



American Journal of Economics and Business Innovation (AJEBI)

ISSN: 2831-5588 (ONLINE), 2832-4862 (PRINT)

VOLUME 4 ISSUE 1 (2025)

**PUBLISHED BY
E-PALLI PUBLISHERS, DELAWARE, USA**

Informal Employment in Morocco and the Modalities of Employment Flexibility: Econometric Study to Reveal Links That May Exist with Reference to the Cumulative Postulate

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Article Information

Received: November 19, 2024

Accepted: December 26, 2024

Published: March 15, 2025

Keywords

Cumulative Postulate, Employment Flexibility, Informal Employment, Morocco

ABSTRACT

This study explores the relationship between informal employment and employment flexibility in Morocco. Informal employment, which accounts for a large proportion of the labor market, is characterized by precarious conditions, lack of job security and absence of social rights. The study focuses on how employment flexibility, which allows companies to adapt contracts and working hours to suit needs, contributes to the expansion of informal employment. It is based on the “cumulative postulate”, which proposes that the accumulation of regulatory and economic changes affects labor informality. Using an econometric approach, the study examines the factors influencing the prevalence of informal employment and shows that increased labor market flexibility, notably through temporary contracts and variable working hours, favors the emergence of informality. This relationship is particularly marked in sectors where labor regulations are less strict, giving companies greater latitude to adjust their workforce without respecting the constraints of formal contracts. The analysis shows that political reforms and economic variations also play a role in this dynamic. The results of the study suggest that to reduce informality, Moroccan authorities should strengthen labor regulations and encourage job formalization while taking into account companies’ need for flexibility. The article concludes that the balance between labor flexibility and the protection of workers’ rights is crucial for sustainable economic development and a fairer labor market while underlining the importance of policies that frame informality to ensure a better quality of life and work for employees.

INTRODUCTION

In a previous work, we focused on the main socio-economic characteristics of informal workers. In this work, we will focus on the cumulative hypothesis, where wages and working conditions are considered unfavorable for temporary employees, which encompasses several categories of employees, including those in the traditional (informal) economy. We will carry out a study of informal employment in relation to the various forms of flexibility.

We used a database which will be described in detail below. We questioned our statistical units on the practice or not of internal quantitative flexibility, functional flexibility and salary flexibility taken individually. The answer to each of these questions takes two values (yes or no), giving us 3 dichotomous endogenous variables (yes=1; no=0) to model against a single exogenous variable (existence of contract). The technique used is probit logistic regression. Our aim is to measure the impact of the existence of a contract (being under contract or without a contract) on the possibility of practicing or enjoying each of the forms of flexibility, on the one hand, and to see the probability of accumulating several forms of flexibility at the same time by informal employees.

LITERATURE REVIEW

Possible Links between Informal Employment and Flexibility in the Labour Market

Informal employment is part of temporary employment and constitutes what we call external quantitative flexibility. We will focus on its links with other forms of flexibility. Flexibility seeks to adapt working conditions to variations in the technical or organizational environment. It also concerns employment situations, such as the framework, rules, standards and status within which employees carry out their activities. A number of classification methods can be adopted. In what follows, we will analyze informal employment in relation to other forms of flexibility. These are internal quantitative flexibility (temporal flexibility), internal qualitative flexibility (functional flexibility) and external qualitative and quantitative flexibility.

Internal quantitative flexibility emphasizes the possibility of varying employees’ working hours (Vielle & Walthery, 2003). This modality enables the company to adapt to a number of determining factors, constituting signals that the firm must take into account if it is to remain on the market. These signals concern prices, the level of competition, market structure and so on. Indeed, temporal flexibility enables the company to modulate

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working hours while maintaining the same workforce (Regini, 2000). This arrangement of working hours, like the annualization of working hours, enables entrepreneurs to adjust to the vagaries of demand. This form of flexibility on the labor market could reduce recourse to informal work by offering itself as a substitute for this employment modality. On the other hand, this variability of working hours is detrimental to the security of temporary employees affected by this type of arrangement and by other forms of personnel management. According to Everaere (1999), if temporary employees sought to secure their jobs, they might adopt, for a time, a strategy of obedience and submission, accepting extremely flexible, awkward and unpredictable working hours. Informal employment and temporal flexibility could then be negatively associated if this combination concerns branches of activity that do not require the implementation of this flexibility modality. Internal qualitative flexibility, on the other hand, is linked to what is known as functional flexibility. This is an internal strategy adopted by the company to redeploy tasks (Keller & Seifert, 2004). Through this form of flexibility, the firm seeks to adapt the skills and qualifications at its disposal to production constraints (Regini, 2000). This modality enables work to be rotated and enriched while offering the possibility of combining the company's productivity and quality requirements with workers' needs by allowing them to develop and vary their work.

Functional flexibility could be associated, in various ways, with informal employment. Informal employees would perhaps allow greater internal qualitative flexibility than open-ended workers, consolidating the idea of the divide between various segments of the workforce. In this sense, the cumulative situation postulate of Goudswaard and Nanteuil (2000) assumes that working and employment conditions are less favorable for temporary employees, which could lead to an unfavorable situation in terms of job security for this category of the workforce. On the contrary, under the pre-recruitment hypothesis, functional flexibility would enable temporary employees to improve their productive capacity and acquire the skills and know-how likely to increase the security of their career trajectory.

Qualitative external flexibility, on the other hand, is associated with the production process and the outsourcing of tasks. Quantitative external flexibility, on the other hand, is linked to employment status and the allocation of workers in terms of job volume. In order to adapt to fluctuations in demand or to cope with changing business cycles, firms resort to staff variation, taking advantage of the possibilities offered by legislation, either by making redundancies or by hiring temporary, fixed-term, or informal workers.

This flexibilization is achieved through a dual movement of legal and physical externalization of workers in relation to the firm. The legal externalization is represented by the case where the firm employing an employee ceases to be the employer. The work tasks would then be performed

by a third party, regarded as a skills provider, as in the case of temporary employment agencies. This approach minimizes the company's transaction costs. The company also resorts to "portage salarial", an intermediary solution between temping and self-employment. This involves a freelance employee bound to the company by an assignment contract, with greater autonomy, or simply recourse to an informal worker. These temporary employment agencies essentially provide after-sales service (Everaere, 1999). Playing up competition between skills suppliers, including informal workers, could play the role of a pre-recruitment mode towards a temporary employment modality.

The links that can be established between temporary employment and other forms of flexibility could therefore be considered from certain angles. Referring to the cumulative situation postulate of Goudswaard and Nanteuil (2000), working, temporal and employment conditions are less favourable for informal workers. On the other hand, informal employment could represent a tool for gradually integrating employees into a long-term strategy of organizational flexibility.

MATERIALS AND METHODS

Estimating the Econometric Model of Informal Employment Based on Socio-Economic Determinants

As access to databases providing the information, we need here is complicated, we constructed our own data. To do this, we carried out a field survey. We interviewed 549 people in order to analyze informal and time-limited employment from a flexicurity perspective.

Our survey took place in both urban and rural areas, as described above. We approached workers by asking them to take some of their time and fill in a pre-established questionnaire with them. In order to clarify the determinants of informal and fixed-term employment, as well as their relationship with forms of flexicurity, the survey gathered information on 549 individuals from the Souss-Massa region of Morocco working in or around the cities of Taroudant and Agadir. Our aim was to question these people on three blocks of information: their socio-economic and professional characteristics and their perception of job security and flexibility. The sampling principle is probabilistic random selection. This technique makes it possible to calculate the precision of the results scientifically, but also to interview individuals who are difficult to reach, thus ensuring their representation in the sample. Interviews were conducted face-to-face with respondents at their place of work and in Arabic (dialectal).

Of the 549 individuals in our database, 453 have a written contract (325 on fixed-term contracts and 128 on permanent contracts) and 96 work without a contract in informal production units. The former work for companies in the formal sector. The sectors of activity are varied (food processing, agriculture, construction, call centers, accommodation and catering). Informal workers, on the other hand, are concentrated in two other

sectors: leather crafts and wholesale trade. We collected 16 explanatory variables: age, marital status, number of children, gender, diploma, type of contract, sector of activity, wage, employability security, combinatorial security, job security, income security, internal quantitative flexibility, functional flexibility, external quantitative flexibility and wage flexibility. In this paper, we will confine ourselves to measuring the impact of socio-economic variables on the exercise of informal employment, exploiting the first block of information collected (5 variables only). The study of informal employment itself, in relation to the various forms of flexibility and security, will be the subject of later work. We then explain in greater detail these variables and their anticipated role within the model we are using for estimation.

We present below our socio-demographic (a) and occupational (b) variables, which will be used in our first model, based on the criteria of informal employment. This will enable us to compare the characteristics of Moroccan populations who hold a formal job with a written employment contract (453 people out of the 549 in our sample) or an informal job (96 people in our database).

RESULTS AND DISCUSSION

Socio-Demographic Characteristics of the Sample

Age is an important explanatory factor, since the youngest workers are those who are most active in the informal sector. Indeed, the average age of workers without a contract is less than 28, compared to more than 29 for those with a contract (Table 1).

Table 1: Population distribution by contract type and age

	N	Minimum	Maximum	Mean	Standard deviation
Age (years) of contract workers	453	18	46	29.49	6,774
Age (years) of workers without contract	96	16	47	27.99	8,002

Source : author's data

The Direction of Statistics (2000) supports this view, stating that employees in the traditional sector are relatively young: 67.3% are aged between 18 and 34, compared with only 45.3% of their counterparts in the formal sector. This predominance of young people could be explained essentially by the heterogeneity of occupation levels in the traditional economy. The traditional economy employs a large number of young people who work in precarious conditions, as they are not fully integrated into working life. These young people take on informal jobs simply to acquire capital and a certain amount of professional experience, before setting up their own business later

on. We also note the presence of salaried children under the age of 18 in our sample, working in the traditional economy. This also corroborates the observations of the Direction de la Statistique (2000), which states that 12.3% of employees in the informal sector are children. This phenomenon can be explained by Morocco's socio-cultural context and poverty, which force children to work to satisfy their needs and those of their families. In addition to age, marital status is another key discriminating factor, since single people make up 56.3% of non-contracted workers, compared with 51.2% of contracted employees.

Table 2: Distribution of formal and informal employment populations by marital status

			Marital Status				Count
			Single	Divorced	Married	Widow (er)	
Contract type	En contrat	Count	232	21	196	4	453
		% in Contract Type	51,2%	4,6%	43,3%	0,9%	100,0%
	Sans contrat	Count	54	1	41	0	96
		% in Contract Type	56,3%	1,0%	42,7%	0,0%	100,0%
Count		Count	286	22	237	4	549
		% in Contract Type	52,1%	4,0%	43,2%	0,7%	100,0%

Source : author's data

Married people, on the other hand, account for 42.7% of employees without a contract, compared with 43.3% of contract employees. Divorcees, meanwhile, account for 1% of employees without a contract, versus 4.6% for contract workers. These results are consolidated by the survey carried out by the HCP (2014). Indeed, 59.5% of employees in Morocco's traditional economy are single, 38.5% are married, 1.6% are divorced and widowers account for 4%. The explanation for these figures can be found in the work of Jensen and Smith (1990). They argue that unemployment increases the risk of separation,

as married people are forced to seek stability in their employment, rather than become involved in the highly unstable informal sector. Related to the previous variable, the number of children is an explanatory factor for belonging to one of the two employment categories; even if the difference does not seem huge in our sample. Having dependent children slightly increases the probability of working in the formal sector, under contract: thus, we observe that 37.5% of employees without a contract have at least one child, whereas this rate rises to 38.4% for employees under contract.

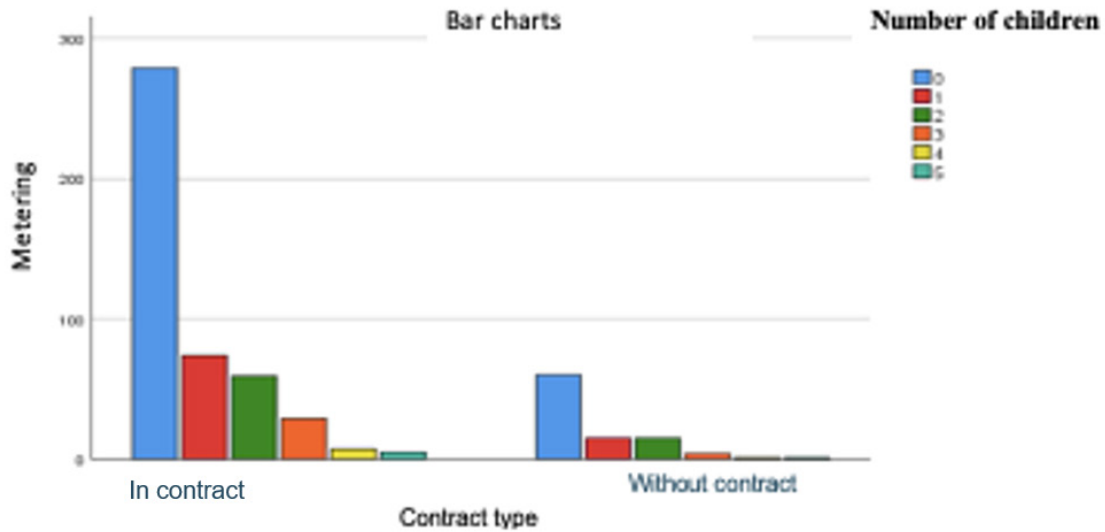


Figure 1: Breakdown of contract and non-contract employees by number of children
Source: author's data

Similarly, Insee (2003) has shown that job instability forces employees in both the formal and informal sectors to postpone their family plans (Insee, 2003). The description of the socio-demographic variables in our first regression revealed no surprises. We now turn to the description of the jobs themselves.

Professional Characteristics of the Sample

Non-contractual employees are less highly educated than formal sector employees. Indeed, 94.8% of employees in the traditional economy have no diploma, while the remaining 5.2% have an average level of education. On the other hand, 57.8% of “formal” employees (i.e., those

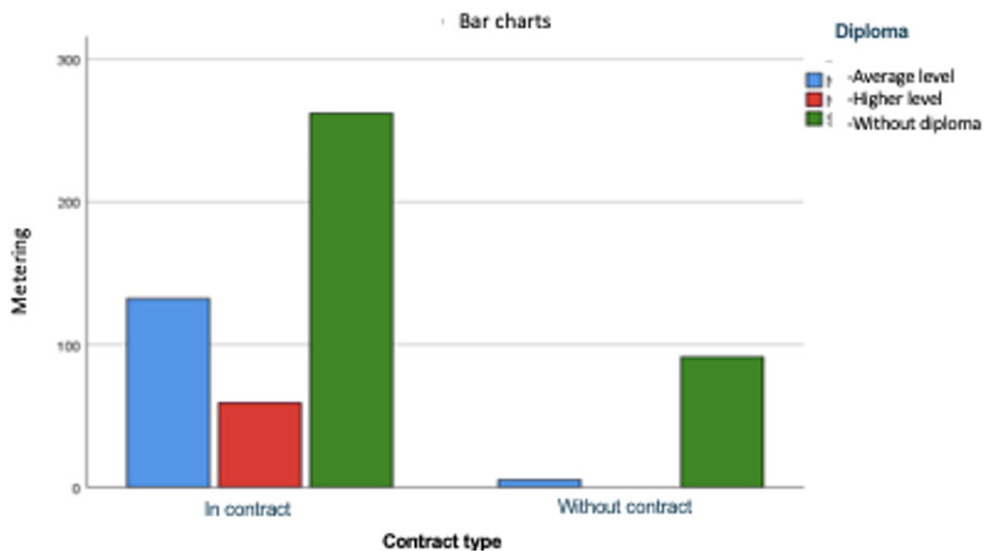


Figure 2: Sample distribution by level of qualification
Source: compiled and analysis by Autor

working in the formal sector) have no diploma at all; 29.1% have an average level of education and only 13% have a higher diploma. The distribution of our sample of informal workers according to diploma is therefore entirely in line with the HCP (2014) figures. Indeed, in 2014, this latter source

showed that 57.6% of workers in the informal sector had no diploma at all, compared with 34.2% who had attained the average level, and only 3.1% who had a higher-level diploma. Furthermore, in line with our forecasts, wages are higher in formal jobs than in informal ones (Education International Research, 2020).

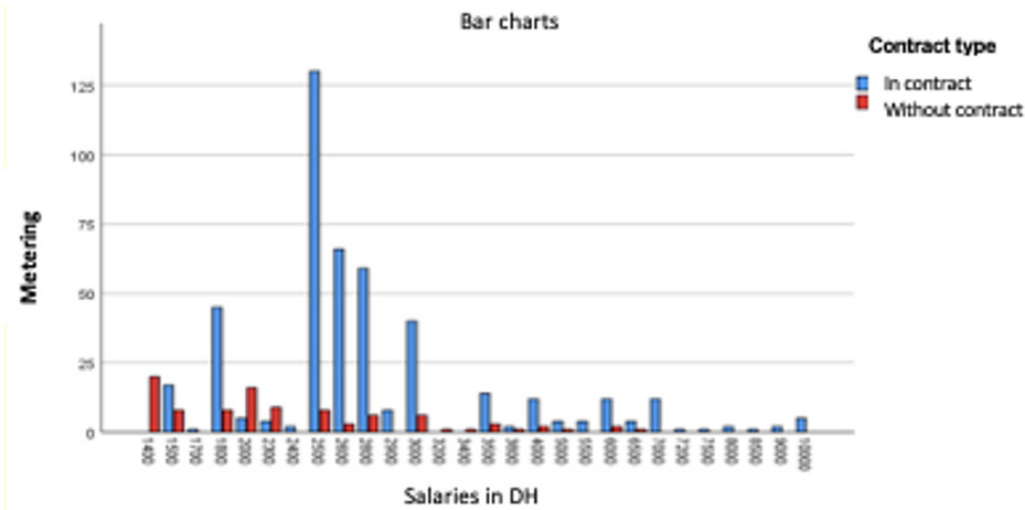


Figure 3: Distribution of the population in informal and formal employment by wage variable
Source: author's data

Most of the workers in our sample are paid around the legal minimum wage. However, this does not mean that there are no points of divergence between informal and formal employment. Indeed, the majority of formal employees earn wages well in excess of the minimum wage. This is confirmed by the average wage in the formal sector, which exceeds 3030 DHS. The traditional economy, on the other hand, offers wages well below the minimum wage, to such an extent that the average pay received by informal workers does not exceed 2314 DHS. We also note that the

dispersion of wages in the formal sector is greater than in the informal sector. This difference in dispersion can be explained by the great homogeneity that characterizes the category of informal workers, as opposed to the relative heterogeneity in the category of formal employees. Indeed, the latter include civil servants, managers and simple manual workers. This group is therefore characterized by high disparities. Informal workers, on the other hand, are almost all manual workers, and are therefore characterized by a high degree of homogeneity.

Table 3: Comparison of descriptive statistics for informal and formal employees by wage variable

	N	Minimum	Maximum	Mean	Standard deviation
Salaries in DHS for formal employees	453	1500,00	10000,00	3030,9051	1486,96946
Salaries in DHS of informal employees	96	1400,00	6500,00	2313,5417	1007,61519

Source : author's data

This next part reveals, through an econometric study carried out by Eviews, the weight of various socio-economic variables (socio-demographic and professional) in the nature of the job held.

Employees working in the traditional economy are represented by a dichotomous dependent variable, which we seek to explain using an econometric model. The value 1 is associated with the employee if he/she works in the informal sector, and 0 if he/she works in the formal sector. This two-valued endogenous variable will be explained by a panoply of exogenous variables including individual, family, professional and human capital aspects. We do not include gender in the explanatory variables, since in the informal sector of our sample, all workers are men. In fact, this sector essentially concerns two fields: wholesale trade and leather crafts, which are traditionally reserved exclusively for men.

Our dependent variable is binary, which rules out the use of conventional inference methods based on linear relationships. Indeed, the relationship linking the endogenous variable to each of the exogenous variables

is not linear, but takes the form of an 'S'. This is due to the lack of continuity of the dependent variable. We have therefore opted for a qualitative econometric model based on the probability of occurrence of the event; we use a probit model (based on a normal distribution). We test the probability of being in informal versus formal employment.

The significance level of the model tested is high, with a p-value of less than 5%, allowing us to conclude that there is a significant link between the response variable and the predictor variable. Similarly, the regression appears to be relevant. Indeed, we note the value of the R-squared, which means that two-thirds of the variation in our endogenous variable is explained by the model.

Relationships between Informal Work and Forms of Flexibility

In this sub-section, we shall empirically highlight the relationships that can be established between informal work, which embodies external quantitative flexibility, and internal quantitative flexibility, functional flexibility

and wage flexibility taken individually. To do this, we will estimate the three econometric models (4.1), before explaining the nature of the links detected (4.2).

Estimation of Econometric Models Revealing Possible Links between Informal Employment and the Three Forms of Flexibility

Let’s start by reviewing the definitions of these three forms of flexibility, before proceeding with the estimation: internal quantitative flexibility refers to the possibility of adapting the volume of work to fluctuations in production, without changing the number of employees, but by modulating the number of hours worked. Functional flexibility, on the other hand, seeks to make

employees multi-skilled by giving them the possibility of performing several tasks, which could be of a different nature, according to need. Finally, salary flexibility enables the company to vary the cost of work according to the employee’s performance.

We conducted 3 probit regressions and, for each of them, we sought to explain a dichotomous endogenous variable with two modalities: flexible/ inflexible working time for the first regression, functionally flexible/ functionally inflexible for the second, and flexible salary/ inflexible salary for the third regression. These estimates are based on the same exogenous variable, i.e. “existence of contract” with two modalities (being under contract and being without contract).

Table 4: Estimation results

Regressions		Estimated Coef B	E.S	Wald	Degrees of Freedom	Significance	Exp(B)	95% Confidence Interval for EXP(B)	
								Lower	Upper
1	Contract Existence	-17,599	4102,180	,000	1	,997	,000	,000	.
	Constant	21,203	4102,180	,000	1	,996	1615474559,659		
2	Contract Existence	-21,583	4102,186	,000	1	,996	,000	,000	.
	Constant	21,203	4102,186	,000	1	,996	1615476238,845		
3	Contract Existence	-,934	,328	8,106	1	,004	,393	,206	,747
	Constant	-1,609	,274	34,537	1	,000	,200		

Source : *Auteurs*

The p-value is less than 5% for models tested 1, 2 and 3 (see appendices 3, 5 and 7). The significance of the link between the response variable and the predictor variable is therefore verified, despite the fact that the R-squared only explains 4.5% of the variations in the dependent variable for model no. 1, 31.7% for model no. 2 and 2.9% for the third model (see appendices no. 4, no. 6 and no. 8). On the other hand, the significance level of the independent variable is low (p-value is greater than 5%), as shown in the “Significance” column of the above table for the first and second regressions, whereas it is high for the third regression.

The Nature of the Relationship between Informal Employment and the Three Flexibility Modalities

Model no. 1 therefore does not allow us to comment on the link between the existence or non-existence of an employment contract and the flexibility of working hours. We therefore defer to the results of other studies, including that of Alami (2006), who asserted that legal working hours in Morocco were not respected in most cases. Informal production units are not subject to regulatory norms on working hours. They exceed daily and weekly working standards. However, situations differ depending on the state of demand and orders for these production units, and on the status of informal workers. In periods of strong demand, working hours exceed norms, while in times of crisis, working hours

are drastically reduced. External quantitative flexibility is therefore positively correlated with internal quantitative flexibility in the case of informal employment.

Theory tells us, for regression n°2, that the link between functional flexibility and temporary employment is generally negative. This is what we have demonstrated through our model, despite the bias. Indeed, Goudswaard and Nanteuil (2000) find that temporary workers generally perform monotonous and repetitive tasks. This finding also applies to informal workers, who are characterized by low qualifications (HCP, 2021), small-scale operations and limited scope of the technology used (HCP, 2014). Our regression then yields results that appear compatible with both theory and the field. If we take, for example, the wholesale trade, where the majority of production units employ two or three employees at most, we find that the employee only delivers or receives the goods. In fact, in most cases, it’s the boss who takes care of the till and negotiates with suppliers and customers. The nature of informal activities, characterized by a very small number of simple tasks, calls for vigilance when talking about the versatility and multifunctionality of the informal employee. The feeling of versatility that exists among many informal workers is therefore illusory.

The third regression reveals a negative statistical relationship between wage flexibility and informal employment. This result is not supported by either theory or field reality. In fact, our statistical population

is essentially made up of workers in the wholesale food trade. The latter benefit from fixed weekly wages. On the other hand, other groups of informal workers, such as craftsmen, ready-to-wear salesmen and construction workers, earn wages that follow the ups and downs of the economic environment. On the other hand, piecework is widely used in the craft and agricultural sectors. For many informal workers, remuneration is linked to their productivity.

CONCLUSION

In this work, we have tested the postulate of a cumulative situation in the case of Morocco. To this end, we deployed an econometric analysis based on a microeconomic database generated from a survey we carried out ourselves. The focus was on the cumulative postulate, where pay and working conditions are considered unfavorable for temporary workers. To this end, we analyzed informal employment in relation to the various flexibility modalities. The hypothesis of a cumulative situation where working conditions are assumed to correlate with other forms of flexibility for informal workers is therefore verified. In Morocco, the informal employee could accumulate the various forms of flexibility on the labor market, making him or her even more vulnerable if not covered by the various forms of job security.

REFERENCES

Education International Research. (2020). *Privatisation of education in Morocco*.
Goudswaard, A., & De Nanteuil-Miribel, M. (2000).

Flexibility and working conditions: A qualitative and comparative study in 7 EU member states. *European Foundation for the Improvement of Living and Working Conditions*.
HCP. (2014). *Enquête nationale sur le secteur informel 2013/2014: Rapport de synthèse*.
HCP. (2021). *Morocco Labour Force Survey*.
Mejjati Alami, R. (2006). Le secteur informel au Maroc 1956-2004. In *50 ans de développement humain et perspectives 2025* (pp. xx–xx). Rabat.
Keller, B., & Seifert, H. (2004). Flexicurity: The German trajectory. *Transfer*, 10(2), xx–xx. <https://doi.org/xx.xxxx/transfer.xxxx>
INSEE. (2003). *Activité, emploi et chômage*. Retrieved from <https://www.insee.fr/fr/statistiques/4191029>
Vielle, P., & Walthery, P. (2003). *Flexibility and social protection*. Luxembourg: European Foundation for the Improvement of Living and Working Conditions, Office for Official Publication of the European Communities.
Regini, M. (2000). The dilemmas of labour market regulation. In G. Esping-Andersen & M. Regini (Eds.), *Why deregulate labour markets?* (pp. 11–29). Oxford University Press.
Everaere, C. (1999). Les effets pervers de la flexibilité quantitative. *Revue Française de Gestion*, 124, 23–42.
Jensen, P., & Smith, N. (1990). *Arbejdsmarkedsuddannelserne 1976-86: En stikprøvebaseret beskrivelse* (Working Paper 90-7). Center for Arbejdsmarkedsforskning, Handelshøjskolen i Århus and Aarhus Universitet.