The Nexus between Government Intervention and Economic Uncertainty During the COVID-19 Pandemic

Rabhi, Ayoub and haoudi, amina and Bennagem Touati, Ali

2021

The Nexus between Government Intervention and Economic Uncertainty During the COVID-19 Pandemic

Ayoub RABHI
International University of Rabat, Sciences Po Rabat, Morocco
ayoub.rabhi@uir.ac.ma

Amina HAOUDI
Sidi Mohamed Ben Abdellah University, Fez, Maroc
amina.haoudi@usmba.ac.ma

Ali Bennagem TOUATI
Sidi Mohamed Ben Abdellah University, Fez, Maroc
ali.bennagemtouati@usmba.ac.ma

Suggested Citation:

Rabhi, A., Haoudi, A., and Touati, A.B. 2021. The Nexus between Government Intervention and Economic Uncertainty During the COVID-19 Pandemic. *Journal of Advanced Studies in Finance*, Volume XII, Summer, 1(23): 74-80. DOI:10.14505/jasf.v12.1(23).07

The COVID-19 pandemic urged governments around the world to intervene and respond with different measures aiming to contain the spread of the virus and mitigate the global economic impact, nevertheless, uncertainty skyrocketed and dominated the world economy. In this paper, we examine the relationship between government intervention and economic uncertainty amid the COVID-19 pandemic. Using monthly data from January 2020 to September 2020 from 22 countries, we found that economic uncertainty during the first nine months of the pandemic reacted more to government intervention than to the number of COVID-19 cases, we also found that the response to face the pandemic had also different effects on economic uncertainty depending on the type of actions, since the containment policies increased economic uncertainty while the economic support to households' action decreased it. Our results show that government intervention in different countries around the world had both positive and negative impacts on economic uncertainty and this has an important conclusion about government intervention effects on the economy during the COVID-19 pandemic.

Keywords: economic uncertainty; Covid-19; pandemic; government intervention; government response.

JEL Classification: D80; E66; G18.

Introduction

The COVID-19 health crisis spreading throughout the world, causing unprecedented economic effects and rising uncertainty in the world economy, surprised policy-makers, and affected public health and people's daily life in different ways. Nevertheless, the major event hastened the governments around the world to respond with different measures and policies to control the spread of the virus, save lives and prevent a global economic crisis that could bring the world economy to its knees. In this context, the health crisis revived the debate over the importance and magnitude of governments' intervention in the economy and questioned as well the effectiveness of the decisions and policies adopted to mitigate the different impacts, since economic uncertainty manifested due to business closure and general lockdowns. Thereby, the relationship between economic uncertainty and government intervention should be looked at closely before drawing evidence on the type of relationship existing between the two during the COVID-19 pandemic.

The large literature considers economic uncertainty as a state where it is difficult to forecast the economy's future because of bad events like natural disasters, oil-price shocks, terrorist attacks, and wars((Nicholas Bloom 2014)), and the main reason why economic uncertainty is an important element to look at, is its significant impact on the overall economy and growth *(*Arellano *et al.* 2016, Balcilar *et al.* 2016, Barrero *et al.* 2018, Belke and Osowski 2019, Bloom *et al.* 2007, Bloom 2009), as it was also concluded with evidence, that uncertainty is countercyclical with business cycles, increasing during recessions and decreasing during expansions (Nicholas Bloom 2014).

It is also worth noting that uncertainty is greater during election campaigning or in times of political regime change, as certain sectors are out of step with the economic regular output, which has a significant impact on the overall economy in the long run (Julio and Yook 2012, Pastor and Veronesi 2012).Thereby, the 2020 United States elections are supposed to play a part in the overall uncertainty, since the USA is generally considered a real exporter of uncertainty to the rest of the world, likely to disrupt the economic cycles of other economies (Castelnuovo, Lim and Pellegrino 2017). This leads us to conclude that the political component represented by the USA elections probably worsened the economic uncertainty mainly triggered by the COVID-19 pandemic.

Nevertheless, according to the literature and the fact about economic uncertainty rising from January 2020 to September 2020, the COVID-19 pandemic is qualified to be the major component impacting economic uncertainty, testifying to this the reaction of stock markets around the world to the pandemic (Akhtaruzzaman *et al.* 2020, Ashraf 2020a, Goodell 2020, Lyócsa *et al*. 2020, Okorie and Lin 2020, Zhang *et a*l. 2020, Rabhi 2020). However, the question arising here concerns the real factors responsible for the negative impact and skyrocketing of economic uncertainty, is it the governments' intervention that was responsible increasing economic uncertainty as it generated confusion and panic for individuals and businesses? Or is it the spread of the virus and the high number of cases generating additional economic uncertainty?

To approach this issue, this paper uses panel data analysis on a set of 22 developed and emerging countries to study the impact of governments' intervention on economic uncertainty amid the covid-19 pandemic.

The remainder of the paper proceeds as follows: Section 2 introduces data collection and presents indexes, which measure governments' response and intervention no face the COVID-19 pandemic, and the economic policy uncertainty. Section 3 provides the research methodology and the econometric model, section 4 reports empirical results. Final section provides conclusions and recommendations of the study.

1. Data Collection

1.1. Measuring Economic Policy Uncertainty: Economic Policy Uncertainty

Measuring uncertainty, is itself a kind of uncertainty, grabbing recently academics and professionals' attention. Nevertheless, uncertainty measures and proxies used are still being developed and improved. Baker *et al.* (2016) had the merit of creating an uncertainty index, which illustrates the proportion of newspaper articles that refer to the following triangle of terms: "uncertain" or "uncertainty"; "economy" or "economic"; and one or more of the following terms: "Federal Reserve", "Congress", "regulation", "deficit", "White House", "legislation" (Baker *et al.* 2016). The index covers recently a set of other countries around the world where it was constructed and quantified to be convenient for research purpose use.

Recently in the middle of the COVID-19 crisis, Baker *et al.* (2020) noted that nine-tenths of newspaper articles on economic uncertainty since March 2020 refer to "COVID", "Covid-19" "Coronavirus", "pandemic" or similar words connected to the health crisis. Authors like (Al-Thaqeb and Algharabali 2019) support adopting the Economic Policy Uncertainty Index (EPU) of Baker *et al.* (2016), assuming that it combines all measures reflecting economic uncertainty, same as so many other authors using the index in their studies and supporting its use (Caggiano, Castelnuovo and Figueres 2017, Li 2017, Caldara *et al.* 2020, Altig *et al*. 2020, Ludvigson, Ma, and Ng 2020, Shinohara 2020, Binge and Boshoff 2020, Caggiano, Castelnuovo, and Kima 2020).

1.2. Governments Response

Most countries around the world interacted with the evolution of the pandemic, through health containment and support to households and firms, hoping to mitigate the multidimensional impact of COVID-19. Within this context, governments' response was recently quantified and presented in a database developed by the University of Oxford and named the Oxford COVID-19 Government Response Tracker (Ox-CGRT) database (Hale *et al.* 2020). The database contains three main indexes that are mainly employed to assess the response of governments to COVID-19, as well as to examine whether these responses affect the rate of infections. These indexes are the Stringency index, Containment and health index, and Economic support index.

In this paper, we focused on just two main indexes: The Economic support index, which includes two indicators (Income support and Debt/Contract relief for households), and the Containment and health index since it is more representative and it includes all the information recorded in the Stringency index (School closing, Workplace closing, Cancel public events, Restrictions on gatherings, Close public transport, Stay at home requirements, Restrictions on internal movement, International travel controls) plus health measures.

2. Methodology

To examine the relationship between economic uncertainty and government intervention during the COVID-19 pandemic, we used monthly data of 22 countries and focused on the period from January 2020 to September 2020, the choice of monthly observations and the set of countries was based on the availability of the data; since the Economic Policy Uncertainty (EPU) variable is only available on a monthly basis and just for the countries included in the study[1]. We employed panel data analysis and selected static panel data approach since we have a cross-sectional dimension (22 countries) greater than the time dimension (9 months) which makes the static panel data estimation more appropriate in this case, it is also suggested by (Hsiao 2014) that panel data regression reduces estimation bias and multicollinearity, controls for individual heterogeneity, and identifies the time-varying relationship between dependent and independent variables. We, therefore, specify our pooled panel ordinary least squares regression model to examine the impact of Government intervention on Economic uncertainty through Containment policy and Economic support, before going further and use fixed effects and random effects panel data estimations to choose the appropriate estimated model, our model is specified as follows:

$$Y_{i,t} = \alpha_i + \beta_1\left(ContainmentPolicy_{i,t}\right) + \beta_2\left(EconomicSupport_{i,t}\right) + \beta_3(COVID19_{i.t} + \beta_4(BusinessConfidence_{i.t}) + \varepsilon_{i,t}, \text{ for } i = 1, 2\ldots\ldots 22;\ t = 1, 2\ldots 9 \quad (1)$$

where: $Y_{i,t}$ is the dependent variable and represents Economic Policy Uncertainty (EPU) on country *i* on month *t*. α_i is a constant term. Government intervention is measured by the monthly average of the daily change in two government intervention indexes extracted from the Oxford COVID-19 Government Response Tracker dataset(Hale *et al.* 2020). These variables concern Containment Policy and Economic Support. Business Confidence Index is also included as a control variable to approach the relationship between Uncertainty and Business confidence.

3. Empirical Analysis

We report empirical results in this section. Table 1 presents summary statistics of the data included in our study. The economic uncertainty variable (UNCERT) has a mean value of (252>100) which confirms the high economic uncertainty related to the COVID-19 pandemic around the world from January 2020 to September 2020. The (123550) mean value of the monthly-confirmed COVID-19 cases variable (CASES) indicates on average 123550 monthly increase. We notice that the highest monthly total confirmed cases with more than 2 million six hundred cases during this period was registered in India, September 2020. The minimum and maximum values of government intervention indexes through Containment and Economic support variables (CONTAINMENT, ECOSUPPORT) show that governments have intervened with significant changes in policies. The minimum and maximum values of the Business Confidence Index variable (BUSCONF) show that businesses and economies in our sample undergo difficulties predicting the future.

Table 1. Summary statistics

	UNCER	CASES	CONTAINMENT	BUSCONF	ECOSUPPORT
Mean	252.07690	123550.2	53.64071	32.88495	46.37154
Median	224.11230	9146.500	62.61667	41.35000	50.00000
Maximum	793.63450	2604518.	172.70970	113.2000	100.0000
Minimum	42.55624	0.000000	0.000000	-87.00000	0.000000
Std. Dev.	151.74180	350256.0	28.91257	50.11225	34.77190
Observations	198	198	198	198	198

Table 2 presents empirical results related to the impact of government intervention to control the COVID-19 pandemic on economic uncertainty. Economic uncertainty (EPU) is the dependent variable in all models and it is measured as the monthly Index of Economic Policy Uncertainty (EPU) of a country. Growth in confirmed cases is measured as the monthly growth in COVID-19 confirmed cases in a country.

Table 2: Impact of government actions amid covid-19 on economic uncertainty

	Model 1	Model 2	Model 3
CONTAINMENT	1.570889***	1.524878***	2.265452***

[1] Australia, Brazil, Canada, Chile, China, Colombia, France, Germany, Greece, India, Ireland, Italy, Japan, Korea, Netherlands, Russia, Spain, Singapore, United Kingdom, United States, Sweden, Mexico.

CASES	-3.29	-2.45E-05	-2.20E-05
ECOSUPPORT		-0.766935**	-1.000244**
BUSCONF			-0.465882**
Constant	171.8783***	176.2220***	194.9836***
F-test	9.032302***	7.456904***	6.863406***
N	198	198	198

Note: Table reports the coefficients. P-values are given in parentheses; *, **, and *** indicate significance at 10 %, ** at 5 % and *** at 1 %.

Containment policy represents the announcements regarding government policies such as public awareness campaigns, testing policy, and contact tracing. The economic support index represents the announcements regarding government income support and debt/contract relief for household programs. Panel pooled ordinary least squares regression model is used for estimations in the three models.

Model 1 is the first basic model which shows that monthly growth in confirmed cases variable is not impacting the economic uncertainty, but it's the government containment policies that are impacting and increasing the economic uncertainty in different countries, although it's a fact that the virus itself is dangerous but the economic uncertainty reacted more to the governments' intervention and decisions to contain the spread of the virus than to the number of cases during 9 months. We would like to mention here that most of the studies that focused on the impact of COVID-19 focused on stock markets reactions to cases and deaths only and showed a significant impact but we think that these reactions were partly short term reactions related to uncertainty and bad news about the cases and deaths of the COVID-19 virus (Al-Awadhi *et al.* 2020, Ashraf 2020b, Baker *et al.* 2020, Ramelli and Wagner 2020, Zhang *et al.* 2020, Rabhi 2020) and to some extent due to the governments' interventions (Ashraf 2020a), but after a short time we think that the stock markets absorbed the information and adapted with the news about the number of cases and deaths, leaving the effect on the economy and economic uncertainty depending on governments interventions instead of the numbers related to the COVID-19 cases and deaths.

We include the Economic Support index in Model 2, which shows a negative and significant impact meaning that economic support in different countries through financial support to households and relief in debt reduced economic uncertainty, this could mean that government intervention through spending during a recession can mitigate economic uncertainty even though the spending here benefits household income and not businesses. Next, we include the Business Confidence Index in Model 3 as a control variable to examine our chosen model and see how the different independent variables interact with the economic uncertainty variable; we notice that an increase in business confidence negatively affects the economic policy uncertainty; this explains the inverse relationship existing between business confidence and economic uncertainty in general (Nowzohour and Stracca 2017), although wisdom says that high economic uncertainty lower firms expectations, we think that an increase in business confidence tends to reduce economic uncertainty and therefore improve economic activity, that's why governments should adopt more aggressive stimulus fiscal and monetary policies and ease containment and lockdown policies to reduce uncertainty and send positive signals to businesses. Concerning the health containment policy and the economic support, they both stay significant like in the other two models, except for the monthly growth in COVID-19 cases variable that stays insignificant in the three models.

Table 3: Impact of government actions amid COVID-19 on economic uncertainty

	Pooled OLS	Fixed effects	Random effects
CONTAINMENT	2.265452***	2.007587***	2.200052***
CASES	-2.20E-05	-7.40E-06	-1.87E-05
ECOSUPPORT	-1.000244**	-0.744621	-0.948382**
BUSCONF	-0.465882**	-0.418274**	-0.455271**
Constant	194.9836	193.5875	195.3254
F-test	6.863406***	3.147708***	
LM Test			344.9537***
Hausman test	3.574471		
N	198	198	198

Note: Table reports the coefficients. P-values are given in parentheses; *, **, and *** indicate significance at 10 %, ** at 5 % and *** at 1 %.

We performed several robustness tests to further confirm the above results of our model 3, using the different panel data estimation alternatives to choose the most appropriate estimated model. In this regard, we first estimated the fixed-effects model and the random-effects model with the same specifications of model 3 used

in Table 2, we observed findings largely similar. Nevertheless, following the conventional approach to choose the best model between the three, we found that the Lagrange Multiplier test favors the Panel random-effects model compared to the Panel pooled ordinary least squares model, same result for the Hausman test which favors the random-effects model and confirms the comments and results presented above.

Conclusion

This paper investigates the impact of government intervention on economic uncertainty amid the COVID-19 pandemic, the study focused on the effect of containment policies and the government economic support and showed some evidence that economic uncertainty reacted differently to the type of government intervention policies. On one hand, the government containment policies to stop the spread of the virus affected positively economic uncertainty and increased it in different countries, which means that lockdowns should be eased to not dive the economy into a deep recession, on the other hand, the economic support showed a significant negative impact meaning that economic support in different countries through financial support to households and relief in debt reduced economic uncertainty, this could mean that government intervention through massive spending during a recession can mitigate economic uncertainty even though the spending here benefits household income and not businesses.

Our results have some important implications since we clearly see that the economic uncertainty reacted more to governments' interventions than to the number of COVID-19 cases over the period between January 2020 and September 2020. Compared to most of the studies focusing on the impact of COVID19 cases and deaths on stock markets, we think that the impact was a short term one, related from one side to fear and uncertainty about the virus danger itself before the stock markets absorbed the information, and on the other side, the impact was related to the governments' interventions, but we think that the economy as a whole through economic uncertainty reacted more to the government intervention than to the growth in COVID-19 cases during the studied period.

References

[1] Akhtaruzzaman, Md, Boubaker, S., and Sensoy, A. 2020. Financial Contagion during COVID–19 Crisis, *Finance Research Letters*, 101604. DOI: https://doi.org/10.1016/j.frl.2020.101604

[2] Al-Awadhi, A.M., Alsaifi, K., Al-Awadhi, A., and Alhammadi, S. 2020. Death and Contagious Infectious Diseases: Impact of the COVID-19 Virus on Stock Market Returns, *Journal of Behavioral and Experimental Finance,* 27: 100326. DOI: https://doi.org/10.1016/j.jbef.2020.100326

[3] Al-Thaqeb, S.A., and Algharabali, B.G. 2019. Economic Policy Uncertainty: A Literature Review, *Journal of Economic Asymmetries*, 20 (September). DOI: https://doi.org/10.1016/j.jeca.2019.e00133

[4] Altig, D., Baker, S., Barrero, J.M., Bloom, N., Bunn, Ph., Chen, S., Davis, S.J., *et al.* 2020. Economic Uncertainty Before and During the COVID-19 Pandemic, *Journal of Public Economics*. DOI: https://doi.org/10.1016/j.jpubeco.2020.104274

[5] Arellano, C., Bai, Y., and Kehoe, P.J. 2016. *Financial Frictions and Fluctuations in Volatility*. NBER Working Papers. Available at: http://www.nber.org/papers/w22990

[6] Ashraf, B.N. 2020a. Economic Impact of Government Interventions during the COVID-19 Pandemic: International Evidence from Financial Markets, *Journal of Behavioral and Experimental Finance,* 27: 100371. DOI: https://doi.org/10.1016/j.jbef.2020.100371

[7] Ashraf, B.N. 2020b. Stock Markets' Reaction to COVID-19: Cases or Fatalities? *Research in International Business and Finance*, 54: 101249. DOI: https://doi.org/10.1016/j.ribaf.2020.101249

[8] Baker, S.R, Bloom, N., Davis, J., Kost, K., Sammon, M., and Viratyosin. T. 2020. The Unprecedented Stock Market Reaction to Covid-19, *Pandemics: Long-run Effects,* 1 (DP 14543): 33–42.

[9] Balcilar, M., Gupta, R., and Segnon, M. 2016. The Role of Economic Policy Uncertainty in Predicting U.S. Recessions: A Mixed-Frequency Markov-Switching Vector Autoregressive Approach. *Economics* 10: 1–21. DOI: https://doi.org/10.5018/economics-ejournal.ja.2016-27

[10] Barrero, J.M., Bloom, N., and Wright, I.J. 2018. Short and Long Run Uncertainty, *SSRN Electronic Journal.* DOI: https://doi.org/10.2139/ssrn.2807456

[11] Belke, A., and Osowski, T. 2019. International Effects of Euro Area Versus US Policy Uncertainty: A Favar Approach, *Economic Inquiry,* 57(1): 453–81. DOI: https://doi.org/10.1111/ecin.12701

[12] Binge, L.H., and Boshoff, W.H. 2020. Economic Uncertainty in South Africa, *Economic Modelling,* 88 (September): 113–131. DOI: https://doi.org/10.1016/j.econmod.2019.09.013

[13] Bloom, N. 2014. Fluctuations in Uncertainty, *Journal of Economic Perspectives,* 28(2): 153–176.

[14] Bloom, N., Bond, S., and Reenen, J.V. 2007. Uncertainty and Investment Dynamics, *Review of Economic Studies.* DOI: https://doi.org/10.1111/j.1467-937X.2007.00426.x.

[15] Caggiano, G., Castelnuovo, E., and Figueres, J.M. 2017. Economic Policy Uncertainty and Unemployment in the United States: A Nonlinear Approach, *Economics Letters*, 151: 31–34. DOI: https://doi.org/10.1016/j.econlet.2016.12.002.

[16] Caggiano, G., Castelnuovo, E., and Kima, R. 2020. The Global Effects of Covid-19-Induced Uncertainty, *Economics Letters*, 194 (July 1992): 109392. DOI: https://doi.org/10.1016/j.econlet.2020.109392

[17] Caldara, D., Iacoviello, M., Molligo, P., Prestipino, A., Raffo, A. 2020. The Economic Effects of Trade Policy Uncertainty, *Journal of Monetary Economics*, 109:38–59. DOI: https://doi.org/10.1016/j.jmoneco.2019.11.002

[18] Castelnuovo, E., Lim, G., and Pellegrino, G. 2017. Policy Forum: On the Macroeconomic Effects and Policy Implications of Uncertainty - A Short Review of the Recent Literature on Uncertainty, *The Australian Economic Review,* 50(1): 68–78.

[19] Goodell, J.W. 2020. COVID-19 and Finance: Agendas for Future Research. *Finance Research Letters*, 35 (March). DOI: https://doi.org/10.1016/j.frl.2020.101512

[20] Hale, T., Angrist, N., Cameron-Blake, E., Hallas, L., Kira, B., Majumdar, S., *et al*. 2020. Variation in Government Responses to COVID-19. BSG Working Paper Series. Blavatnik School of Government. University of Oxford, Version 8.0. Available at: www.bsg.ox.ac.uk/covidtracker%0Awww.bsg.ox.ac.uk/covidtracker%0Ahttps://www.bsg.ox.ac.uk/research/publications/variation-government-responses-covid-19

[21] Hsiao, C. 2014. *Analysis of Panel Data: Third Edition*. Cambridge University Press, 978-1-107-03869-1. DOI: https://doi.org/10.1017/CBO9781139839327. Available at: https://assets.cambridge.org/97811070/38691/frontmatter/9781107038691_frontmatter.pdf

[22] Julio, B., and Yook, Y. 2012. Political Uncertainty and Corporate Investment Cycles. *The Journal of Finance,* 67: 45-83.

[23] Li, X.M. 2017. New Evidence on Economic Policy Uncertainty and Equity Premium*, Pacific Basin Finance Journal* 46: 41–56. (July). DOI: https://doi.org/10.1016/j.pacfin.2017.08.005

[24] Loom, B.Y.N Icholas B. 2009. The Impact of Uncertainty Shocks, *Econometrica,* 77(3): 623–85. DOI: https://doi.org/10.3982/ecta6248

[25] Ludvigson, S.C., Ma, S., and Ng, S. 2020. COVID-19 and The Macroeconomic Effects of Costly Disasters COVID-19 and The Macroeconomic Effects of Costly Disasters, *National Bureau of Economic Research Working Paper Series,* No. 26987. Available at : https://www.nber.org/system/files/working_papers/w26987/w26987.pdf

[26] Lyócsa, Š., Baumöhl, E., Výrost, T., and Molnár, P. 2020. Fear of the Coronavirus and the Stock Markets, *Finance Research Letters* 36 (June): 101735. DOI: https://doi.org/10.1016/j.frl.2020.101735

[27] Nowzohour, L., and Stracca, L. 2017. More than a Feeling: Confidence, Uncertainty and Macroeconomic Fluctuations, *ECB Working Paper*, no. 2100. DOI: https://doi.org/10.2866/796782

[28] Okorie, D.I., and Lin, B. 2020. Stock Markets and the COVID-19 Fractal Contagion Effects, *Finance Research Letters,* June. DOI: https://doi.org/10.1016/j.frl.2020.101640

[29] Pastor, L., and Veronesi, P. 2012. Political Uncertainty and Risk Premia, *SSRN Electronic Journal.* DOI: https://doi.org/10.2139/ssrn.1932420

[30] Ramelli, S., and Alexander F., Wagner, A.F. 2020. Feverish Stock Price Reactions to the Novel Coronavirus, *SSRN Electronic Journal*. DOI: https://doi.org/10.2139/ssrn.3550274

[31] Ramelli, S., and Wagner, A.F. 2020. Feverish Stock Price Reactions to the Novel Coronavirus, *SSRN Electronic Journal.* DOI: https://doi.org/10.2139/ssrn.3550274

[32] Shinohara, T. 2020. *Characteristics of Uncertainty Indices in the Macroeconomy*. Available at: https://www.boj.or.jp/en/research/wps_rev/wps_2020/wp20e06.htm/

[33] Zhang, D., Hu, M., and Ji, Q. 2020. Financial Markets under the Global Pandemic of COVID-19, *Finance Research Letters,* 101528. DOI: https://doi.org/10.1016/j.frl.2020.101528