet the emergent needs of community (Bardram, 1997).

The aforementioned relation between the subject and the object or the actor and his environment could be depicted in the following diagram:

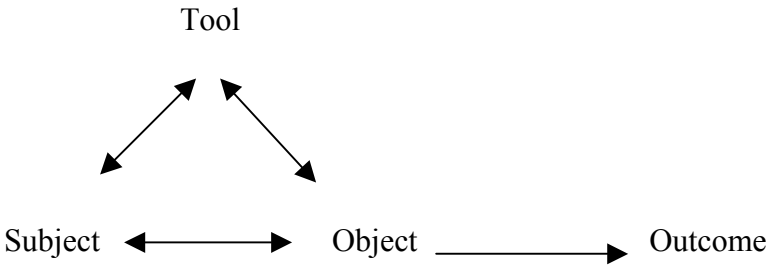

Figure 1:Structure of an human action

Engestrom (1987) draws the attention to the fact that the triangle portrayed in Figure 1, is not but "the tip of the iceberg". The simple structure of human action depicted in the diagram is not adequate to describe the needs of the systemic relations emerged between an individual and his environment. In this respect, Engestrom adds a third main component in the activity system which he defines as *Community* (Kuuti and Arvonen, 1992). Community is an assembly of people who share the same object and their activity is directed to the fulfillment of the same human need. As a result, the systemic model describing the basic structure of activity contains now three mutual relationships between the subject, the object and the community.

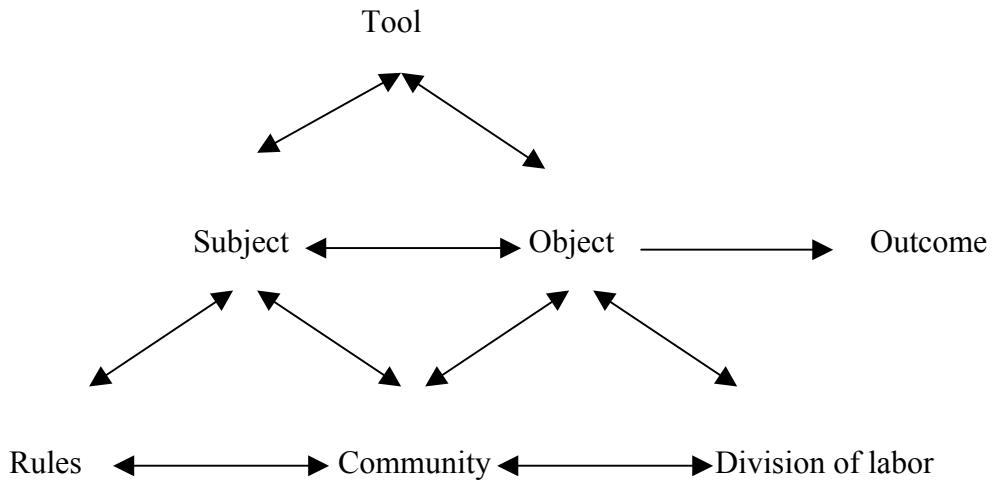

Figure 2: Basic structure of an activity- The activity system model (Engestrom 1999a)

Looking at the above diagram, one can notice that apart from the artifacts or instruments, there are also less visible social mediators of activity, such as the rules and the division of labor. More precisely, the relation between the subject and the object is mediated by tools, the one between the subject and the community is mediated by rules and the one between the object and the community is mediated by division of labor (Kuuti and Arvonen 1992).

It could be concluded that Engestrom's diagram (1987) summarizes the structure of an activity system as such: An activity is undertaken by a human agent (*subject*) who is motivated towards the solution of a problem or the pursue of a purpose (*object*). The activity is almost never individualistic in its execution, but it usually entails the participation of an ensemble of people who share the same object (community). The activity is mediated both by a) tools (*artifacts*), as well as by social conventions such as b) *rules* that shape and define the limits of individual and collective conduct, and c) *division of labor* that determines the various kinds of tasks to be done and the way these tasks are distributed among the key actors of the activity, in order the desired outcome to be achieved in the best possible way (Strauss 1985, 1988).

According to Leontiev, the hierarchical structure of activity is consisted of three levels (Engestrom 1987): the overall *collective activity*, the *actions* and the *operations*. In most of the cases, human activity is by definition co-operative. The human activity is driven by a collective motive, which is formed when a collective

need meets an object that has the potential to fulfill this need (Engestrom, 1999b). Remarkable is the fact that "under the conditions of division of labor, the individual participates in activities mostly without being fully conscious of their objectives and motives" (Engestrom 1987). Individuals are rather conscious of the actions that operate/function supportively to the overall collective activity and are connected to clearly articulated goals. These actions are carried out through operations which are concerned with conditions/circumstances. Operations are related to routinized behaviors which are performed automatically, not consciously. For instance, tools are crystallized operations (Engestrom, 1987; 2000).

Engestrom (1999) argues that the same goal-directed action may accomplish various different activities, while the object and the motive of a collective activity may typically be served through the achievement of various alternative goals and actions. The aforementioned scholar also draws the attention to the fact that the object of an activity is not harmonious in itself, but it is rather internally contradictory. For instance, in software development, this can take the form of the final IS deliverable as an accumulation/allocation of laborious effort aiming to produce a premium IS application versus the final IS deliverable as solely a source of profit and revenue.

This contradictory nature of the object usually generates multiple levels of tension among the various components of the activity system and leads to an incessant reconstruction of the activity system as a whole. Engestrom (1999) notes that "in activity theory, developmental transformations are seen as attempts to re-organize or re-mediate the activity system in order to resolve its pressing contradictions".

In conclusion, one could sustain the view that the interacting components, human and non-human, that formulate an activity system are not static entities, but live ones that are constantly transformed and redefined to achieve a better "fit" among them. The activity system seems to be in a dynamic equilibrium that changes over time accordingly to the emergent relationships between its three main components the subject, the object and the community.

In the next session, I will attempt to apply the basic principles Activity Theory outlined above, in order to describe and make sense out of the contingent employment relationship and the IT expert's work practice.

Applying Activity Theory concepts to contingent employment relationship

In the context of the current paper, we will endeavour to analyse IT expert's everyday work practice and the subsequent employment relationship between him/her and the employing firm, from the viewpoint of the former: the IT expert who has just signed a time-limited contract and has been assigned a particular project by a client-firm. Relied upon some preliminary empirical findings and following Activity Theory threads of logic, we will attempt to identify and make sense out of the general context within which the IT expert performs the assigned task.

An IS development project, such as a web site development or a software development, could apparently be described as an activity system, where all elements have a kind of relationship to other elements. Applying the Activity Theory principles to an IS project, we come up with the following diagram:

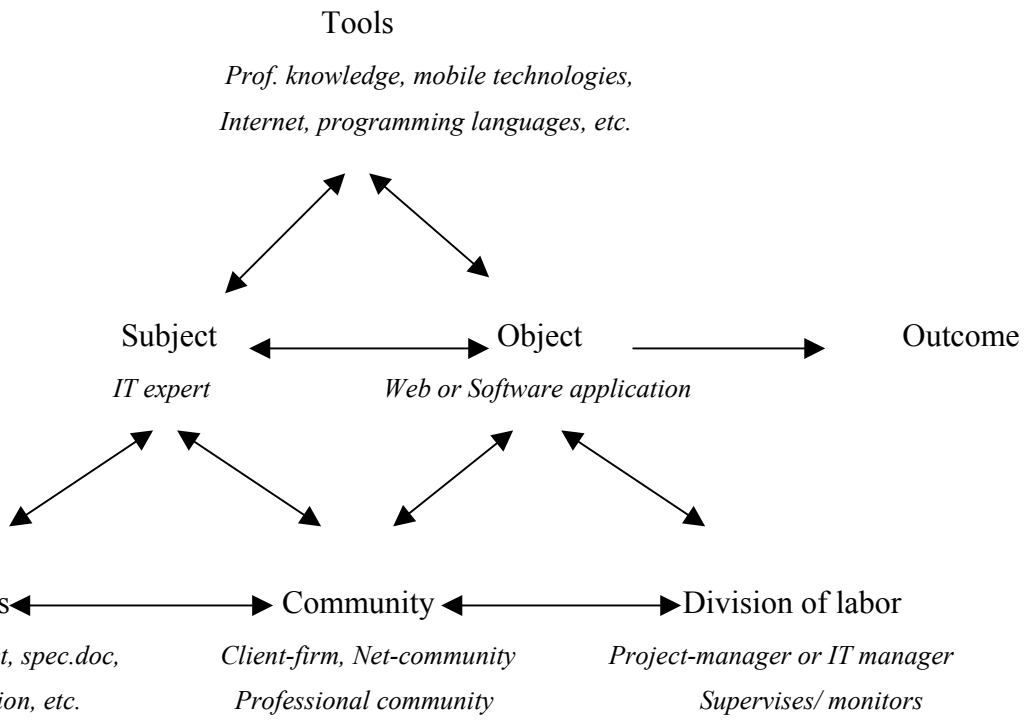

Figure 3: Application of the Activity System Model to web development application

Information systems development projects often deal with adjusting and integrating prefabricated pieces of software to meet the needs of a specific company (Lyytinen et al, 1998), while other times the required software application must be constructed from scratch. The development of a Web application, an IS activity which is very popular in the contingent IS field, belongs mostly to the second category, while the development of a software application belongs to the first one.

Relied upon some first data derived form preliminary interviews with IT contractors, we will attempt to apply the Activity Theory principles to the case of a web or software developer who is employed by a client-firm in a contingent basis.

The starting point or the *object* of an Information Systems Development activity is a *need* for better technological facilities that the management team or the IT manager of the organization has already realized and tries to find a way to cover it. For instance, a firm may realize that the accounting system that currently uses is too slow and dysfunctional for several kinds of transactions that it undertakes; consequently, the software accounting programme needs to be upgrade, to be modified so as to meet the desired performance standards. Another case could also be the one of a firm that decides to equip its internet web page with an on-line transaction system.

In both cases, the firm under study (the client firm) decides for various, financial and non-financial reasons to hire a contractor to do the IS job. One could distinguish two main reasons that justify firm's decision to outsource an IS technically demanding project. In brief, such a decision is explicated a) by the fact that the latter does not have the expertise in the specific domain and it is not interested in acquiring expertise in this domain or b) by the excessive competitive pressure that forces the company to acquire the IS application right away- the firm has no time to develop the required expertise internally. In both cases, the client-firm assigns the IS project to a contractor- IT expert.

In practical terms, the object is a "forthcoming" software or web programme that is expected to be transformed into a delivered, bug-free, user-friendly application. The client-firm (the employer) is the "community" who shares the object with the IT contractor-the subject of the activity. In other words, the IT contractor for a more or

less prolonged period of time engages in a collaborative activity with the client-firm with the aim to contribute his/her specialized knowledge and acquired experience to the development of the desired application.

The relationship between the client-firm (community) and the IT contractor (subject) is mediated by a set of *rules* (the left-down triangle in the figure 3). "Rules cover both explicit and implicit norms, conventions and social relations within a community" (Kuuti, 1995). This set of rules is necessary for the establishment of a well-sustained relationship between the two entities. Rules are the regulator and stabilizer of the relationship. The most conspicuous rule that governs the contingent employment relationship is the *labour contract* (Goldthrope, 1998) which defines in a more or less direct way the rights and the obligations of the two parties involved.

But before the signing of the contract, there is also a sequence of procedures that lead to the mutual agreement between the IT contractor and the client-firm. The formal process would entail that the client-firm declares its will to assign a specific part of an IS project to an IT contractor and towards that aim, it prepares and publishes a request for bid (RSB) document. This document contains the software specifications that describe in general terms what has to be done by the potential contractor. Every interested IT contractor, in his turn, gives his offer and everyone's offer is judged in terms of estimated effort provided, money requested and time needed.

The process mentioned above is usually met in software development projects. In web development projects, the procedures followed seem to be less formal. For instance, frequent is the case when the client-firm is not in position to explicate its requirements into information systems specifications and it just limits itself at judging the final deliverable in terms of functionality. It is the IT contractor's responsibility to understand and translate his client requirements into IS specifications.

Independently of what the case is, -software development project or web development project- an increasingly important *rule* that determines the relationship between the contractor and the client firm is the *reputation* that the former has built in the IS industry. Establishing trust seems to be one of the most crucial features and source of sustainable competitive advantage in the e-lance economy (Malone, 2004). Market

experience shows that when the client-firm is pleased by the output delivered by an IT contractor, it employs him again and again over time (Nardi et al., 2002). The aforementioned remark tends to provide a totally different perspective regarding the contingent employment world of the IS industry: the observed employment pattern seems to be the one of a "permanent" relationship in a contingent basis.

Explicit contract terms and bonds of trust, derived from a construction of a good reputation in the market seem to be the implicit rules that delimit the apparition of "tensions and contradictions" in the employment relationship. In other words, contract explicitness and interpersonal trust could possibly reduce the undesirable effects (opportunism exertion) that information asymmetry may cause to the principal-agent relation (Goldthrope, 1998).

The community, we have so far referred to is the client-firm and more specifically the personnel of the client-firm: the project manager, the IT manager or other employees who indirectly or directly are somehow involved into the specific IS project. Yet, what is interesting in the IT expert's case is that one could possibly identify more than one community that directly or indirectly participate in the shaping of the final object. Besides the client-firm, it could be also detected another community, the *virtual community/communities* that IT experts are participating into, in order to respond adequately to the difficulties associated with the complex and insecure nature of their contingent IS work.

More and more often (Rheingold, 1993) IT freelancers and IT experts in general, visit the Web to acquire specialized information, to contact people with the same concerns and difficulties, to exchange opinions, etc. "On-line bulletin boards, on-line chat-rooms, web-reference material" (Kunda et al. 2002), internet sites with detailed information about various software programmes –concerning programme upgrading and programme bugs- constitute the virtual space of gathering of virtual communities. It could be argued that since IT freelancers work outside the conventional office and do not have the privilege to ask their colleagues about valuable information, they have substituted the traditional face-to-face communication among colleagues with the virtual communication among net-IT experts.

Close to the notion of virtual community could be the notion of *intentional network*, a social network of people who collaborate in order to get work done (Nardi et al. 2002). An IT virtual community is consisted by IT experts who come from all over the world and display a significant interest in IS related topics. Although these people do not participate in the same "activity", they all share a general collective motive, namely the evolution of IS artifacts and IS discipline respectively. The notion of an IT virtual community could be considered to include both the idea of cooperation and collaboration, as defined by Lewis (1997): "Cooperation depends upon a supportive community of actors who agree to help one another in activities aimed at attaining the goals of each person involved. Collaboration depends upon the establishment of a common meaning and language in the task which leads to the community setting a common goal". Although the members of the virtual community are not directly involved into the project undertaken by the IT expert-under study (the subject in the activity model), they may provide considerable mediation in the tasks being performed by the supply of crucial information that the IT expert could not otherwise acquire.

Finally, another community that tends to participate in the activity system under study is the professional community of IT experts. In Greece, there is an association of IT employees (EPE) which usually offers to them professional development programmes, awareness about job opportunities and a place for socializing. The membership in this professional peer group operates as an indication-guarantee about the level and quality of technical skills that IT experts possess and is often positively related with the establishment of a good reputation in the market. Apart from a financial annual subscription that members have to pay, there is also an implicit obligation of all members to help one another and contribute to the general "well-being" of the association.

As far as the relationship between the IT contractor (subject) and the delivered software or web application (object) is concerned (the up-triangle in figure 3), one cannot but draw the attention to the mediating role of *artifacts*. In every activity system artifacts are "integral and inseparable components of human functioning" (Engestrom 1991a).

In software or web development, mediating artifacts or means of work can range from conventional languages (e.g. English, Greek) to specialized design and programming languages and tools, methodologies, procedures and specific applications, timetables, computers, mobile phones etc. (Barthelmess and Anderson, 2002). In more detail, the high expertise that IT experts display, as a result of a lengthy formal training and a rich working experience, enables them to reach the object and transform it into the desired outcome. Supportively to their effort, information technology devices frame each of their actions, making the realization of the object practically attainable.

Before going any further, we would like to insist on the role of information technology, as a mediating artefact between the object and the subject as well as between the subject and the community. Information Technology tools seem to have a dual role in the activity scheme displayed above: they are used both as *means of work* as well as *means of communication and coordination* (Korpela, 2002). For IT experts, technology is the content of their job, the medium for conducting their work and their basic link to the external world. IT experts are experienced users of a variety of technologies. Almost all actions undertaken by them, from writing code and designing web pages to contacting the IT manager of the project or searching for specific information in the internet, involve the use of some kind of technological artifact. It would not be an exaggeration to argue that the notion of IT work could not be conceptualized without the idea of mediating hi-tec artifacts.

The above remarks are particularly important in work practices of contingent employment relationships, where the notion of time and space are relatively defined. It is a common knowledge that Information and Communication Technologies have enabled and facilitated new modes of communication at a distance and new interaction forms within and across organizational boundaries in real time settings (Kallinikos 2001, 2003). Due to the digitalized format of the deliverable product, the IT expert can work distantly, out of the conventional office of the client-firm and contact the client-firm personnel he is cooperating with via e-mail, instant messenger or common remote desktops. In IS literature, there is a wide range of papers about issues concerning cooperative work arrangements and their support via information technology (Bannon & Schmidt, 1989; 1992; Bannon 1992).

In general, it could be argued that communication and information sharing between the contractor and the firm is mostly taking place in a virtual space, where the physical presence, although irreplaceable (Olson and Olson, 2000), has been rendered costly and superfluous.

Furthermore, the use of information technology generates such circumstances and conditions that otherwise could not possibly emerge. Kuuti (1995) supports the view that information technology can be considered as the principal enabler of an activity, the pre-requisite catalyst that make an activity to be practically possible and feasible. In particular, specialized web sites that provide up-to-date and easily accessible information about specific software and hardware, constitute a non-conventional and content-rich source of knowledge and instant learning that has a significant impact on the knowledge repertory of IT experts and consequently on the way they are doing their work. Working independently and carrying the burden of upgrading one's own professional training (Kunda et al., 2002), is not an easy thing to accomplish. The importance of the above observation is further reinforced by the fact that the pace of technological change is extremely rapid and the attempt to possess "cutting-edge" skills is more than a necessity for an IT contractor who wishes to be constantly employed (Kunda et al. 2002). Without the training possibilities provided by information technologies, the whole idea and future of free-lancing would be doubtful and uncertain, if it could ever burgeon and prosper.

In accordance with the above is also the perception that this new organizational edifice, known under the name of "contingent employment relationship" would not probably proliferate without the existence of virtual communities and networks, whose emergence relies almost solely upon the usage of mobile and internet technologies. Lewis (1997) emphasizes the fact that the availability or choice of communication channels is critical in the creation and maintenance of distributed communities, whereas Nardi et al. (2002) note that "netWorkers rely heavily on their own personal social networks as they seek to get the work done in today's world of organizational boundary crossing". The latter scholars also remark that there are two key actions that seem to be the prerequisite of a network sustainability: remembering and communicating. Taking for granted that IT contractors are always moving from

the one enterprise to the other, it is sensible to conclude that they can only keep in touch with their "contacts" through technologically advanced artifacts.

At last, the relationship between the client-firm (community) and the delivered software or web application (object) is mediated by the division of labour (the right-down triangle in figure 3). Strauss (1988) states that each project, as defined by its initiators, must begin with a vision (an image, an idea, a notion), of what can, should or might be done; and soon after that the initiators must consider ways and means of implementing the vision. For instance questions such as: "Who is working with whom, on what and for how long? Who knows what each person is up to and who is responsible about what? What is the level of interdependence of task X with the task Y?" answer the above initial question about the "realization of the vision" and address in practical terms the concerns posed by the division of labour.

"The division of labour refers to the explicit and implicit organization of a community as related to the transformation process of the object into the outcome" (Kuuti 1995). The division of labour is formulated according to the nature and the special needs of the participating organization and can be further refined to meet the requirements of a particular activity or project. On the other hand, a certain division of labour historically evolves within the professional communities that traditionally define what kind of skills and competences are required by someone to hold a particular job position.

A distinctive characteristic of contingent or time-limited contracts is the "grouping of tasks into modules that can be detached from particular contexts and be assigned to people with small or no acquaintance with specific organizations" (Kallinikos, 2003). Correspondingly, in software industry, the prevailing trend is towards "creating finer divisions of labour by separating analysis form programming and dividing programmers and programs further so that most ended up concentrating on coding small modules using structure coding methods" (Friedman 1992), namely "modularization" (Kraut & Streeter, 1995)

IT experts, who work as software or web development in a contingent basis, usually undertake a relatively autonomous and specific part of an overall project which they

mainly accomplish by themselves. Nevertheless, although the nature of programming work could be considered, at least to some extent, individualistic, it unavoidably concerns some kind of collaboration with the representatives of the client-firm. The IT contractor does not create a software application that will be applied in the vacuum; his deliverable application will respond to some problems or needs that the client-firm encounters. Therefore, even if it is the "cutting edge" skills about specific hardware and software that make IT experts so sought-after in the market and so indispensable to the client-firm, a certain kind of familiarization with the organizational culture of the client-firm is also important. Especially at the first phases of a project, meetings between the contractor and the representatives of the client firm are considered to be necessary so as the best possible result to be assured.

IT contractor has the complete responsibility of the assigned job and he is accountable (Strauss, 1985) about his actions to the general manager of the client-firm or to the person that the manager has set as leader of the project. The IT contractor is expected to accomplish a specific task into a strictly defined period of time, using all kinds of tools that are at his disposal. What is striking about the way an IT expert accomplishes his duties is that his threads of actions are not really accessible to easily monitoring and supervision. In other words, the way IT expert makes use of his esoteric, abstract as well as technical skills is usually out of the traditional methods of controlling and supervising work. Although information technology itself can possibly make, at least to a certain degree, the work done by the IT worker visible and comprehensible (Kuuti, 1995), the manager is not really in position to judge the work process embraced by the hired contractor. What the latter can control (Belanger & Collins, 1998) is the functionality and usability/utility of the final deliverable as well as the general behaviour of the contractor.

As far as the virtual community is concerned, one could not really identify the existence of explicit norms that dictate a certain division of labour or a certain type of accountability. As already mentioned, IT people formulate these communities in an informal and "volunteer" way, attempting to promote the IS discipline in general. On the other hand, in case where strong social ties and networks among IT contractors, who know each other, are developed and regular communication and interaction is taking place (professional community of IT experts) among them, there is the implicit

obligation of every member to be able to make some kind of contribution when he is asked to do so.

Main strengths of Activity Theory

Activity Theory is a useful multi-disciplinary, descriptive tool for analyzing and understanding human activity and behavior, independently of any specific field of application. It incorporates quite different psychological, educational, cultural, historical and developmental approaches to human activity (Vygotsky 1978; Leontiev 1978; Engestrom 1987, 1999), providing a promising theoretical framework for studying complex socio-technical phenomena, such as work practices and behaviors.

As Kuuti and Arvonen (1992) notice the behavioral and social sciences have always suffered from a dichotomy between the individual and the social. Nevertheless, actions are always situated into a context and it is impossible for them to be understood without that context (Suchman, 1987). "Human mind comes to exist, develops and can only be understood within the context of meaningful, goal-oriented and socially determined interaction between human beings and their material environment" (Bannon, 1997)." Activity Theory seems to display a remedy for the aforementioned epistemonological bipolarity by defining as unit of analysis the *notion of activity*, which implies the unity and inseparability of individual actions and social context within which these actions are embedded (Engestrom 2001). An "activity" consists the minimal meaningful context for individual actions to be adequately understood (Kuuti 1995).

Although the elements of the system and the relations between them are presented in a relatively abstract way, the AT model does not lose its analytical and descriptive power. In contract to a strict definition and articulation of variables of interest, this "abstractness" gives the researcher more degrees of freedom to adjust Activity Theory tools to his subject-matter, according to the particular needs and conditions of the current research.

Another way of putting the matter would be that Activity Theory is not a rigid and static research framework, since its main constructs are under continuous change and

development, which is not linear or straightforward, but uneven and discontinuous: "the object and the motive will reveal themselves only in the process of doing" (Kuuti, 1995). This constant change and re-conceptualization of its basic components and the relationships between them, transforms Activity Theory model into an extremely flexible and adjustable analytical tool with multiple possibilities of use and application. By providing the researcher the possibility to deal with developmental and dynamic features of human practices and interaction, Activity Theory could be considered to outweigh other theories and research frameworks that are used to study work practices (Kuuti, 1995).

As far as the field of Information Systems is concerned, the contribution of Activity Theory seems to be that it highlights perspectives that are different from the typical "production-oriented" approach that is particular permanent in software engineering (Floyd, 1992). Activity Theory allows the researcher to obtain a view on the overall work process out of which the IS product is generated.

Moreover, Activity Theory enables the researcher to discuss on issues which belong to different levels within a relatively integrated framework (Kuuti, 1995). Individual actions are always embedded within a social context and are always analyzed and understood in relations to the particular social conditions emerged and the more general-communal motives that seem to be behind them.

In conclusion, it could be stressed that in comparison to other approaches used in studying work practice, the main strength of Activity Theory is in providing "a theoretically founded but detailed and practicable procedure for studying Information Systems development in context" (Korpela et al., 2002).

Conclusion- Discussion- Limitations

Within the context of the present paper, we attempted to identify and illustrate the agents and the contextual factors, -as well as the interactions developed among them-, that tend to shape the reality of IT expert's work practice and everyday life. Relied upon some preliminary empirical data, we opted to give the big picture of a complex phenomenon, namely the employment relationship between IT experts contractors and

their employing organization. In other words, this authoring endeavour is nothing else but a first attempt to make "form" out of the "unformed" facts and interactions that shape contingent work arrangements in the Greek IS sector. And towards this aim, we selected deliberately Activity Theory model, as our pair of glasses to stare at and make sense out of our research subject.

To conclude we would like to argue that "the value of any theory is not whether the theory or framework provides an objective representation of the reality (Bardam, 1998), but rather how well a theory can shape an object of study, highlighting relevant issues (Halverson, 2002). Unavoidably, some elements of the observed world are brought into light, while others fade into obscurity (Halverson, 2002), according to the particular scientific focus of the research framework.

Finally, we have to acknowledge that although AT framework explicitly names and gives a general appreciation of important aspects of the social and communal dimensions of human behaviour, it does not really illuminate the role of them in the shaping of the overall activity. In most cases of AT application, the perspective of the individual is at the centre of everything (Halverson, 2002) and often no particular attention is paid to the impact of social and cultural structures on the system as a whole. More precisely, according to AT, every activity involves the interaction of an individual with various artifacts that are supposed to be structured via well-established procedures and routines, without specifying how these routine operations and behaviours emerge and function within the system.

Without underestimating the enlightening contribution of Activity Theory to our overall comprehension of the research subject, an attempt for enrichment and extension of Activity Theory concepts is something that should be taken under consideration, so as further useful insights about contingent work arrangements in the IS industry to be reached. Paying attention to the institutional complexity of work as well as to the other social, technological and psychological factors that refer to the employment relationship, could hopefully reveal subtle and often invisible mechanisms that render the above relationship sustainable and mutually beneficial.

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Socio-Economic Differences in the Perceived Quality of High and Low-Paid Jobs in Greece[1]

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Abstract

Using data from eight waves (1994-2001) of the European Community Household Panel (ECHP), this study examines whether significant differences exist in the perceived quality of high and low-paid jobs in Greece. After correcting for the potential selectivity problem that is prevalent in the study of low pay status on job satisfaction, evidence is presented that low wage workers are significantly less satisfied with their jobs compared to their higher-paid counterparts. Further analysis of the specific facets of jobs reveals that the lower average satisfaction of low-paid employees in Greece arises not only due to their lesser pay, but mainly because of the inferior type of work that they perform, undesirable working hours and poor working conditions. Low-paid workers in Greece therefore seem to suffer from a double penalty, as their jobs are also of bad quality. In view of this segmentation, combined with the fact that Greece remains a low wage economy, it becomes evident that policies that centre on the quality of jobs are of equal importance to those that focus on the level of pay that they provide.

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1. Introduction

1.1 'Atypical employment' and the 'two-tier' labour market

Following the substantial process of structural change and reform that European labour markets underwent since the late 1970s, during which the distribution of earnings has been widely regarded as having become more unequal, concerns were raised over the growing proportion of workers falling into the category of the 'working poor'. Specifically, given the increased globalisation of economic activity, the acceleration of technological innovation and the emergence of the knowledge society, as well as the growing importance of the services sector, new employment practices were deployed that aimed to provide employers with adequate flexibility to respond to ever-changing circumstances. These involved the widespread use of 'atypical' forms of employment, such as part-time work, contracts of temporary duration (fixed-term/agency work), and very low-paid jobs on non-standard working hours. Sabethai (2000), for example, documents the extensive use of such flexible forms of work in Greece in the late 1990s, as well as numerous legislative measures concerning the utilisation of labour, that sought to adapt employment and production needs of Greek enterprises to changes in demand. While some considered such relative changes as the ineluctable response of competitive markets to the diminishing demand for the services of low-skilled workers, others were apprehensive of the ability of low-paid individuals to maintain decent living standards, especially in the face of the deregulation of the institutional framework that traditionally supported their wages.

More recently, the European Union (EU) has expressed concerns regarding the potential downsides of such non-standard forms of employment not only on the level of pay but also on the *quality* of jobs, such as the impact on job security, work-life

balance, access to training and lifelong learning, health and safety at the workplace *inter alia*. In other words, it has been argued by the EU that along with the declining relative (and for some countries real) position in the earnings distribution, low-paid workers have suffered from a double penalty as their jobs are also of inherently bad quality. This is believed to be the outcome of market and institutional failures, or of a belief by employers that quality improvements can impair their capacity for flexibility, both of which have allegedly fostered the development of a two-tier labour market in Europe. In this segmented market "the first tier is made up of jobs subject to decent pay, relative job security and career prospects, involving generally good working conditions. The second tier comprises not only the unemployed and discouraged workers, but also those employed in jobs of low quality which have low pay, precarious employment relationships or lack of further education and career development prospects" (European Commission, 2001a, p. 79).

1.2 Focusing on the quality of employment

The need for policy-makers to focus on this latter 'lower end' of the labour market was underlined by the *Employment in Europe 2001* survey, which was the first to document the strong link between jobs of relatively poor quality and social exclusion. Specifically, it was shown that those employed in jobs of low quality are at much greater risk of becoming unemployed or dropping out of the labour force. Moreover, "previous experience of unemployment and labour market exclusion, in turn, lowers the probability of returning to employment in general and into high quality employment in particular, thus leading to substantial risk of vicious circles of low quality – low productivity employment, and unemployment, inactivity and social exclusion" (European Commission, 2002, p. 81). So the problem with casual or low-

paid labour is not, to paraphrase Hicks (1963, p. 82), that 'it is worth so appallingly little', but that it is condemned to 'act as the main conduit for repeat unemployment' (Stewart, 2002, p. 19), and, thus, to suffer from few opportunities to move up the job ladder. Indeed, *Employment in Europe 2003* (p. 138) reports that between 1995 and 2000 Greeks in low-quality employment experienced the least favourable career opportunities amongst the EU counties, with above EU-average transition rates into unemployment, and below EU-average transition into high quality employment. Also striking is the persistence of the no job/low quality trap in Greece, with almost 30 percent of unemployed Greeks in 1999 moving into low-quality employment in 2000, and almost 20 percent in inactivity. Little above 5 percent moved into high-quality jobs.

The fear of a vicious cycle between low-quality jobs and non-employment was further exacerbated by the possibility that the trend of increasing employment in the services sector would lead to a proliferation of dead-end jobs of bad quality. For Greece, in particular, which has experienced rapid growth of the services sector over the past twenty years, it has been argued that the demand for high profitability by Greek firms, in the face of slow growth of productivity and high unemployment, has facilitated the propagation of low-wage/bad jobs in the Greek economy (Ioakimoglou and Soumeli, 2002).

The attention that the EU has paid to job quality was also stirred by the acknowledgement that the full potential of job creation cannot be achieved if the jobs on offer are unattractive in terms of the quality of work, consequently proving difficult to fill (Eurofound, 2001, p. 4). This problem has recently become starker in European labour markets, following the marked improvements in the quality of the European labour supply (European Commission, 2001b, p. 9).

Finally, placing greater emphasis on the quality of employment was also dictated by the evidence that better quality in work results in faster employment growth and higher productivity (European Commission, 2003a, p. 6-8). Specifically, better jobs are expected to be more attractive to non-participants or those at the margins of the labour force, especially women. Safer jobs that offer access to training are also more likely to result in productivity gains, by reducing turnover and absenteeism and by leading to the production of better goods and services, respectively. At the same time employees are likely to reciprocate to their employer's gift-exchange offer of better working conditions by exerting greater effort (much in the spirit of the 'reciprocity' arguments put forward by Fehr and Falk, 2002). High-quality employment is also believed to contribute to the positive mental and psychical well-being of employees, thus serving as a precondition for a rich, satisfying, and productive life (Eurofound, 2001, p. 7).

It is not least for these reasons that European Member States in the Lisbon Summit of 2000 considered the goal of improving quality in work as a complementary and mutually supportive objective to those of full employment and social cohesion. Quality promotion has hence been acknowledged as a cornerstone for modernising Europe's social model, as a means of ensuring the dynamic positive complementarity between flexible and competitive economic policies, on the one hand, and social cohesion, achieved through strong and supportive social systems, on the other.

1.3 Theoretical framework and defining quality in work

Of course, the theoretical framework underlying the EU's rationale of low wage jobs also being of low quality is the *dual labour market hypothesis*. According to this theory, the lack of perfect mobility, and subsequent lack of competition, between

distinct labour markets fosters the development of 'good' and 'bad' jobs, whereby the former enjoy not only better working conditions than the latter, but also higher pay. In this case significant differences in the utility derived from work among otherwise identical individuals arise, with those in superior jobs enjoying greater job satisfaction. Such differences cannot be sustained, however, in markets that are characterised by a perfect flow of information and lack of barriers to mobility. For in that case Adam Smith's (1776) paradigm of *compensating wage differentials* would prevail. According to Smith, employers of jobs with many disamenities would be expected in the long run to compensate for these with higher pay, all other things equal, in order to recruit and retain their workers. Thus, according to the theory of compensating (or equalizing) differences, in perfectly competitive labour markers one expects to observe low-paid jobs with relatively good working conditions, and jobs with bad working conditions paying high wages. Two otherwise similar individuals, who have the same demographic, human capital, and job characteristics, but who work in different tiers of the job market (i.e. one as low-paid and the other as high-paid), should therefore enjoy similar utility from their occupations.

This study therefore attempts to, firstly, detect whether or not significant differences in perceived job quality exist among high and low-paid workers in Greece, and, secondly, to uncover the differential effect that certain socio-economic variables exert on the utility from high or low-paid work, respectively. By understanding if (and how) the determinants of job satisfaction between these two types of workers differ, appropriate policy responses could then be developed to address the discrepancy in quality between good and bad jobs.

However, since 'quality of work' is a multifaceted concept any attempt to quantify the term is highly contentious. It is for this reason that the Commission (2001b, p. 7)

has suggested that there can be no one single measure or index of employment quality, which is why it has identified 10 'dimensions' of job quality instead.[1] In contrast, this paper follows the practice of an ever-increasing number of economists who use self-reported job satisfaction data as a surrogate for the overall quality of work. Specifically, many have argued that since overall subjective job satisfaction is the reflection of the worker's weighting in his/her mind of all the job's aspects (such as pay, job security, the type of work, hours and times of work, working conditions, commuting etc.), "then the former should serve as a reasonable proxy for the overall quality of work as perceived by the individual worker" (Hamermesh, 2001; Leontaridi et al., 2004, p. 2).[2] This is also the method adopted by Leontaridi and Sloane (2001), who showed with British data that low-paid workers in the UK enjoy greater job satisfaction than their higher paid counterparts. Jones and Sloane (2004) have also recently illustrated that job satisfaction in the low-wage economy of Wales is not lower than in the rest of the UK. These findings led to the conclusion that there is "no justification for the European Commission's assertion that low paid jobs are inherently jobs of low quality, at least as far as the British evidence is concerned" (op cit., 2004).

This study casts doubt on the generality of this proposition to other European labour markets by showing that low-paid workers in Greece are markedly more dissatisfied with their jobs than their higher-paid counterparts. This is based on data from eight waves (1994-2001) of the European Community Household Panel (ECHP), and arises after taking into account the potential selectivity problem that is prevalent in the study of low pay status on job satisfaction. Further analysis of the specific facets of jobs reveals that the greater displeasure of low wage workers in Greece reflects not only their lower satisfaction with their pay, but, mainly, the inferior type of work that they perform, their undesirable working hours and the poor environment of their

workplace. In the face of this evidence, combined with the fact that Greece remains a low wage economy, it becomes evident that policies that centre on the quality of jobs are of equal importance to those that focus on the level of pay that they provide.

The structure of the paper is organized as follows. Section 2 offers a brief literature review of the growing research that has taken place using subjective well-being data, including any results that have been reported for Greece. In section 3 the data used in this study and summary statistics are presented. Section 4 outlines the econometric methodology, while section 5 describes the empirical estimates of the relationship between low pay status and job satisfaction in Greece. Section 6 concludes the discussion.

2. Subjective Job Satisfaction

2.1 Subjective Well-Being and Job Satisfaction

There has been a surge of interest among economists in recent years regarding the use of subjective survey questions on individual well-being and its domains, such as job satisfaction or health satisfaction. As mentioned above, much research has now started with the premise that *subjective well-being* (SWB) can serve as an empirical proxy for the theoretical concept of utility, thus overcoming the traditional economic practice of evaluating individual preferences by means of *revealed* behaviour in market situations. This initiative has followed the lead of many years of psychological research, which has illustrated that comparisons of different measures of SWB are often mutually consistent. For example, self-reported SWB has been found to be correlated with physiological measures such as the amount of smiling or frowning, changes in facial muscles (see Kahneman et al., 1999) or the evaluation of the individual's experience by a third party observer (Kahneman et al., 1997). Van Praag

(1991) has also shown that individuals belonging to the same language community have a very similar understanding of concepts such as welfare, well-being and happiness. In addition, the use of subjective well-being data was encouraged by the robust econometric findings that were spurred by Freeman's (1978) pioneering work on the inverse relationship between job satisfaction and quit behaviour.

Of course, it has been acknowledged that survey questions about satisfaction suffer from a number of weaknesses, such as the discrepancy between *remembered utility* and *experienced utility*. For example, it has been argued by Kahneman that when evaluating retrospectively the utility of an event (remembered utility), individuals give a relatively higher weight to events with a high intensity (Peak Effect) and those that have occurred last (End Effect) (hence the term *Peak-End evaluation rule*). Another problem arises due to the presence of the *adaptation phenomenon* (Easterlin, 2001). Specifically, the evidence that wealthier individuals and economies are happier at a given point in time, but not over time, has led to the assertion that individuals adapt to new situations, such as an income increase or becoming handicapped, by changing their expectations. Both of these issues therefore arouse suspicion about the use of time-series data on subjective happiness.

In spite of these problems, economists have reported a number of interesting and robust results regarding the effect of individual socio-economic characteristics on SWB and its domains. Concentrating specifically on the domain of job satisfaction, which is considered to be a proxy for an individual's utility from work (U), most of the empirical literature now follows the theoretical exposition of Clark and Oswald (1996). According to these authors, job satisfaction depends not only on absolute income (y) and working hours (h), as in standard indifference curve microeconomics, but also on a set of individual (i) and job-specific (j) features:

$$U = u(y, h, i, j) \;\; u'_y > 0, u'_h < 0 \qquad (1)$$

Based on this model, the estimating equations usually regress the indices of job satisfaction on a set of demographic (age, gender, marital status, number of children etc.), human capital (education, training), economic (wages and salaries, other income), work-related (firm size, hours of work, contractual arrangement) and social (unionization, institutions) determinants.

In this manner the literature has found that unemployed individuals report substantially lower levels of well-being than the employed and are permanently 'scarred' as a result of their jobless experience (Clark and Oswald, 1994; Theodossiou, 1998). It has also been argued that much of the wage effect on job satisfaction operates through relative wages[3] (Clark and Oswald, 1996; Clark, 1999; Grund and Sliwka, 2003), or through the individual's own judgement about his past and future financial situation (Easterlin, 2001; Lydon and Chevalier, 2002).[4] Interesting demographic differences have emerged in that women consistently declare higher job satisfaction scores than men (Clark, 1997) and the age effect has been reported as being U-shaped (Blanchflower and Oswald, 1999). Finally, satisfaction levels have been found to be negatively correlated with both education (Clark and Oswald, 1996; Sloane and Williams, 1996) and union status (Blanchflower and Oswald, 1999; Drakopoulos and Theodossiou, 1997).[5]

2.2 Greek Specific Research on Job Satisfaction[6]

In Greece the empirical research on job satisfaction is limited, with most of the relevant studies originating in the health sciences. Recent papers that have focused on the job satisfaction of Greek teachers include those of Koustelios (2001) and Stamouli

and Ipfling (2003). Koustelios's (2001) sample of 345 teachers from 40 public schools in Thessaloniki showed that they are satisfied with the job itself and supervision, while they are dissatisfied with their pay. Holding a supervisory post or having promotion prospects also appears to have a positive effect on job satisfaction. Stamouli and Ipfling's (2003) cross-national research of four countries (Greece, Germany, Austria, Switzerland) also revealed that teachers with greater work autonomy, and those with good working conditions (such as administrative support, school environment, student acknowledgement), are more satisfied in all countries. A notable difference is that for Greek teachers the vacation period seems to be more relevant for their job satisfaction compared to their Central European counterparts.

Two more studies worth mentioning include those of Blanchflower and Oswald (1999) and Kaiser (2002), both of which examine job satisfaction in the whole of Europe including Greece. Blanchflower and Oswald (1999), using information from two waves (1995 and 1996) of the Eurobarometer survey, show that job satisfaction levels in Greece are the lowest in the EU, and Greece appears to be one of the most stressed countries in Europe. Kaiser (2002) confirms these results using data from the European Community Household Panel (ECHP) for the period 1994-1997. According to Kaiser, Greeks have the lowest average satisfaction in the EU with respect to their jobs in general, as well as with two specific aspects of their jobs, notably the number of working hours and job security. Such a bleak picture also emerges from the empirical analysis of this paper, to which we now turn.

3. Statistical Data and Descriptives

3.1 Data and Incidence of Low-Paid Employment

The empirical analysis uses statistical data for Greece drawn from the eight waves of the European Community Household Panel (ECHP), covering the period 1994-2001. Designed centrally at Eurostat, but in close coordination with the Member States, the ECHP is a questionnaire database that contains information on more than 60,000 nationally representative households and 120,000 observations per year for all (pre-accession) EU countries.[7] In constructing the ECHP emphasis was placed on developing comparable longitudinal social statistics across Member States on income, labour, poverty and social exclusion, housing, health, as well as other social indicators concerning living conditions of private households and persons. More important for our purposes, it contains a considerable amount of information on the personal, human capital and employment characteristics of workers, as well as their stated satisfaction with their jobs. In particular, in the ECHP respondents are asked to rate their satisfaction levels with their main activity status (whether it is employment, unemployment, or inactivity). The employed are also asked to state their preference with respect to specific components of their jobs, such as earnings, job security, type of work, working hours, working times, working conditions/environment and distance to job/commuting. Each of these are given a number from one to six, where a value of one corresponds to 'not satisfied at all', six reflects 'full satisfaction', and the integers from two to five represent intermediate levels of utility. It is these self-reported responses that constitute the dependent variables in the econometric analysis that follows below.

Using the available ECHP data on Greece, the total number of interviewees for each of the eight years of the survey was approximately 11,000, resulting in a total of 85,748 observations on 15,374 individuals for the pooled sample.[8] Keeping only those in paid employment, who are between 16 and 65 years of age, and excluding the self-

employed and those in unpaid work in family enterprises for the purpose of retaining homogeneity in the sample, resulted in a pooled sample of 20,785 observations on 5,314 individuals, of which 3,162 are males and 2,152 are females. Although our sample excludes full-time students, those working in paid apprenticeship or those receiving job-related training were included, given that training possibilities constitute a key component of the quality of jobs.

Based on this sample, Table 1 identifies the fraction of employees who were low-paid in Greece per year. These figures were computed by, firstly, deriving gross hourly earnings for each individual, using the available information on current gross monthly earnings and the number of weekly hours of work in the main job.[9] A conventional definition that classifies as low-paid those individuals whose earnings are less than two-thirds of the median gross hourly wage was then adopted.[10] Using this definition, Table 1 illustrates that the overall incidence of low-paid employment in Greece, based on ECHP data for the period 1994-2001, is 17.24 percent.[11] This figure closely mirrors the results of both Ioakimoglou and Soumeli (2002) and Marlier and Ponthieux (2000), who have shown, using slightly different definitions and data, that low wage workers in Greece amount to 16-17 percent of the total population.

3.2 Descriptive Statistics

Having identified the overall incidence of low pay in Greece, Table 2 depicts the composition of low wage employment in relation to categories of jobs and individuals. Specifically, Table 2 shows the percentage of workers in each category who are low-paid (*incidence*), the *distribution* of low wage employment among the particular categories, and the *concentration indicator*, a measure of the prevalence of low-paid employment in each group relative to the overall incidence in the population. This

indicator is useful for conducting cross-national comparisons, as a value greater than one suggests a higher than average risk of being low-paid in any country. Taking the category of 'sector' as an example, Table 2 illustrates that being employed in the private sector is associated with a higher than average probability of being low-paid, since the concentration value is 1.48. This is in stark contrast to public sector workers, whose concentration value is 0.21, thus implying that the public sector in Greece acts a safeguard against low wage employment. These figures are a reflection of the fact that, as shown in column 1, almost 26 percent of private sector employees are low-paid, compared to only 4 percent in the public sector. Moreover, from column 2 one can see that among the 17 percent of workers who are classified as low-paid in our sample, 92 percent work in private sector jobs, compared to only 8 percent who are employed in the public sector.

From the remaining rows in Table 2 it is clear that the likelihood of low-paid employment in Greece is higher for women and younger workers, as well as for those with lower educational qualifications and absence of training opportunities in their jobs. This is not surprising, given that wages tend to increase with working experience, training, and the level of educational attainment, as has been noted long time ago by Becker (1964) and Mincer (1974), the two pioneers of human capital theory. In fact, our sample confirms that low-paid workers have fewer years of general experience and job tenure (11 and 3.5, respectively), compared to their higher-paid counterparts (17 and 9 years). Single workers, and to a lesser extent those who work in part-time jobs, are also at higher than average risk of being in the low pay category. In addition, low wages are relatively less common in fairly 'stable' jobs, such as jobs with contracts of indefinite duration. The persistence of the no pay/low pay cycle that was mentioned above is also evident, since those who (re-) enter employment after

being unemployed or inactive a year earlier are much more likely to be in low wage jobs, compared to those who were employed. From Table 2 it is also apparent that fears of high-paid jobs in the shrinking manufacturing sector being increasingly replaced by low-paid jobs in the growing services sector have not yet materialized in Greece, as the possibility of low pay seems to be greater in the non-services sectors. Lastly, the occupational breakdown suggests that while being in a non-manual occupation (such as sales) is not a guarantee of being in a relatively high-paid job, very few managerial, technical and professional workers receive low wages. All of these correlations are in close agreement with the results that other authors have reported for many other countries, thus indicating that the risk of low wage employment in Greece tends to be concentrated among the same types of workers and employment categories as elsewhere (OECD, 1996, p. 70; Marlier and Ponthieux, 2000, p. 4; and articles in the volume of Asplund, Sloane and Theodossiou, 1998).

Moving on to an analysis of the raw job satisfaction data, Figure 1 demonstrates that in 2001 Greece had the lowest average job satisfaction among the EU countries for which such data was available, thus confirming the findings of Blanchflower and Oswald (1999) and Kaiser (2002) for earlier years. From Figure 2, which illustrates the distribution of job satisfaction responses in Greece in 2001, it can be seen that 11 percent of Greeks ranked themselves at the bottom of the job satisfaction ladder (i.e. gave a score of 1 or 2), while 59 percent were in the middle rungs (scores 3 and 4). The remaining 30 percent of Greek employees reported a satisfaction value of 5 or 6, which constitutes one of the smallest fractions in the EU. More relevant for this study, however, is the pattern that is displayed in Figure 3, which compares the average job satisfaction of high and low-paid workers over time in Greece with that of five other

EU countries. From this figure it is clear that Greece stands out in terms of the pronounced and constant divergence in satisfaction between the two types of workers.

Table 3 now depicts the means of overall job satisfaction and satisfaction with specific facets of jobs, broken down by various categories of interest. As an example, one can see from column 1 of this table that the average job satisfaction score of high-paid workers in Greece in the years 1994-2001 was 4.02, which is larger than the average satisfaction value of 3.17 that low-paid workers reported. Accordingly, it is evident that men in Greece are more satisfied with their pay and security, compared to women, in line with Papapetrou's (2004) finding that average wages of Greek women are 25 percent less than those of men. Nevertheless, women express greater satisfaction with their working hours, times, conditions, and type of work. Moreover, full-time workers report greater satisfaction with respect to their pay, security, and type of work, while part-time employees in Greece receive greater satisfaction from their working hours and conditions. Overall full-time workers seem to be happier than those who work part-time, which probably reflects the fact that part-time work in Greece is still limited and to a large extent involuntary.[12] Public sector workers in Greece are more satisfied with their jobs in general, and with all of the facets in particular, compared to private sector employees.[13] Workers on permanent contracts receive greater utility from their jobs, especially with regards to the security of their employment, while those on casual work suffer the most. Moreover, married individuals, those in possession of more human capital, those who are employed in supervisory positions, and those working in the services sector are more satisfied with all of the components of their jobs. Finally, and more important for the purposes of this study, *low-paid workers in Greece are less satisfied with all aspects of their work compared to their high-paid counterparts.*

4. Econometric Methodology

The correlations that are outlined above may, of course, be spurious, as the influence of other factors that may obscure the relationship between an individual's low pay status and his/her job satisfaction has not yet been controlled for. As shown in section 3, we cannot be certain on the basis of the raw data only that low-paid workers in Greece are undeniably less satisfied than their higher-paid counterparts. Since a large proportion of low-paid workers possess other characteristics that might have an effect on job satisfaction (e.g. they are more likely to be single, low-skilled, on non-permanent contracts, etc.), it might be these features that cause low-paid workers to appear as more or less satisfied, rather than the fact of being low-paid itself. Therefore, in order to uncover the true *ceteris paribus* effect of low pay on job satisfaction, a multivariate regression methodology is required to net out the effects of other variables that are simultaneously correlated with both low pay status and self-reported job satisfaction.

However, even after controlling for these factors simple OLS or ordered categorical estimates of the effect of low pay are likely to be biased. The reason is that in the non-experimental sample that this study utilizes it is unlikely that individuals have been randomly allocated into either the low pay or the high pay sector. In reality, the observed distribution of high and low wage workers is likely to reflect the outcome of a matching process, with individuals of an intrinsic disposition (i.e. those who value non-pecuniary aspects of life) ending up on the lower rungs of the wage ladder and those who are extrinsically motivated selecting high-paying jobs. If intrinsically motivated individuals are concurrently more likely to report higher levels of job satisfaction, the least squares coefficient of a low pay variable will overestimate its true average effect. Similarly, if having low expectations from life is positively

correlated with a person's chances of being low-paid, and low expectations breed a high level of satisfaction with one's current state of affairs (due to the *adaptation* phenomenon), then the OLS estimate will again suffer from upward bias. In other words, the well-known problem of sample selection bias is likely to feature prominently in the analysis of the effect of low pay on job satisfaction.

It is for this reason that a "treatment effects" (or "endogenous dummy variable") model has been employed (Barnow et al., 1981; Maddala, 1983), which considers the effect of an endogenously chosen binary treatment on another endogenous continuous variable, conditional on two sets of independent variables. Such techniques use either Heckman's two-step consistent estimator or full maximum-likelihood, and estimate all of the parameters in the model:

$$JS_{it} = \sum_{j=1}^{h} X_{itj}\beta_{1j} + L_{it}\beta_2 + u_{it}, \quad i = 1,...,n; \quad t = 1,...,6 \tag{2}$$

where JS_{it}, job satisfaction of individual i at time period t, is the dependent variable, **X** is a vector of h personal and labour market characteristics that affect job satisfaction, and **L** is the endogenous dummy variable of interest that distinguishes between high and low-paid employees by taking the value 1 if low-paid and 0 otherwise. The stochastic process which determines the propensity of an individual belonging in either the high or the low pay tier of the labour market is modelled as the outcome of an unobserved latent variable, **L***, which is determined by the following equation:

$$L_{it}^{*} = \sum_{l=1}^{q} Z_{itl}\gamma_{l} + \varepsilon_{it} \tag{3}$$

where **Z** is a matrix of q identifying factors ($q \geq h$) believed to determine whether assigned treatment in the low wage sector occurs or not, and u and ε are assumed to be bivariate normal random disturbance terms that are distributed as follows:

$$\begin{Bmatrix} u \\ \varepsilon \end{Bmatrix} \sim \mathrm{N}\left\{ \begin{pmatrix} 0 \\ 0 \end{pmatrix}, \begin{pmatrix} \sigma & \rho \\ \rho & 1 \end{pmatrix} \right\} \tag{4}$$

Of course, **L*** is unobserved, but it is known that the allocation of individuals into either wage sector is made according to the rule:

$$L_{it} = \begin{cases} 1, & if\ L_{it}^{*} > 0 \\ 0, & otherwise \end{cases} \tag{5}$$

From this it becomes evident that any estimation of the average difference in job satisfaction between high and low-paid workers that does not take the associated problem of incidental truncation into account will be biased ($E(u_{it} / L_{it}^{*} > 0) \neq 0$).

Implementation of the "treatment effects" model, however, should lead to a consistent estimate of the coefficient of the low pay variable, β_2, as it accounts for the selectivity issue that arises. Maddala (1983, p. 122; also see Stata manual, 2003, p. 282) derives the likelihood function for this model, the maximisation of which yields consistent and asymptotically efficient estimates of the coefficients (**β**, **γ**) and variance-covariance matrix (**σ, ρ**):

$$l_i = \begin{cases} \ln \Phi\left\{ \dfrac{Z_{it}\gamma + (JS_{it} - X_{it}\beta_1 - \beta_2)\,\rho/\sigma}{\sqrt{1-\rho^2}} \right\} - \dfrac{1}{2}\left(\dfrac{JS_{it} - X_{it}\beta_1 - \beta_2}{\sigma} \right)^2 - \ln(\sqrt{2\pi}\sigma), & L_i = 1 \\ \ln \Phi\left\{ \dfrac{Z_{it}\gamma + (JS_{it} - X_{it}\beta_1)\,\rho/\sigma}{\sqrt{1-\rho^2}} \right\} - \dfrac{1}{2}\left(\dfrac{JS_{it} - X_{it}\beta_1}{\sigma} \right)^2 - \ln(\sqrt{2\pi}\sigma), & L_i = 0 \end{cases}$$

where Φ(.) is the cumulative distribution function of the standard normal distribution.

Identification of the model is achieved provided that at least one non-overlapping variable in **Z**, compared to **X,** is present. For this purpose two identifying restrictions have been used in the selection equation, but not in the main job satisfaction equation. These consist of, firstly, dummy variables capturing the number of rooms in the household per person, ranging from 1 to more than 3 rooms. Secondly, dummies of an index summarizing the presence of good features in the household have also been included. The good features consist of whether or not the dwelling possesses a separate kitchen, bath or shower, indoor flushing toilet, hot running water, heating and a place to sit outside. For both of these identifiers it is postulated that while their existence is correlated with the probability of an individual belonging in the low-paid group, it is uncorrelated with the utility that he/she receives from his work. Additional statistical tests, which are discussed in more detail below, also indicate that the restrictions for identifying the endogeneity effects are adequate.

Before describing the empirical results of the model, two final clarifications need to be made with respect to the nature of the dependent variable and of the standard errors.[14] Firstly, given that subjective well-being answers are categorical variables i.e. ordered discrete variables, researchers conventionally apply ordered probit (OP) or logit (OL) techniques with the aim of identifying the probability that a self-reported

satisfaction level, i, falls within one of the intervals (or 'ancillary' cut points) $(k_{i-1}, k_i]$, as a function of appropriate individual and labour market characteristics:

$$\Pr(i) = \Pr(k_{i-1} < X_{it}\beta_1 + L_{it}\beta_2 + u_{it} \leq k_i) = \quad (6)$$
$$\Phi(k_i - X_{it}\beta_1 - L_{it}\beta_2) - \Phi(k_{i-1} - X_{it}\beta_1 - L_{it}\beta_2)$$

This practice reflects the fact that one does not know the respondents' *exact* feelings about their jobs, only the *interval* in which they belong. However, it has been (increasingly) suggested that via an appropriate utility transformation, researchers may be able to approximate the true evaluations of the respondents by means of a cardinal scale. For example, in one of the seminal articles in this field Freeman (1978) recommended that one could convert the ordinal job satisfaction variable by applying a standardized z-score transformation. He argued that this practice would not distort the regression output compared to techniques that assume interpersonal ordinal comparability. Recently, other options have been explored, most notably the 'conditional mean' transform. According to this method, the researcher may approximate the unknown 'true' value of job satisfaction, $\widetilde{JS}$, by its conditional mean, $\overline{JS}$, as follows:

$$\overline{JS} = E(\widetilde{JS} \leq k_{i-1}) = \frac{-\phi(k_{i-1})}{\Phi(k_{i-1})} \qquad if \;\; JS = 1$$

$$\overline{JS} = E(k_{i-1} < \widetilde{JS} < k_i) = \frac{\phi(k_{i-1}) - \phi(k_i)}{\Phi(k_i) - \Phi(k_{i-1})} \qquad if \;\; 1 < JS < 6$$

$$\overline{JS} = E(\widetilde{JS} \geq k_i) = \frac{\phi(k_i)}{1 - \Phi(k_i)} \qquad if \;\; JS = 6$$

In other words, this method assumes that for those individuals whose 'actual' responses to the ECHP questionnaire took the value '1', the distribution of their 'true' satisfaction was truncated from above, while for those who replied with a '6' it was truncated from below. For the intermediate satisfaction categories, 1…6, it is assumed that the respondents' true evaluations were truncated both from above and below, and, thus, these are approximated with the expected values of a doubly truncated normal variable (Maddala, 1983, p. 366). This approach, which Van Praag and Ferrer-i-Carbonell (2004) have called the *Probit Ordinary Least Squares* approach (POLS), yields approximately the same estimates as a traditional OP regression, apart from a multiplying factor that stems from a different normalization. Moreover, the significance of the estimates, e.g. as evaluated by t-values, has been shown to be practically the same for both methods (see Ferrer-i-Carbonell and Fritjers, 2004; Van Praag and Ferrer-i-Carbonell, 2004, Ch. 2). It is therefore evident that there are significant advantages to using the cardinal measure of POLS instead of OP, since it simplifies the computational constraints that the researcher encounters when dealing with complicated models (e.g. sample selection or panel data).[15] It is for this reason that the POLS technique has been adopted in the econometric estimations of this paper.

Finally, it should also be noted that robust (Hubert-White) standard errors have been calculated in all of the regressions that correct for clustering at the individual level. This was deemed necessary, given the discrete nature of the low pay and the (original) job satisfaction variables, as well as the pooling of cross-sectional data over time. Time effects have also been accounted for through the inclusion of yearly dummy variables (Wooldridge, 2002, p. 128).

5. Empirical Results

5.1 Empirical Results for Low Pay Selection Equations

The estimation of the selection equations (3) makes use of the probit method to identify the factors that determine whether an individual works in the high or the low pay tier of the labour market. The regression results, as well as the marginal effects of the included variables, are presented in the first two columns of Table 4. As usual, positive coefficients imply a greater likelihood of an individual having low wages, whereas the marginal effects indicate the change in the probability that an individual is low-paid when each of the independent variables, calculated at the mean values of the sample, is increased by one unit. Due to space limitations we refrain from an extensive discussion of this output. It is clear, though, that the probability of low paid employment is concentrated on the same types of workers and job categories (females, young, private sector workers etc.) as was described in section 3 above.

More important for the purposes of the model is the fact that the chosen identifying restrictions are highly correlated with low pay status, most of them at the one percent significance level or less. Specifically, those who live in more spacious households (i.e. with two or more than three rooms per person) are less likely to be low-paid, compared to those who live in households with only one room per person. Accordingly, those with fewer good household features face a greater likelihood of being low-paid. The Wald test statistic for the joint significance of these selection variables in the probit equation is χ^2 (5) = 55.00, which is significant at the 1 percent level.

5.2 Empirical Results for Overall Job Satisfaction Equations

From the estimation of a job satisfaction equation on the entire sample of workers, as is shown in column 3 of Table 4, we find that low-paid employees in Greece are significantly less satisfied with their jobs compared to those who are high-paid, all other things equal.[16] Two 'statistically identical' individuals, who have the same characteristics, would therefore not be equally satisfied with their jobs if one of them worked in the low pay segment of the labour market and the other in the high pay one. In reality, the individual who is low-paid would, on average, receive lower utility from his/her work. This is evidence in favour of the dual labour market hypothesis, as it indicates that non-pecuniary benefits do not seem to compensate low wage workers in Greece, as would be expected in a labour market with perfectly competitive market forces. The idea that there exist 'bad jobs' and 'good jobs' in the Greek labour market is therefore supported by our data.

From the coefficients of Table 4 one can also derive an estimated value of the amount of money that low-paid workers in Greece would need to receive, in order to have their utility equalized to that of their higher-paid equivalents. Alternatively, such a calculation allows us to put an approximate monetary value on the disutility of low pay employment in Greece i.e. on the 'implicit' (shadow) cost that workers are 'paying' for being in low-paid jobs that are also of low quality. This can be done by looking at the relative size of the coefficients on the low pay and wage variables, as this provides information about how the wages of a marginal individual would need to change in the face of a change in his/her pay status, in order to keep utility from work constant (Blanchflower and Oswald, 2004). In our case, the calculus suggests that if a previously high-paid worker were to work in a low-paid job, he/she would need to be compensated with approximately 1,420drx extra per hour if he/she were to retain the same utility as before the change. As an indication of the magnitude of this figure, one

can note that the mean gross hourly wage of a low-paid worker in Greece in the years 1994-2001 was 826drx, while that of a high-paid worker was 2034drx. Thus, in order for a low-paid employee to enjoy the same utility as that of a higher-paid counterpart, he/she would need to receive on average approximately (826+1420) 2,246drx per hour. It is therefore clear that equalizing the average wages of workers in the two tiers would not be enough to provide them with equal utility. Rather, it would be necessary to offer low-paid workers an additional (2,246-2034) 212drx per hour, presumably to compensate them for the fact that low-paid jobs are also of inherent 'bad' quality. Of course, these calculations should be treated cautiously, but they do illustrate the quantitative importance of the estimated coefficients.

From the other explanatory variables we observe further that higher absolute wages have a significant positive effect on individual job satisfaction, consistent with the traditional income-leisure trade-off of microeconomic theory. The significant disutility associated with mean hours is also consistent with the conventional theory, while the significant positive effect of 'transitory' deviations from mean hours is reflective of the fact that those individuals who work in excess of average hours are more likely to be intrinsically satisfied with their jobs. Job satisfaction is also found to be U-shaped in age (thus confirming that the middle-aged are less satisfied), while we do not discover any significant effect of marital status or of the presence of young children in the household. After conditioning on the main job and worker characteristics, we also find that Greek men are less satisfied with their jobs compared to women.[17]

Considering now the variables that capture the 'stability' or 'precariousness' of the employment relationship, it is found that temporary, part-time, and private sector workers in Greece are strongly dissatisfied compared to those on permanent, full-time,

and public sector contractual arrangements. These results seem to confirm popular worries that increased labour market flexibility affects the job security of employees, provided that only a minority of individuals who work on non-permanent and part-time contracts do so by choice.

Significant differences in the subjective evaluation of jobs are also found among those who have different human capital characteristics. In Greece, workers with tertiary education and above the second stage of secondary education are more satisfied with their work, compared to those who have not completed the second stage secondary level. In addition, those who believe that their current job is not utilizing their skills to the full extent (i.e. self-reported over-qualification) have lower satisfaction scores than those who are content with their skills-job match. The provision of training by employers as a means of upskilling and career development also leads to significantly higher job satisfaction. Finally, very good health, which Mincer (1974) considered a form of human capital as well, is an additional factor that leads to higher utility from work.

Another important result that has surfaced from the econometric analysis is that the well-documented non-pecuniary costs of unemployment are partially offset once an unemployed individual finds some sort of employment. This is evident by the fact that, everything else equal, an 'ex-unemployed' worker is not likely to be significantly unhappier with his current job compared to someone who was employed a year earlier. In contrast, ex-inactive employees are happier, which is consistent with the fact that these people consist mainly of women and younger individuals. This specific group is more likely to be in the process of entering or re-entering employment, after having taken some time off voluntarily due to various care responsibilities or further education. Finally, there is also evidence that absenteeism, non-supervisory positions

in the hierarchy and working outside of Attica negatively impacts on the perceived quality of jobs.

5.3 Empirical Results for Facets of Job Satisfaction and by Sector

Given that we have established that there exist significant differences in the perceived job quality of high and low-paid workers in Greece, which points towards the existence of a segmented labour market, we now proceed to investigate the reasons for this discrepancy. To this end, seven satisfaction equations have been estimated with some of the available components of jobs (pay, security, type of work, working hours, working times, working conditions/environment and commuting) as dependent variables this time (see Table 5). The results indicate that, with the exception of travelling distance to work, the greater dissatisfaction of low wage workers in Greece arises not only from their lower satisfaction with their pay, but, mainly, because of the inferior type of work that they perform. In addition, compared to their higher-paid counterparts, low wage employees in Greece are found to be less satisfied with their working hours and the environment of their workplace. Overall these findings seem to support the assertion that low wage jobs in Greece are inherently of bad quality.

Of course, the success of our preferred methodology hinges on the appropriateness of the identification restrictions of the model. For this purpose, statistical tests that examine the adequacy of the restrictions were repeatedly undertaken. Regressions were run in each case to ascertain statistically that our chosen selection variables are uncorrelated with the job satisfaction measures that were used. Specifically, the exogenous variables were entered as regressors in the job satisfaction equations together with the other covariates. In all estimations the instruments as a group did not add any significant explanatory power as tested by an F test. In fact, the relevant F-

statistics that are reported at the end of Tables 4 and 5 are small and insignificant in comparison to conventional statistical levels.

6. Conclusions

Following the establishment of job quality as one of the three overarching objectives of the EU's Employment Guidelines, and in the face of concerns regarding the declining economic prospects of workers on the lower rungs of the income distribution, which has supposedly led to the emergence of a two-tier labour market in Europe, this study examined whether significant differences in perceived job quality exist among high and low-paid workers in Greece. To do so we followed the practice of an ever-increasing number of economists, who use self-reported job satisfaction data to proxy the overall quality of work as perceived by the individual worker. Using data from the eight waves of the ECHP, evidence was presented that low-paid workers in Greece do in fact seem to suffer from a double penalty, as their jobs are also of bad quality. Further analysis of the specific facets of jobs revealed that this fact arises due to the lower average satisfaction of low wage employees with their pay, the type of work that they perform, as well as their working hours and conditions.

The results of this study therefore vindicate previous claims regarding the segmented nature of the Greek job market. As has been noted by other authors (Tsakloglou and Cholezas, 2004), the discrepancy between 'good' and 'bad' jobs in this country is likely to have emerged due to the specific structure of the Greek labour market. In Greece the prevalence of agricultural employment (15%) and self-employment (44%), the small (in terms of number of employees) size of firms and enterprises, the limited and to a large extent involuntary nature of part-time work, and the fact that about a third of paid employees are employed in the broadly defined

public sector (Kanellopoulos et al, 2003) has resulted in a dualistic labour market. "On the one hand, there are those who are either low-skilled self-employed or employed in small firms, receive low wages, work in unstable and precarious conditions, often for very long hours, and face a highly competitive environment. On the other hand, there are those who are working either in the highly unionised public sector or in large private sector firms who receive relatively high wages and enjoy far better working conditions" (op cit., 2004).

In view of this segmentation, combined with the fact that Greece remains a low wage economy, it becomes evident that policies that centre on the quality of jobs are of equal importance to those that focus on the level of pay that they provide. This, however, requires the design of a regulatory framework that will, firstly, ensure that low-paid jobs are underpinned by an infrastructure of decency and fairness with guaranteed workplace rights, and, secondly, encourage the mobility of those workers who are involuntarily trapped in low wage/low quality employment into more desirable jobs.

FIGURE 1

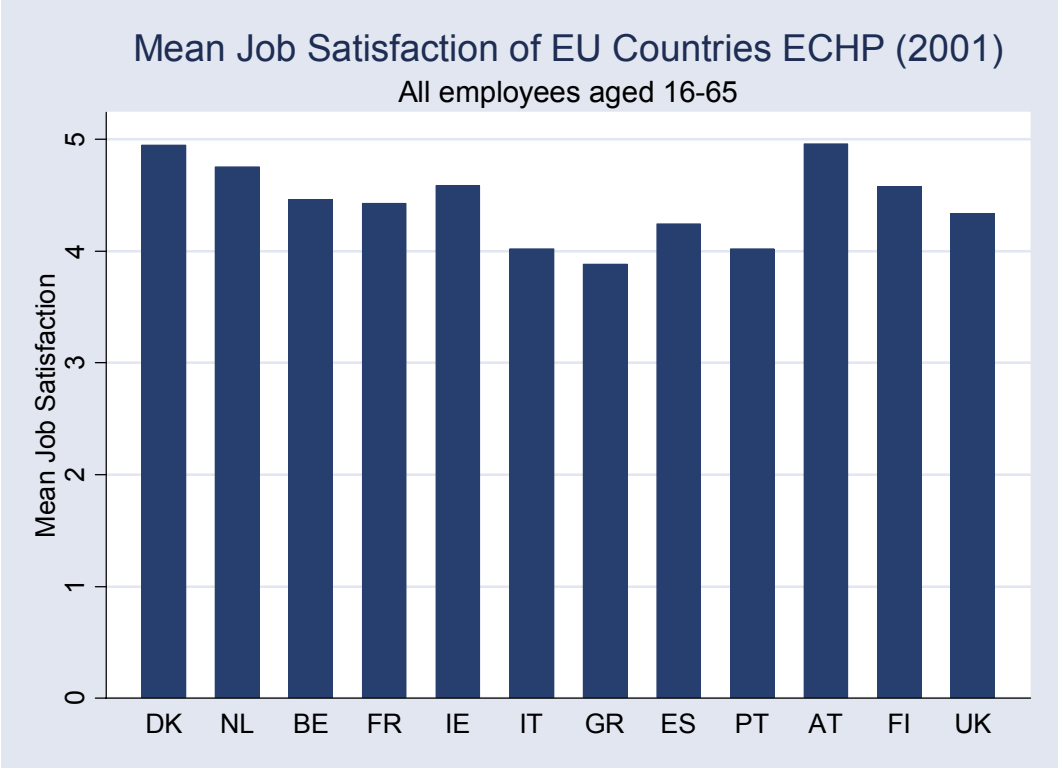

FIGURE 2

FIGURE 3
Mean job satisfaction of high and low-paid workers in six EU countries over time (1996-2001)

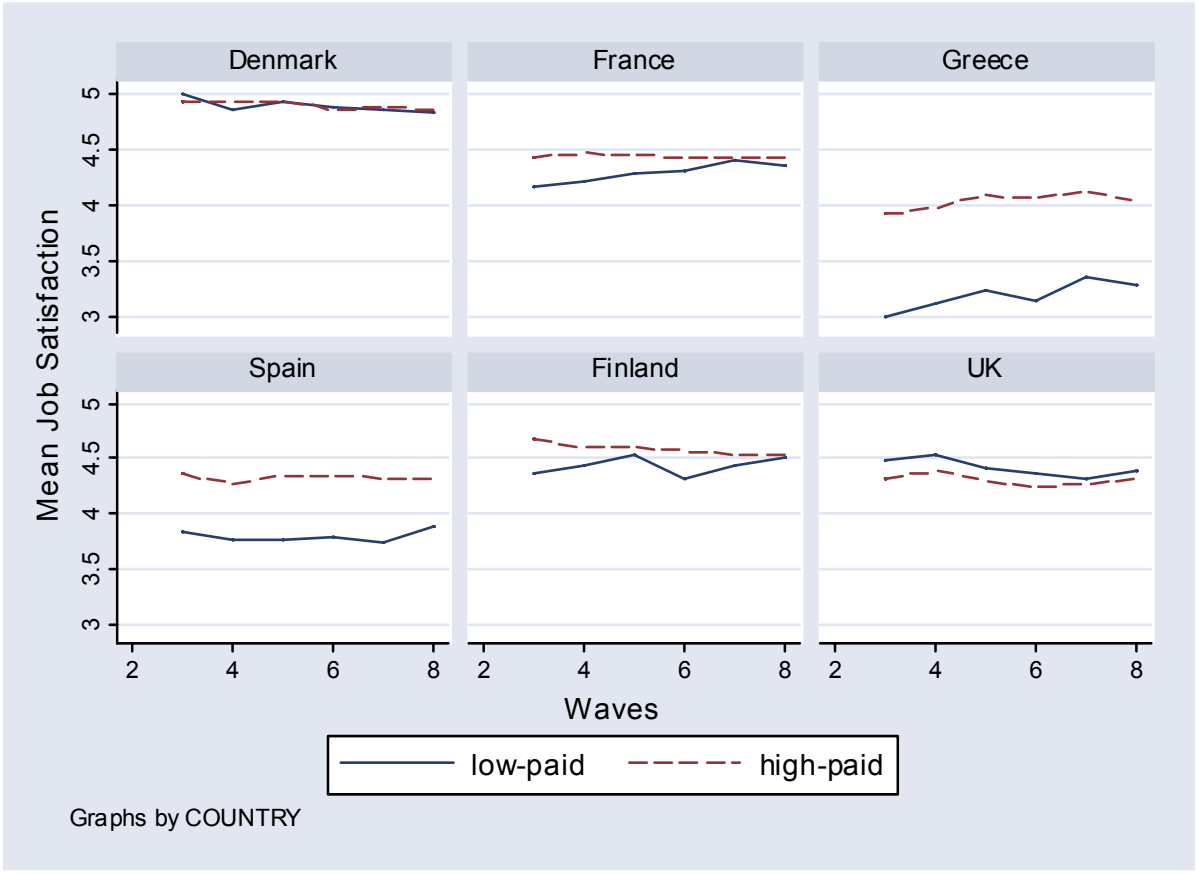

TABLE 1 Median wages, thresholds, and low wage workers in Greece, 1994-2001

Year	*Median*	*Threshold*	*Low-paid*
1994	1214.674	809.7827	17.7
1995	1269.095	846.0635	16.65
1996	1448.031	965.3543	16.8
1997	1630.435	1086.957	17.66
1998	1702.517	1135.011	16.62
1999	1760.87	1173.913	16.9
2000	1795.196	1196.797	18.46
2001	1835.228	1223.485	17.22
1994-2001	**1550.311**	**1033.541**	**17.24**

Notes: Amounts quoted in drachmas (not adjusted for inflation); The threshold refers to 2/3rds of the median of the gross hourly wage distribution; The last column indicates the proportion of employees whose wages are below the threshold;
Source: own calculations using ECHP UDB;

TABLE 2 Incidence, distribution and concentration of low-paid employment in Greece, 1994-2001

Category	***Incidence***[a]	***Distribution***[b]	***Concentration***[c]
Total	17.24	100	1
By sex			
Female	22.69	49.93	1.32
Male	13.9	50.07	0.81
By age			
16-25	47.37	40.41	2.75
26-35	16.35	29.56	0.95
36-45	9.06	15.02	0.53
46-55	8.97	10.47	0.52
56-65	14.41	4.55	0.84
By marital status			
Not married	30.6	61.31	1.77
Married	10.18	38.69	0.59
By working time status			
Part-time	19.08	5.9	1.11
Full-time	17.18	94.1	1.00
By sector			
Sector: public	3.66	8.22	0.21
Sector: private	25.55	91.78	1.48
By position in hierarchy			
Supervisory	2.29	0.84	0.13
Intermediate	4.15	1.8	0.24
Non-supervisory	18.99	97.35	1.10
By contractual arrangement			
Permanent	10.65	49.03	0.62
Fixed/short term	24.79	12.84	1.44
Casual/no contract	44.27	37.21	2.57
Other arrangement	26.73	0.92	1.55
By training incidence			
No training/education	21.93	76.91	1.27
Training/education	9.53	23.09	0.55
By educational attainment			
Tertiary	6.78	12.06	0.39
Second stage secondary	18.71	40.43	1.09
Below second stage secondary	24.67	47.51	1.43
By health			
Very good	17.72	72.76	1.03
Good	15.34	19.78	0.89
Fair	19.23	6.13	1.12
Bad	20.23	0.98	1.17
Very bad	36.11	0.36	2.09
By status last year			
Employed	14.14	73.09	0.82
Self-employed	16.75	0.90	0.97

Unemployed	45.10	12.48	2.61
Inactive	49.59	13.54	2.87
By industry			
Agriculture	44.44	3.81	2.58
Industry	18.69	32.09	1.08
Services	15.67	64.1	0.91
By occupation			
Legislators/managers	4.25	0.58	0.25
Professionals	3.41	3.38	0.20
Technicians/associate prof.	11.01	5.47	0.64
Clerks	10.63	11.32	0.62
Service and Sales	31.61	26.17	1.83
Skilled agriculture/fishery	38.06	2.74	2.21
Craft/trade	23.2	25.39	1.35
Plant/machine operators	13.47	7.83	0.78
Elementary	30.14	17.12	1.75

Notes: Low pay is defined as less than 2/3rds of median hourly earnings of all employees aged 16-65.

[a]Percentage of workers in each category who are low-paid.

[b]Percentage share of all low-paid employment in each category.

[c]Incidence of low-paid employment in each category divided by overall incidence of low-paid employment. A value greater than 1 indicates a higher than average risk of being low-paid, while a value less than 1 indicates a smaller probability.

Source: own calculations using ECHP UDB;

TABLE 3 Mean Job Satisfaction Scores of all Greek employees, 1994-2001

	Overall	*Pay*	*Security*	*Type work*	*Hours*	*Times*	*Conditions*	*Commuting*
Low-paid	**3.17(1.23)**	**2.60(1.05)**	**3.01(1.39)**	**3.44(1.31)**	**3.46(1.23)**	**3.57(1.24)**	**3.63(1.31)**	**4.02(1.36)**
High-paid	**4.02(1.17)**	**3.39(1.09)**	**4.25(1.44)**	**4.15(1.24)**	**4.14(1.14)**	**4.12(1.23)**	**3.98(1.29)**	**4.15(1.33)**
By sex								
Female	3.87(1.24)	3.21(1.14)	4.00(1.53)	4.08(1.27)	4.07(1.18)	4.12(1.24)	4.17(1.23)	4.13(1.35)
Male	3.88(1.22)	3.29(1.11)	4.06(1.50)	3.99(1.29)	3.99(1.19)	3.97(1.26)	3.77(1.33)	4.12(1.32)
By age								
16-25	3.55(1.21)	2.96(1.08)	3.36(1.38)	3.77(1.27)	3.77(1.20)	3.78(1.23)	3.88(1.28)	4.07(1.32)
26-35	3.81(1.19)	3.20(1.09)	3.88(1.47)	4.01(1.25)	3.95(1.18)	3.95(1.25)	3.93(1.29)	4.01(1.35)
36-45	4.03(1.21)	3.35(1.11)	4.31(1.47)	4.14(1.26)	4.13(1.18)	4.12(1.27)	3.96(1.30)	4.24(1.32)
46-55	4.00(1.22)	3.40(1.15)	4.34(1.49)	4.11(1.29)	4.16(1.15)	4.17(1.21)	3.92(1.30)	4.18(1.32)
56-65	3.83(1.33)	3.32(1.23)	4.10(1.63)	3.91(1.43)	4.03(1.23)	4.05(1.30)	3.80(1.45)	4.14(1.36)
By marital status								
Not married	3.70(1.24)	3.08(1.11)	3.67(1.49)	3.90(1.29)	3.87(1.19)	3.90(1.24)	3.91(1.30)	4.02(1.33)
Married	3.97(1.21)	3.35(1.11)	4.23(1.49)	4.09(1.27)	4.10(1.17)	4.09(1.26)	3.93(1.31)	4.18(1.33)
By working time status								
Part-time	3.37(1.51)	2.58(1.19)	3.37(1.79)	3.93(1.49)	4.05(1.42)	4.22(1.34)	4.00(1.36)	4.21(1.43)
Full-time	3.91(1.20)	3.29(1.11)	4.07(1.48)	4.03(1.27)	4.02(1.17)	4.01(1.25)	3.92(1.30)	4.12(1.33)
By industry								
Agriculture	2.89(1.27)	2.56(1.11)	2.64(1.47)	2.84(1.35)	3.20(1.21)	3.18(1.32)	2.91(1.41)	3.93(1.45)
Industry	3.57(1.20)	3.15(1.11)	3.57(1.45)	3.68(1.28)	3.89(1.15)	3.94(1.20)	3.47(1.32)	3.99(1.33)
Services	4.04(1.20)	3.33(1.12)	4.28(1.47)	4.21(1.23)	4.10(1.18)	4.09(1.26)	4.14(1.23)	4.19(1.33)
By sector								
Sector: public	4.38(1.10)	3.52(1.10)	4.91(1.30)	4.48(1.16)	4.44(1.09)	4.38(1.22)	4.19(1.25)	4.32(1.34)
Sector: private	3.58(1.19)	3.10(1.10)	3.50(1.37)	3.75(1.27)	3.77(1.17)	3.81(1.23)	3.76(1.31)	4.00(1.32)

By job status								
Supervisory	4.66(1.02)	3.93(1.14)	5.00(1.14)	4.75(1.10)	4.32(1.22)	4.37(1.27)	4.44(1.26)	4.37(1.40)
Intermediate	4.35(1.07)	3.53(1.13)	4.69(1.33)	4.48(1.14)	4.15(1.18)	4.19(1.30)	4.09(1.30)	4.20(1.40)
Non-supervisory	3.79(1.22)	3.19(1.10)	3.92(1.50)	3.93(1.28)	3.99(1.18)	3.98(1.24)	3.87(1.30)	4.10(1.32)
By contractual arrangement								
Permanent	4.10(1.10)	3.46(1.04)	4.50(1.26)	4.24(1.17)	4.17(1.09)	4.13(1.19)	4.07(1.22)	4.19(1.29)
Fixed/short term	3.50(1.15)	3.10(1.06)	2.74(1.23)	3.75(1.26)	3.78(1.12)	3.80(1.16)	3.77(1.29)	4.06(1.31)
Casual/no contract	2.88(1.08)	2.60(1.01)	2.44(1.08)	3.12(1.21)	3.33(1.14)	3.44(1.18)	3.27(1.28)	3.85(1.27)
Other arrangement	3.75(1.12)	3.39(1.11)	3.49(1.34)	3.85(1.36)	3.75(0.97)	3.86(1.12)	4.09(1.27)	4.34(1.26)
By training incidence								
No training/education	3.62(1.22)	3.13(1.09)	3.76(1.50)	3.72(1.28)	3.87(1.17)	3.88(1.23)	3.73(1.30)	4.07(1.30)
Training/education	4.27(1.12)	3.46(1.14)	4.44(1.42)	4.46(1.15)	4.24(1.17)	4.23(1.26)	4.20(1.25)	4.20(1.38)
By educational attainment								
Tertiary	4.35(1.13)	3.53(1.14)	4.56(1.40)	4.61(1.11)	4.33(1.14)	4.40(1.19)	4.34(1.17)	4.20(1.37)
Second stage secondary	3.89(1.15)	3.29(1.07)	4.05(1.45)	4.03(1.21)	4.01(1.15)	3.97(1.24)	4.02(1.25)	4.13(1.30)
Below second stage secondary	3.43(1.22)	2.97(1.09)	3.53(1.50)	3.48(1.27)	3.75(1.19)	3.74(1.24)	3.42(1.32)	4.04(1.33)
By health								
Very good	3.94(1.21)	3.32(1.11)	4.06(1.48)	4.08(1.26)	4.05(1.17)	4.04(1.24)	3.99(1.28)	4.16(1.31)
Good	3.77(1.19)	3.15(1.10)	4.00(1.53)	3.94(1.28)	3.94(1.19)	3.97(1.26)	3.79(1.30)	4.03(1.35)
Fair	3.61(1.37)	2.93(1.24)	3.84(1.71)	3.71(1.43)	4.01(1.26)	4.01(1.35)	3.61(1.48)	4.05(1.49)
Bad	3.50(1.51)	2.79(1.24)	3.90(1.87)	3.59(1.53)	4.09(1.40)	4.11(1.37)	3.57(1.48)	4.13(1.56)
Very bad	3.66(1.70)	2.88(1.23)	4.02(1.85)	3.97(1.46)	4.02(1.64)	4.00(1.80)	3.27(1.76)	4.30(1.67)

Notes: Standard deviations in parentheses.
Source: Own calculations based on ECHP UDB (1994-2001) data

TABLE 4
Estimates of low pay status and of overall job satisfaction in Greece, 1995-2001

	(1) Lowpay	(2) Marginal effect	(3) Overall JS
Lowpay			-0.153
			(0.069)**
Personal			
Male	-0.527	-0.058	-0.071
	(0.054)***		(0.023)***
Age	-0.139	-0.013	-0.019
	(0.015)**		(0.007)**
Agesq	0.001	0.0001	0.0002
	(0.0001)***		(0.000)**
Married	-0.264	-0.028	-0.026
	(0.059)***		(0.026)
Child < 12yrs	-0.183	-0.017	0.026
	(0.054)***		(0.020)
Unemployed 5yrs	0.067	0.006	-0.017
	(0.048)		(0.022)
Work-related			
Ln(pay)			0.436
			(0.031)***
Tenure	-0.037	-0.003	0.006
	(0.014)**		(0.005)
Tenuresq	0.0002	0.000	-0.0001
	(0.0007)		(0.0002)
Ln(Total hours)	2.870	0.284	0.492
	(0.162)***		(0.070)***
Mean(hours)	-1.132	-0112	-0.024
	(0.188)***		(0.078)
Full-time	-0.906	-0.168	0.101
	(0.120)***		(0.047)**
Private	-0.626	0.056	-0.205
	(0.100)***		(0.029)***
Absenteeism	-0.008	0.0008	-0.006
	(0.006)		(0.003)**
Twojobs	0.225	0.026	0.143
	(0.101)**		(0.041)***
Duties			
Intermediate	0.131	0.014	-0.120
	(0.191)		(0.044)***
Non-supervisory	0.586	0.040	-0.181
	(0.165)***		(0.038)***
Contract			
Fix/short term	0.275	0.033	-0.270
	(0.062)***		(0.033)***
Casual work	0.541	0.074	-0.382
	(0.052)***		(0.028)***
Other	0.209	0.024	0.006
	(0.216)		(0.077)
Human Capital			
Training	-0.169	-0.016	0.094
	(0.051)***		(0.018)***
Overqualified	0.033	0.003	-0.163
	(0.040)		(0.016)***
Third level	-0.375	-0.033	0.079

	(0.079)***		(0.032)**
2nd secondary	-0.136	-0.013	0.069
	(0.055)**		(0.025)***
Health			
Good	0.015	-0.001	-0.154
	(0.045)		(0.019)***
Fair	0.149	-0.016	-0.082
	(0.088)*		(0.041)**
Bad/Very Bad	0.149	-0.050	-0.025
	(0.088)*		(0.100)
Status last year			
Self-employed	-0.009	-0.000	-0.055
	(0.155)		(0.070)
Unemployed	0.318	-0.039	-0.045
	(0.066)***		(0.036)
Inactive	0.326	0.041	0.088
	(0.072)***		(0.041)**
Region			
Northern GR	0.311	0.034	-0.073
	(0.057)***		(0.023)***
Central GR	0.133	0.014	-0.070
	(0.064)**		(0.026)***
Aegean islands	-0.119	0.012	-0.003
	(0.078)		(0.032)
Identifying variables			
2 rooms pp	-0.305	-0.025	
	(0.064)***		
> 3 rooms pp	-0.369	-0.027	
	(0.163)**		
< 2 good features	0.469	0.067	
	(0.156)***		
3 good features	0.388	0.051	
	(0.090)***		
4 good features	0.162	0.017	
	(0.046)***		
Constant	-3.559		-4.44
	(0.669)***		(0.384)***
N	15521		15521
Wald test (d.f)	2054.19(63)***		4183.94(60)***
Log-likelihood	-4227.9534		-22838.973
χ^2 (5) (H_o: **Z** = 0)	55		

Notes: Standard errors in parentheses: robust to arbitrary heteroscedasticity and the repeat sampling of individuals over time; * significant at 10%; ** significant at 5%; *** significant at 1%; The ordinal dependent variable overall job satisfaction has been transformed according to the POLS approach; All regressions include controls for occupation (9), industry (13) and time (7); Column 1 includes probit estimates of low pay status. Column 2 includes the marginal effect of an independent variable on the probability of low pay status, evaluated at the means of the remaining explanatory variables. Column 3 includes ML "treatment effect" estimates of the job satisfaction of Greek employees; *Reference groups*: duties: supervisory; contract: permanent; education: below second stage; health: very good; status last year: employed; region: Attica; rooms pp: 1 room pp; good features: more than 5 good features; F test statistic for the joint significance of the identifying restrictions in an overall job satisfaction regression: F (5, 4098) = 1.27 - p-value: 0.274;

TABLE 5 Estimates of effect of low pay status on facets of job satisfaction in Greece, 1995-2001

	(1)Pay	(2)Security	(3)Type work	(4)Hours	(5)Conditions	(5)Times	(6)Commuting
Lowpay	-0.213	0.057	-0.126	-0.107	-0.198	-0.040	0.228
	(0.094)**	(0.076)	(0.061)**	(0.064)*	(0.091)**	(0.082)	(0.095)**
N	15528	15528	15528	15528	15528	15528	15528
Wald test (60)	2822.77***	8649.30***	3624.45***	2559.66***	2118.82***	2224.61***	625.17***
Log-likelihood	-23277.018	-20723.811	-23076.593	-23833.425	-23985.962	-24172.733	-25033.995

Notes: Standard errors in parentheses: robust to arbitrary heteroscedasticity and the repeat sampling of individuals over time; * significant at 10%; ** significant at 5%; *** significant at 1%; Results for the remaining explanatory variables are available from the authors upon request; All columns include ML "treatment effect" estimates, where the first step is a probit regression of the treatment lowpay dummy on the regressors of the underlying regression model and the chosen selection variables; F-test statistics for the joint significance of the selection variables in each job satisfaction regression: *Pay* - F(5, 4098) = 0.70; *Security* - F(5, 4234) = 1.71; *Type Work* – F(5, 15462) = 1.18; *Hours* - F(5, 4098) = 0.67; *Times* - F(5, 4098) = 0.55; *Conditions* – F(5, 4098) = 2.11; *Commuting* - F(5, 4098) = 0.32.

Appendix: Description of variables

Variable	Description
Job Satisfaction scores (1 = 'not satisfied', 6 = 'fully satisfied')	
Overall Job Satisfaction	Respondent satisfaction rating with work or main activity
Job Satisfaction: facets	Respondent satisfaction rating of facet *i* of present job (*i* = earnings, job security, type of work, number of working hours, working times, work conditions/environment, distance to work/commuting)
Identifying variables	
1 room pp	1, if individual lives in household with 1 room per person (not counting kitchen, bathroom and toilets), 0 otherwise (omitted)
2 rooms pp	1, if individual lives in household with 2 rooms per person (not counting kitchen, bathroom and toilets), 0 otherwise
> 3 rooms pp	1, if individual lives in household with more than 3 rooms per person (not counting kitchen, bathroom and toilets), 0 otherwise
< 2 good features	1, if accommodation has less than two good features, 0 otherwise
3 good features	1, if accommodation has 3 good features, 0 otherwise
4 good features	1, if accommodation has 4 good features, 0 otherwise
> 5 good features	1, if accommodation has more than 5 good features, 0 otherwise (omitted)
Job and Personal Characteristics	
Lowpay	*1, if individual is low-paid, defined as having wages less than 2/3rds of median current gross hourly wages, 0 otherwise*
Lnpay	natural log of gross hourly wage of main job (including overtime)
Age	age of respondent at date of interview
Agesq	age squared
Tenure	job tenure at date of interview
Married	1, if individual is married, 0 otherwise
Male	1, if gender is male, 0 otherwise
Mean hours	Average number of (log) total hours that the respondent worked per week (in main plus additional jobs, including paid overtime) over the years of the survey
Ln(Hours)	Natural log of total number of hours worked per week (in main plus additional jobs, including paid overtime)
Child < 12yrs	1, if household has 1 or more children under 12, 0 otherwise
Unemployed 5yrs	1, if individual has been unemployed during 5 years before joining the survey, 0 otherwise
Full-time	1, if main job is full-time, 0 otherwise
Private	1, if current job is in the private sector, 0 otherwise
Absenteeism	Days absent from work cause of illness or other reason during last 4 working weeks, not counting holiday weeks
Two jobs	1, if respondent has more than one job, 0 otherwise
Human Capital	
Training	1, if individual had formal training or education that gave skills needed for present type of work, 0 otherwise
Overqualified	1, if individual feels has skills or qualifications to do more demanding job than the one has now, 0 otherwise
Below second stage secondary	1, if highest level of general or higher education completed is less than second stage of secondary education, 0 otherwise (omitted)
Second stage secondary	1, if highest level of general or higher education completed is second stage of secondary education, 0 otherwise
Third level	1, if highest level of general or higher education completed is recognised third level education, 0 otherwise
Duties	
Supervisory	1, if job status in current job is supervisory (omitted), 0 otherwise
Intermediate	1, if job status in current job is intermediate, 0 otherwise
Non-supervisory	1, if job status in current job is non-supervisory, 0 otherwise
Contract	
Permanent	1, if employment contract in main job is permanent, 0 otherwise (omitted)
Fixed/short term	1, if employment contract in main job is fixed term or short-term, 0

	otherwise
Casual work	1, if employment contract in main job is casual work with no contract, 0 otherwise
Other	1, if employment contract in main job is other arrangement, 0 otherwise
Health	
Health: very good	1, if health in general is very good, 0 otherwise (omitted)
Health: good	1, if health in general is good, 0 otherwise
Health: fair	1, if health in general is fair, 0 otherwise
Health: poor	1, if health in general is poor, 0 otherwise
Health: very poor	1, if health in general is very poor, 0 otherwise
Status last year	
Employed	1, if most frequent activity last year was employment, 0 otherwise (omitted)
Self-employed	1, if most frequent activity last year was self-employment, 0 otherwise
Unemployed	1, if most frequent activity last year was unemployment, 0 otherwise
Inactivity	1, if most frequent activity last year was inactivity, 0 otherwise
Region	
Attica	1, if region in which the household is situated is Attica, 0 otherwise (omitted)
Northern GR	1, if region in which the household is situated is Northern Greece, 0 otherwise
Central GR	1, if region in which the household is situated is Central Greece, 0 otherwise
Aegean Islands, Crete	1, if region in which the household is situated are the Aegean Islands or Crete, 0 otherwise
Other controls	
Industry	a set of 13 dummies for one-digit industry, taking the value 1 if the respondent's job belongs to the corresponding industry classification, 0 otherwise. The one-digit industries include: Agriculture; Mining; Manufacturing; Construction; Retail and Trade; Hotels and Restaurants; Transport and Communication; Financial Services; Real Estate; Public Administration; Education; Health, social services; other (omitted: Agriculture)
Occupation	a set of 9 dummies for one-digit occupation, taking the value 1 if the respondent's job belongs to the corresponding occupational classification, 0 otherwise. The one-digit occupations include: Legislators, Senior officials and managers; Professionals; Technicians and associate professionals; Clerks; Service and Shop and market sales workers; Skilled agricultural and fishery workers; Craft and related trades workers; Plant and machine operators and assemblers; Elementary occupations (omitted: Elementary occupations)
Year	a set of seven dummies taking the value 1 for observations that belong to the corresponding wave of the ECHP, 0 otherwise. Years of sample include: 1995, 1996, 1997, 1998, 1999, 2001 and 2001 (omitted category: 1995)

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Endnotes

[1] These indicators cover 10 main elements of quality within two broad categories – the characteristics of the job itself, and the work and wider labour market context. They include: intrinsic job quality; skills, lifelong learning and career development; gender equality; health and safety at work; flexibility and security; inclusion and access to the labour market; work organization and work-life balance; social dialogue and worker involvement; diversity and non-discrimination; and overall work performance.

[2] Indeed, the strength of this approach seems to lie in the fact that subjective assessments of job satisfaction have been found to be strong predictors of worker behaviour, such as quits, absenteeism, and worker productivity (Freeman, 1978; Clegg, 1983).

[3] Also see Pouliakas and Theodossiou (2004) and McCausland, Pouliakas, and Theodossiou (2005) for a relative comparison of job satisfaction among workers receiving performance-related pay (PRP) and those on alternative compensation schemes.

[4] In this case researchers assume a utility function that depends not only on absolute income, but also on relative income i.e. $U = u(y, y^*, h, i, j)$, where y^* is the reference level of income against which the individual compares his/her own earnings. The idea is that utility either declines with an increase in comparison income when this gives rise to feelings of relative deprivation, or increases when higher wages of co-workers are regarded as a signal of a higher potential wage for the individual himself (what is known as the 'tunnel effect' - see Panos, Theodossiou and Nicolaou (2004) for an empirical investigation of these two hypotheses).

Nevertheless, contention exists among economists as to what is exactly the comparison benchmark. While Clark and Oswald (1996) have defined it as the econometrically predicted 'going rate' for the job, that is the income of comparable employees of given characteristics, Clark (1999) and Grund and Sliwka (2003) have recently argued that it is the wage of the prior period that serves as reference. Due to the limited availability of data in the ECHP, however, it has not been possible to incorporate any of these relative wage effects in the econometric analysis below.

[5] Though difficult to test, several hypotheses for these facts have been put forward. For example, it has been argued that more educated workers are less satisfied since education raises aspiration targets. The lower ceteris paribus satisfaction of union workers has been attributed to voice mechanisms that allow workers to express their dissatisfaction, or to the fact that dissatisfaction is used by unions as a means to increase demands.

[6] This section is heavily based on the literature review for Greece (Annex 3) that was undertaken as part of the EPICURUS project by Vasileiou, E. at the University of Macedonia.

[7] In the first wave of the ECHP (1994) the sample comprised of 60,500 representative households and 130,000 interviewees aged 16 years or over, from 12 Member States. From 1995 onwards Austria was also included, and from 1996 and 1997 Finland and Sweden, respectively, joined the survey as well.

[8] The decision to pool the eight years of data was made in order to maximise the number of observations in the sample, and to control for certain unobservable effects that change over time but are constant across individuals (such as inflation and other political and economic disturbances within the country). This is achieved via the inclusion of yearly dummy variables in the econometric analysis.

[9] Given that the presence of part-time workers in the sample introduces the additional complexity of disentangling differences in time worked from differences in wage rates, hourly earnings were constructed in order to neutralize the effect of diverse working hours among full-time and part-time workers.

[10] Such a relative measure is commonly used in the literature, since an absolute metric poses difficult conceptual and methodological problems for making international comparisons of the incidence of low pay (OECD, 1996, p. 69).

[11] It should be borne in mind, though, that in Greece there is a large number of atypical low-paid workers who are employed in the parallel economy, and who therefore do not form part of the official statistics. Thus, the 17 percent figure should be seen as a minimum estimate (Ioakimoglou and Soumeli, 2002). Of course, it should be pointed out that low-wage employees do not necessarily live in low-income households. In Greece, especially, "a person's likelihood of being poor depends to a large extent on the income of his (closely knit) family and not exclusively on his individual income" (ibid., 2002). Apart from the fact that workers' households often have two wages, as well as the continued support by parents and the extended family, non-labour income (such as property income) is also common.

[12] Specifically, among the 5.34 percent of employees who work in a part-time job in our sample, almost 47 percent declare that they do it because they were unable to find other work, while only 7.5 percent preferred this type of working arrangement. Furthermore, given that "part-time employment in Greece

is directly interwoven with low pay, low-skilled jobs, limited prospects of career development, low social benefits and partial insurance coverage which also entails low pension rights" (Ioakimoglou and Soumeli, 2002), it is understandable why such workers report lower job satisfaction ratings.

[13] This is consistent with Papapetrou's (2003, p. 45-7) finding that female and male wages in the Greek private sector are on average 37 and 34 percent less than in the public sector, respectively. The high level of security satisfaction expressed by Greek public sector workers can also be explained by the element of permanency in such jobs.

[14] A more detailed account of the issues that are discussed here can be found in Westergaard-Nielsen et al. (2004), p. 276-282.

[15] Ultimately, given that the focus of interest is on the relative contribution of 'objective' characteristics on well-being i.e. on the *trade-off* ratio between two variables, so as to maintain well-being constant, the econometric method that is used becomes irrelevant. This is the case since the trade-off ratios for either OLS, OP and POLS estimates are the same, apart from statistical deviations, which tend to become small in large samples (Westergaard-Nielsen et al., 2004, p. 280).

[16] Given that data for the type of contractual arrangement was not available for wave 1 in Greece, the regression output that is reported in this paper has been estimated on the basis of the 1995-2001 period.

[17] This might seem surprising, given that Papapetrou (2004) and others have found substantial and significant male-female earnings differentials across occupations and countries, while there is also evidence of discrimination against women in areas such as hiring/firing and promotion. Nevertheless, the fact that women consistently report higher job satisfaction scores than men is well established in the literature. Attempts to explain this paradox have usually focused on the difference in aspirations between the two genders, with women supposedly expecting less from their jobs due to more frequent career breaks and previous discriminatory behaviour in the workplace. The narrower gap between their current working state and what women expect might therefore explain their greater happiness (Clark, 1997).