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The effect of Covid-19 pandemic on labour market outcomes in Moldova

Sézard Timbi
University of Ngaoundéré, Laboratory of Applied Economics

Joel Stephan Tagne
University of Ngaoundéré, Laboratory of Applied Economics

Abstract

This study aims at assessing the social consequences of the Covid-19 pandemic on the labour market in Moldova. This specifically involves evaluating the effects of the Covid-19 pandemic on the supply and demand for labour in Moldova. To achieve these aims, we used data from the World Bank (Enterprise Survey) survey of manufacturing industries and service companies in 2020. Using the censored Tobit model, a few number of results were obtained. These include: (i) due to the Covid-19 pandemic, the more a company practises e-commerce, the less her employees are rendered unemployed and the less they resign; (ii) the more a company adapts or changes her production or service due to the pandemic, the more her employees get out of work and the more they resign. In addition, the more the lockdown period extends because of the pandemic, the more a company reduces her workforce (iii) and the more the company's turnover decreases a result of Covid-19, the more she reduces the size of her workforce (iv). Lastly, the more the workforce working remotely due to the pandemic increases, the more they are likely to quit or take extended leave (v). Thus, we can recommend to government to adopt additional support measures for not only companies but also for employees and reduce as much as possible the duration of these health safety measures.

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Contact: Sézard Timbi - cesartimb@gmail.com, Joel Stephan Tagne - schoolmapbuea@gmail.com.
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1. Introduction

In December 2019, a new strain of the coronavirus was discovered in China and it quickly spread around the world (World Health Organization 2020; Zu et al. 2020). As of today (January 4, 2021) with approximately 83 554 175 confirmed cases and 1 851 936 deaths, this disease has become a serious global health concern. On February 11, 2020, the World Health Organization named it COVID-19 (Hossain et al. 2020; Zu et al. 2020). In the absence of drugs and vaccines, intensive testing and case identification were recommended (Anderson et al. 2020). However, many countries with insufficient resources have instead turned to other measures such as isolation, quarantine, containment and social distancing (Anderson et al. 2020; Lipsitch et al. 2020).

The Covid-19 pandemic in Moldova spread from March 07, 2020, when 2 cases were confirmed. A month later (April 14, 2020), 1,712 cases of contamination were announced, and today (January 4, 2021) there are approximately 145 873 cases, including 3 037 deaths (Worldometer, 2020). Faced with this crisis, the state of health emergency was declared in the country until June 30, 2020 and until that date entry into the Moldovan, territory remains was prohibited for foreigners and stateless persons. Regular air links and interurban transport was suspended. Among other measures, the government introduced containment in four districts and a couple of institutions/buildings in Chisinau, namely the offering of fiscal support to enterprises and individuals, and postponing of interest on loans. In addition, the announcement of state subsidies to cover social and health insurance contributions and other taxes for business that stopped their activities due to the pandemic and the approval on the 21 April of a range of additional package of socio-economic measures to support the population and businesses during the state of emergency. Furthermore, for household without internet access, lessons have been filmed and broadcast on television throughout September; the signing of a presidential decree on 24 March for the national army to help the police patrol public places and to contribute military doctors and hospitals.

Previous studies on pandemics haves shown that health measures greatly contribute in reducing the spread of the disease (Abouk & Heydari 2020). However, it is essential to take into account their effects on the state, the household and the economy in general (Brooks et al. 2020; Hossain et al. 2020; Wang et al. 2020).

Regarding economy is concerned, the effects are experienced at some levels that is domestic demand, the price level and the labour market. The impact of the pandemic on economic activities is significant in terms of domestic demand, in the short and medium term (Nations Unies and PNUD 2020).

Referring to the theoretical model of Mortensen and Pissarides (1994) that describes global fluctuations in unemployment, it is possible to establish a link between the Covid-19 pandemic and the labour market. This model assumes on one hand a constant rate of job losses and on the other hand the neutrality of workers and firms towards risk (Shimer 2005). In this situation, shocks guide employers' decisions in terms of job creation and fluctuations in unemployment. This theoretical model presents an instability in unemployment that is too low vis-à-vis global shocks (Costain and Reiter 2008). Actually, at equilibrium, wages largely absorb labour productivity shocks. Consequently, these shocks will have little impact on the level of hiring labour and unemployment (Mortensen and Pissarides 1994).

Beyond urgent concerns about the health of workers and their families, the COVID-19 pandemic represents an unprecedented shock to the labour market (Fujita et al. 2020). Definitely, following public health measures taken to hold back the virus, many companies have closed their doors or brought down the size of their workforce (Beirne et al. 2020; Kahn et al. 2020). In the same view, the first estimates of the International Labour Organization indicate a significant increase in unemployment and underemployment because of the

coronavirus, as evidenced by previous crises (International Labour Organization 2020). However, this increase in the level of unemployment depends on the type of job.
This is because the coronavirus spreads mainly through droplet transmission that occurs when people are close. Thus, job loss is greater in occupations that require more interpersonal contact and which cannot be carried out remotely (Montenovo et al. 2020). Gupta et al. (2020) show that with mobility restriction measures, many people experience work interruptions and those who can work remotely are more able to keep their job during the crisis (Gupta et al. 2020). Following the same reasoning, workers in essential jobs are less likely to lose their job (Montenovo et al. 2020).
FAO (2020) focuses its analysis on the rural area, and states that the disruption of supply chains and agro-food markets due to closures and restrictions on movement threaten the livelihoods of workers in this area. According to this author, the closure of markets and schools leads to the loss of buying and selling opportunities and decreases the demand for agricultural products, thus reducing the demand for agricultural labour.
However, unlike these previous studies Bick et al. (2020) find that the Covid-19 pandemic can in somewhat contribute in the reduction of the level of unemployment. In fact, according to these authors, in this period of health crisis, some people who lose their job may choose not to look for another job for a certain time, either for health reasons or because they are waiting for the lifting of work restrictions. Hence, if many people who have lost their jobs stop looking for work, they cease being part of the labour force, leading to a counterintuitive drop in the unemployment rate (Bick et al. 2020).
Other authors have estimated the effect of the Covid-19 pandemic in terms of wages and show that the shock to the demand for labour will likely lead to considerable downward adjustments in wages and hours of work (International Labour Organization, 2020). Many of those who are still working report loss of income (Bick et al. 2020). However, workers who lose their jobs, but are called back after the crisis by their last employer, may return to the same job and not suffer any loss of income (Fujita and Moscarini 2017). On the other hand, workers who have definitively separated from their employer and who are not called back suffer a great loss of income, ranging between 2% and 12%, depending on the duration of the unemployment (Fujita and Moscarini 2017). It would thus be beneficial for workers to maintain a sense of attachment to their previous jobs, by preventing closures of previously viable businesses that are expected to bounce back once the health crisis is over (Fujita et al. 2020). This can be achievable by giving affected businesses interest-free loans to cover their fixed costs and converting the loans into grants, if the business offers to hire back the old employees, when it returns to normal production operations (Furman 2020).
Some authors have gone beyond the demand for labour to focus on the supply of labour. In fact, it has been mentioned that the death rate seems higher for the elderly than for younger people. Thus, high-risk workers provide less labour, especially in high-exposure jobs (Guerrieri et al. 2020). Nevertheless, labour supply could also decrease through other channels. For example, people could reduce their labour supply because the epidemic has made it difficult to obtain childcare, education and other types of home and family care services (Dingel et al. 2020). On the other hand, Di Blasio et al. (2012) assesses sick leave in Norway due to the pandemic, but as the authors noted, because self-certified sick leaves are not factored into the data, the true effects of the pandemic on sick leave is likely to be underestimated.
In the light of this literature review, several observations can be made. Firstly, a study highlighting the consequences of Covid-19 on the labour market is still rare given the very recent appearance of this pandemic. Secondly, apart from the study of Montenovo et al. (2020) who use an empirical approach in their research, all other studies in these areas are still at an early stage and do not incorporate an empirical methodology. Thirdly, as per our knowledge, there is no such study focusing on Moldova that has also been hit by the pandemic.

Consequently, the following research question is worth asking. What are the effects of the Covid-19 pandemic on the labour market in Moldova? The following set objectives permit us to answer this question:

- assess and analyze the effects of Covid-19 on the demand for labour in Moldova;
- assess and analyze the effects of Covid-19 on the supply of labour in Moldova.

2. Methodology

2.1 Data

To achieve our objectives, we made use of data from the World Bank (Enterprise Survey) for the year 2020. As part of the World Bank's efforts to understand the impact of Covid-19 on the private sector, this organization has carried out a series of follow-up surveys in several countries. These short surveys follow the baseline provided by a recent Standard Business Survey and are designed to provide quick and timely information on the impact and adjustments Covid-19 has caused in the private sector. The questionnaire is addressed to manufacturing companies or registered service companies with 5 or more employees. At this moment, only data for Moldova are available. They were collected from 360 companies from 19 to 29 May 2020. This survey therefore relates to the first wave of the virus.

2.2. Econometric model

Econometric modeling is done based on the nature of the dependent variable. This dependent variable is captured on the basis of the two major players involved in the labour market, job seekers on the one hand and job providers on the other.

On the demand side, the dependent variable is centered on the demand for labour. Since the onset of the coronavirus pandemic, several companies have either made redundant or laid off many of their employees. On this point, two questions helped us to structure this variable: first, since the onset of the COVID-19 pandemic, how many workers have been made redundant? And secondly, since the onset of COVID-19, how many workers have been laid off? Thus, the dependent variable on labor demand is measured by the number of employees who have been made redundant or laid off since the onset of Covid-19. On the supply side, the dependent variable is centered on the supply of labour. Since the onset of the coronavirus pandemic, several employees have either taken more than five days of leave, resigned, or adopted other mobility restrictions. On this point, only one question helped us to structure this variable: Since the onset of the COVID-19 pandemic, how many workers have taken more than 5 days of leave or resigned or adopted other mobility restrictions due to illness? Thus, the number of employees who have adopted at least one of these restrictions since the Covid-19 pandemic measures the dependent variable on labour supply.

Whether on the demand side (through the number of employees made redundant or laid off) or on the supply side (through the number of employees who resigned or took more than five days of leave), this can only be observed for individuals who were already working for a company. This leads to a potential presence of bias due to the selection of the study sample if ordinary least squares were to be used. In addition, the limited dependent variable models can also determine the selection. However, the number of employees made redundant or laid off, and the number of employees who have resigned or who have taken a leave of more than five days cannot be less than zero. We therefore use a censored data model since these dependent variables are located in an interval. Although these variables are linear, the use of ordinary least squares could be the source of endogeneity bias. In both cases, a censored Tobit model is recommended and its use will correct any bias that would arise from the use of ordinary least squares. The Tobit model is a model that lies halfway between linear regression models where the endogenous variable is continuous and qualitative models. This model is used when there is a model with limited dependent variable (dependent variable belonging to the interval for which it is observable).

However, the censored Tobit model is not the only model that can be used in this scenario. Instead of this Tobit model, Heckman's (1979) model could be used. Heckman's model also solves endogeneity bias issues as does the Tobit model, but it differs from the latter in two main points. On the one hand, while the Tobit model is done in one step, the Heckman model is generally done in two steps. On the other hand, while the Tobit model involves a single equation, the Heckman model generally involves two equations, an equation for the first step (called the selection equation) and an equation for the second step (called the substantial equation). The Tobit model is chosen for this study.

If we note $y_{1,i}$ the number of employees made redundant or laid off and $y_{2,i}$ the number of employees having resigned or having taken a leave of more than five days since the Covid-19 pandemic in a company, these can be defined by:

$$y_{1,i} = \begin{cases} y_{1,i}^{*} \ si \ y_{1,i}^{*} \succ 0 \\ 0 \ si \ y_{1,i}^{*} \leq 0 \end{cases} \qquad \text{“(1)”}$$

$$y_{2,i} = \begin{cases} y_{2,i}^{*} \ si \ y_{2,i}^{*} \succ 0 \\ 0 \ si \ y_{2,i}^{*} \leq 0 \end{cases} \qquad \text{“(2)”}$$

With $y_{1,i}^{*} = x_{1,i}\beta + \varepsilon_{1,i}$; $y_{2,i}^{*} = x_{2,i}\beta + \varepsilon_{2,i}$; $\forall i = 1,...,\mathrm{N}$; β denotes the vectors of unknown parameters; $\varepsilon_{j,i}$ denotes error terms; $x_{j,i}$ denotes the vectors of observable characteristics. Observable characteristics are grouped into two categories; on one hand, the variables of interest are those variables specific to the context of the Covid-19 pandemic and on the other hand, the control variables are those variables specific to the company or its environment.

Regarding the variables of interest, the International Labour Organization (2020) mentions that the Covid-19 pandemic has already turned into a shock affecting also the demand in terms of consumption and investment. In this light, the first group of variables of interest comprising of variables such as the variation in sales, variations in the supply of inputs or finished products, the change or adaptation of the production or service, must be considered. In addition, faced with this health crisis, governments issued containment measures. According to Eloundou (2020), if it were necessary to characterize a particularly striking phenomenon of changes in companies during the confinement periods, we would probably choose teleworking. In addition, this confinement leads to a temporary closure of companies, which could lead to the development of e-commerce. Following this view, the second group of variables of interest includes temporary closure, e-commerce and teleworking.

Regarding the control variables, only one will be used in this study which is the nature of the business.

2.3 Statistical analysis

Our study highlighted two dependent variables, namely the demand for labor on the one hand and the supply of labour on the other. The statistical analysis of these variables is presented in Table 1 below. Referring to this table, some companies have not reduced the size of their workforce; however, other companies have laid off or made about 748 employees redundant. Thus, on average, the number of employees made redundant or laid off per company has been 15 employees. Likewise, even in some companies no employee has resigned or taken more than five days' leave since the onset of the pandemic, but in other companies 70 employees have done so, that is about 8 employees per company.

Table 1 Description of dependent variables

Variable	Measure	Average	Standard deviation	min	max
Labour demand	number of employees made redundant or laid off since the onset of Covid-19	15.24818	71.7768	0	748
Labour supply	number of employees having resigned or having taken more than 5 days of leave since the onset of Covid-19	8.767442	14.47302	0	70

Source: Authors based on World Bank data

As mentioned above, 7 explanatory variables are used in this study, their description is given in Table 2 below. Based on this table we can see that even some companies have not temporarily closed their doors following the onset of the Covid-19 pandemic, we also see that other companies have done so with a temporary closure that may go up to 12 weeks. We have also found that companies have witnessed a drop in their turnover by about 55%. Likewise, due to the appearance of Covid-19 that has forced individuals to limit contacts, some companies have chosen to work remotely and do online sales. Thus, during this period of health crisis, on average 7; 46% of employees work remotely while on average 6.40% of each company's sales are done online. Also because of this pandemic, some companies (19.64%) have changed completely or partially or totally adapted their production or service. Because of this same situation, the majority of companies (68.79%) have lowered their demand for inputs or supply of finished products. In our sample, the majority of companies (61.53%) are service companies.

Table 2 Description of explanatory variables

Continuous variables

Variable	Measure	Average	Standard deviation	Min	Max
Temporary closure	Number of weeks of temporary closure of the company due to Covid-19	2.971731	3.503683	0	12
Sales variation	Percentage of decrease in turnover due to Covid-19	55.53285	33.78385	0	100
E-commerce	Percentage of online sales due to the Covid-19 pandemic	6.405904	18.65569	0	100
Teleworking	Share of the workforce working remotely due to the Covid-19 pandemic	7.462121	20.00662	0	100

Categorical variables

Variable	Measure	Proportion
Conversion	1 if the company has converted or adapted its production or service due to Covid-19	0.1964286
	0 otherwise	0.8035714
Supply variation	1 if there is a downward variation in the supply of input or finished product due to Covid-19	0.6879433
	0 otherwise	0.3120567
Nature of the company	0 if service company	0.6153846
	1 if manufacturing company	0.3846154

Source: Authors based on World Bank data

3. Results and discussions

The results of the econometric estimates are presented in Table 3 below. The second column of this table presents the effects of the explanatory variables on the demand for labour, while the third column of the same table presents the effects of the explanatory variables on the supply of labour.

3.1.The Covid-19 pandemic as a source of reduction in the size of the workforce in Moldovan companies

The demand for labor model is globally significant at the 1% level ($\Pr ob \succ Chi2 = 0,000$) . In addition, four variables significantly explain this model in this period of serious health crisis. This include the temporary closure of the business due to the pandemic, partial conversion or total adaptation of production or service due to the pandemic, falling variation in sales due to the pandemic and, development of online business due to the pandemic.

Due to the Covid-19 pandemic, when a business temporarily closes its doors for a week, it can lead it to reduce the size of its workforce by 11.63 individuals. Thus, the longer the period of temporary closure, the more the company will reduce the number of its employees. This result can be justified by the fact that, when an exogenous or endogenous shock brings the company to a situation of temporary closure, this could have a negative effect on its turnover, which could force the latter not to respect its commitments towards all stakeholders. Thus, to avoid finding itself in a critical situation that could lead to a definite closure, the company will seek to reduce its costs. One possibility of reducing costs is the reduction or contraction of workforce. This result is consistent with the study of Ouedraogo et al. (2020) who find that the contraction of activities of certain sectors in Burkina Faso due to Covid-19 led to unemployment because some companies had to release a significant number of their employees to overcome the crisis. In a similar vein, Onana (2020) analyzes the implications of covid-19 on employment in Cameroon and shows that the closure of drinking establishments and restaurants from 6 p.m has contributed to contracting formal and informal jobs and led populations in a situation of inactivity.

When a company changes or adapts its production or service due to Covid-19, then the latter is likely to reduce the size of its workforce by 76.08. Although this result is a little counterintuitive, it however has an explanation. In fact, the company's employees are recruited for a specific task. The latter thus have a human capital specific for a task. When an individual with task-specific human capital leaves that task for another, much of that human capital becomes unused (the expectations and needs of the new task being different from the previous one). This type of human capital therefore depreciates as soon as its holder changes tasks. Applied to our context, when a company adapts or converts its production or service due to Covid-19, many of its employees do not have enough human capital to perform the new task entrusted to them. As a result, the company is forced to release many of them.

The downward variation in the company's turnover due to the Covid-19 pandemic also plays a significant role in explaining the demand for labor. In fact, when the company's turnover drops by 1%, the latter is likely to reduce the size of its workforce by 0.71. Thus, the more the turnover of a company drops, the more it lays off its employees. Downsizing is important in times of crisis to facilitate the recovery of the business and avoid its complete switch of operations or shutdown. However, this reduction can also have negative effects on economic performance of the company through the combination of various mechanisms: induced costs (severance pay), the degradation of labor productivity due to the disorganization of the production process or the lower motivation of employees (Degorre and Reynaud 2003).

The development of online business due to the Covid-19 pandemic also appears significantly in the demand for labor. In fact, in this period of health crisis, when the share of the company's online sales increases by 1%, then the number of employees made redundant or laid off will drop by 1.58. Thus, faced with this health crisis, the development of online business limits the possibility for the company to lay off some of its employees. This result can be justified by the fact that when a company initiates or develops an online sales project in a period of health crisis as is the case today; it can help to lessen the consequences of the shock on its turnover, which could limit the number of dismissals. Some previous authors had already found this result.

Hecker (2001) finds that e-commerce activities, in general, rather stimulate the employment needs of workers involved in e-commerce systems and website organization and design. However, in the retail sector, the development of e-commerce affects the level of employment negatively (Americo and Veronico 2018).

3.2.The Covid-19 pandemic as a determinant of the decline in labor supply in Moldovan companies

The labour supply model is globally significant at the 5% level $(\Pr ob \succ Chi2 = 0,0424)$ and four explanatory variables significantly affect this model. These include; the nature of the business, telecommuting, converting or adapting production or service, and e-commerce.

The nature of the company is the only control variable in our model because it does not depend on the specific context of the Covid-19 pandemic. If we compare a service company with manufacturing company, then the number of employees likely to resign or request an extended leave decreases by 11.15 in manufacturing companies. Thus, during this period of health crisis, service companies suffer more resignations than manufacturing companies do.

When the share of employees working remotely increases by 1%, then 0.47 workers are likely to resign or take extended leave. Thus, teleworking facilitates the resignation of employees or the taking of leave due to the appearance of covid-19. This result, although counterintuitive, can be justified. Indeed, teleworking is the carrying out of a professional activity totality or partially by means of information and communication technologies (Sewell and Taskin 2015). If some of them do not have these skills, they will be less productive for the company and take extended leave to wait for the crisis to end to initiate a resignation process. Dingel and Neiman (2020) use data from responses to two Work Information Network surveys and estimate that around 37% of jobs can be done from home. In a similar vein, Mongey and Weinberg (2020) document those employees who are less likely to be able to work from home to be predominantly non-white and without a college degree in the case of the US economy.

As in the case of labour demand, the conversion variable also plays a significant role in explaining the supply of labour. Indeed, when a company converts or adapts its production or its service due to Covid-19, then, 15.08 of its employees are likely to resign or take extended leave. The same argument above can also help us to justify this result. Indeed, when a company adapts or converts its production or service due to Covid-19, many of its existing employees do not have the needed human capital to perform the new task assigned to them. Such employees become unproductive for the company and are forced to resign or take extended leave. Workers who stay at home can cause underutilization of productive capacities and natural resources. In addition, the loss of workers and working days due to covid-19 or demands for medical care can lead to a significant drop in productivity, loss of income, and depreciation of skills and experience (Lusk 2002). Furthermore, Hossain et al. (2020) argue that a reduction in the workforce also means a decline in the demand for capital, as firms need a combination of labour and capital to produce goods and services. E-commerce also plays a significant role in explaining the supply of labor. Indeed, when the company's share of online sales increases by 1% due to the Covid-19 pandemic, the number of employees who quit or request extended leave drops by 0.43. However, e-business development is likely to help the company withstand the shock and thus honour its commitments with all stakeholders including employees, which can reduce the likelihood of employee resignation.

Table 3 Effects of explanatory variables on labor supply and demand

Variable	Labour demand	Labour supply
Nature of the company	21.19157 (19.4016)	-11.15069 (5.18150)**
Temporary closure	11.63689 (3.21402)***	-0.8779318 (0.88931)
Teleworking	-0.5356978 (0.726977)	0.4796292 (0.147211)***
Conversion	76.08725 (24.7267)***	15.08457 (6.48274)**
Declining variation in supplies	-3.887998 (24.0345)	0.5889908 (6.37441)
Fall in sales	0.7151723 (0.37943)*	0.0389527 (0.096554)
E-commerce	-1.585074 (0.879305)*	-0.4330887 (0.15158)***
	Prob : 0,0000	Prob : 0,0424

Source: authors' estimate; (***), (**) and (*) respectively represent the significance at 1%, 5% and 10%.

4. Conclusion

At the end of this study, with objective to assess and analyze the social consequences of the Covid-19 pandemic on the labour market in Moldova, we noted that studies in this area are still rare or in an embryonic state and on this basis it is still difficult to identify the consequences of this pandemic on the labour market. Following the theoretical model of Mortensen and Pissarides (1994), we were able to identify two channels by which the labour market is affected. This is the demand for labour on one hand and the supply of labour on the other hand. To verify this at the level of Moldova, we used data from the World Bank (Enterprise Survey) from a survey of service companies and manufacturing industries in 2020. Using the censored Tobit model, we found that most variables of interest significantly explain the demand and supply of labour in Moldova. More precisely, we observed that due to the Covid-19 pandemic, the more a company practices e-commerce, the lesser it renders its employees unemployed or out of work and the lesser its employees resign or quit. In addition, we found that, the more a company adapts or converts production or service due to the pandemic, most of the variables of interest significantly explained the demand and supply of labour in Moldova. The more the period of temporary shutdown extends due to the pandemic, the more a company reduces the number of its employees, and the more the company's turnover decreases due to Covid-19, the more it reduces the size of its workforce. We equally found that the greater the share of the workforce working remotely, the more likely employees are to quit or take extended leave. Thus, we can recommend to the authorities that be to apply additional support measures not just for companies but also for employees and reduce as much as possible the duration of health measures.

The main limitation for this study is that it primarily focuses on Moldova meanwhile the Covid-19 pandemic affects almost all the countries around the world. Therefore, as a future prospect, we plan to conduct a similar study using data from a larger number of countries.

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