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Stock market volatility and the COVID-19 reproductive number

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The extant financial literature identifies factors that significantly impact on stock market volatility. Among others, institutional arrangements and government characteristics, the conduct economic policy, the behaviour of macroeconomic out-comes, such as output and inflation volatility, trading activities by institutional investors, noise trading and investors sentiment and the economy's risk aversion. Most of these factors have overlapped during the outgoing COVID-19 outbreak, to the extent that their effects on uncertainty and financial markets volatility are the largest in the recorded history of pandemics.

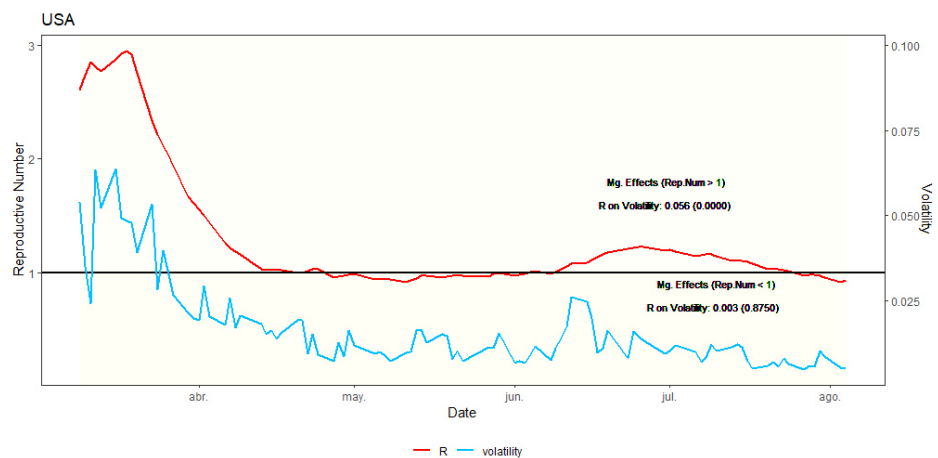
We analyse the relationship between stock market volatility and the so-called effective (or time-varying) reproductive number, commonly referred to as R , which has become a totemic figure in the COVID-19 pandemic. Broadly speaking, R is a measure of the coronavirus capacity to spread and is the average number of people who become infected by an infectious person. Thus, when $R > 1$ the epidemic is at a high-contagion state and

the number of infected is expected to increase; on the contrary, $R < 1$ corresponds to a low-contagion state, and the spread of the disease is expected to decline and eventually to stop. Thus, from the viewpoint of public health policy, a widespread recommendation to ease measures to contain the pandemic, such as lock-downs, only as long as $R < 1$.

We construct a panel with data information from various public sources. The panel is unbalanced and covers, at most, 27 countries that jointly account for 97 percent of the global market capitalization, and for 57 percent of the world population. The sample covers the period from February 2nd to August 4th, 2020, which amounts to an average of 94 trading days per country. Thus, it includes the outbreaks of the COVID-19 disease in

most of Asia, all of Europe, the US and the Americas. Our results provide evidence that the impact of R on stock market volatility is not only statistically significant and economically meaningful, but that it can be orders of magnitude higher than the impact of policy responses. Accordingly, it seems that news about R convey more relevant information about the epidemic dynamics than the policy interventions.

Furthermore, we show that volatility in international stock markets is more sensitive to R when the pandemic is considered to be in a high-contagion state than when it is in a low-contagion state. Taking together, it seems that a value of $R = 1$ constitute a “psychological threshold”, with an observed value greater than 1 considered a signal of high economic uncertainty.



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“Gender Bias in the Chilean public health system: Do we all wait the same?”

Susana Mondschein, María José Quinteros & Natalia Yankovic. Forthcoming in PlosOne,

The GES plan (Garantías Explícitas en Salud), was created to even out healthcare coverage, access and opportunities for all Chilean residents, regardless of their health plan. The aim of this work is to explore the existence of gender bias within the GES Plan. We quantify and characterize the differences in waiting time (WT) by gender and further explore other observable categories that might be meaningful for understanding these inequalities.

Particularly, this study uses the FONASA database and explored how WT is affected by characteristics such as age, insurer holder status, health district, and type of provider assigned. Most of the literature on gender bias in healthcare studies the differences in access, use and levels of insurance of the population. To the best of our knowledge, this is the first study in Chile, that analyzes the timeliness of treatment after a diagnosis has been made.

We use multilevel hierarchical regressions to explain potential differences in WT, with clear identified clusters, such as type of disease, health regional districts and type of providers. We found significant differences in WT for treatment between men and women for 7 out of the 16 GES diseases analyzed. In two of them, ischemic stroke and colorectal cancer, the WT was shorter for women than men.

For ischemic stroke, women had a WT 0.3 days shorter than men, and even though it might be a small difference,

due to the characteristics of the disease, it may have an impact on the health outcome, that needs further study. We also observe that ischemic stroke accounts for 50,663 cases, and therefore, due to the large amount of data, small differences will almost certainly be statistically significant. On the other hand, for colorectal cancer, WT for women is 1.2 days shorter than that for men. However, this difference will most likely not have an impact on health outcomes, considering the opportunity guaranty is 45 days.

For preventive cholecystectomy and diabetic retinopathy there is strong evidence that women wait longer

than men in these two pathologies. We notice that for preventive cholecystectomy, women account for almost 80% of the cases, with an average WT 1.67 times longer than that for men (47.3 vs 79.0 days). For Diabetic retinopathy, women account for almost half of the cases and wait, on average, 2 weeks longer to receive the appropriate treatment. Diabetic retinopathy produces slow progressive eye damage, but it might also cause sudden complications such as vitreous hemorrhage, retinal detachment and blindness. Thus, it would be interesting to study if outcomes for women are worse than those for men, when waiting longer for treatment.

We explore the existence of gender bias within the GES Plan, created to even out healthcare coverage for all Chilean residents..

We notice that the opportunity guarantees analyzed in this study vary from one to ninety days. There are five diseases covered by the GES plan which mandate treatment within less than a week namely: nontraumatic rheumatogenous retinal detachment, ischemic stroke in people 15 years and older, subarachnoid hemorrhage secondary to ruptured brain aneurysms, moderate or severe head trauma, and severe eye trauma. Therefore, there is less room for discretionary decisions affecting WT given the urgency of these treatments. We notice that the opportunity guarantees analyzed in this study vary from one to ninety days. There are five diseases covered by the GES

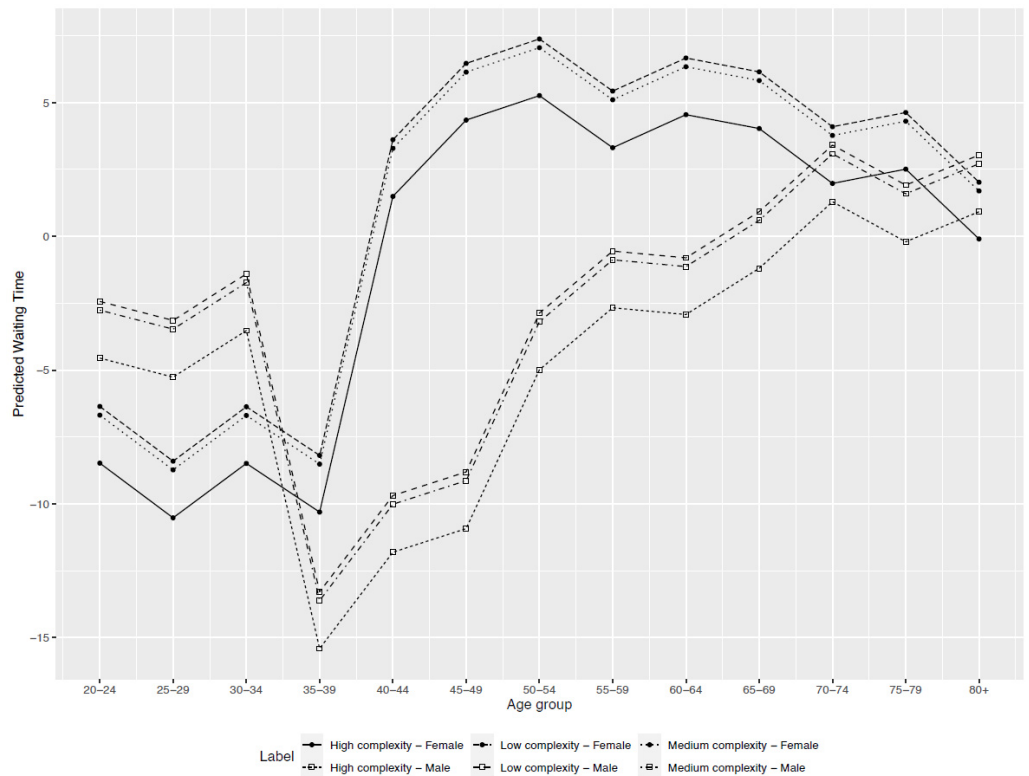
plan which mandate treatment within less than a week namely: nontraumatic rheumatogenous retinal detachment, ischemic stroke in people 15 years and older, subarachnoid hemorrhage secondary to ruptured brain aneurysms, moderate or severe head trauma, and severe eye trauma. Therefore, there is less room for discretionary decisions affecting WT given the urgency of these treatments.

Although more than 90% of cases in our database were treated in high complexity hospitals, we observe that the type of provider in our multilevel analysis increased the fit of our model. We found larger variability in the intercept for the type of provider

for GES with opportunity guarantees longer than 10 days, that may be a consequence of more room for discretionally due to the length of the OG. We also found large heterogeneity across health districts in their impact on WT for each specific GES plan.

At the individual level, primary holder status and age groups between 35 and 49, were significant when explaining WT. These two variables are associated with active workers, and we might think they would affect waiting time in the same direction. However, this is not the case: primary insurance holders have a positive slope in WT, and ages between 35 and 49 have a negative one.

Figure 1: Example of fitted waiting time differences between female and male



It is worth noticing that the coefficient for ages is at least 4 times larger than the one for the primary holder status variable. For women, the coefficient was not statistically significant. However, in

the interaction between the gender and age variables we found an interesting and revealing effect: for female patients between 40 and 54 years old the impact on WT is significant and positive, more than compensating the

negative effect on WT that we found for working ages. We should further explore the reasons behind this bias. Figure 1 is an example of WT fitting (ischemic stroke in health area 16).

How can new ventures attract talented employees? Evidence from the biopharmaceutical industry

Francisco Morales

New ventures or startups face many challenges. One of the most important challenges is access to human capital. Large established firms can attract employees using attractive compensation packages and career prospects. New ventures, however, can do neither—not with the same certainty as a large firm—because they face a greater risk of failing. In a recently published paper, my coauthors and I study how new ventures

can reduce the information asymmetry that leads to lower chances of hiring new talented employees. Specifically, we study the effect of partnering with high-status organizations help ventures to reduce the information asymmetry regarding their chances of surviving. A venture's greater risk of failing is conceptualized as the liability of newness. This liability describes a situation in which companies may

not access critical resources because they do not have proven track records. New ventures competing in knowledge-intensive industries face a greater challenge. In these industries, access to high-quality human capital is key to achieving a competitive advantage. Thus, new ventures in industries where knowledge is fundamental benefit greatly from hiring scientists, engineers, and, more broadly inventors.

Even though the strategic management literature has shown the importance of accessing critical resources, we still know little about how ventures can attract new employees. Scholars have highlighted the role of signals when organizations face resource constraints. When information asymmetry exists, new ventures can engage in activities to signal their quality. These signals, in turn, facilitate economic exchange across different markets. In the paper, we argue that the prominence of partners can provide assurances to potential new employees about the venture's resources and prospects. When a venture associates with a prominent venture capital investor or a prominent alliance partner, individuals in the labor market may correctly infer the value of working at the venture. the biopharmaceutical industry from 1985 to 2008. To identify the emplo-

ees that the ventures hire, we gathered information from the U.S. Patents and Trademark Office. We obtained the patents granted to individuals working in the industry and we built their careers. From this data, we were able to identify inbound mobility events.

The empirical evidence shows that new ventures can greatly benefit from signals that come from their partnerships with prominent venture capital firms and alliance partners. In particular, we show that the prominence of the venture's partners is associated with more inbound mobility. That is, we show that as the prominence of the partners increases, the number of highly talented employees that the venture hires increases. We make the case that the mechanism is related to reducing information asymmetry by showing that this effect is attenuated when the venture

has gone through more investment rounds. The number of investment rounds is positively associated with the likelihood that the venture is going to survive in the medium term. The study contributes to our understanding of how new ventures can access critical resources. We show how new ventures can hire talented employees. According to our research, signals that come from the quality of the venture's partnerships affect the likelihood that high-quality human capital will join the venture. Zhang, K., Reuer, J.J. and Morales, F. (2020), "Attracting Knowledge Workers to High-tech Ventures: A Signaling Perspective on Employee Mobility", Tzabbar, D. and Cirillo, B. (Ed.) Employee Inter- and Intra-Firm Mobility (Advances in Strategic Management, Vol. 41), Emerald Publishing Limited, pp. 415-431.

One of the most important challenges new ventures or startups face is the access to human capital. While large established firms can attract employees using attractive compensation packages and career prospects, new ventures cannot.

Sentiment analysis of Twitter data during critical events through Bayesian networks classifiers

Ruz, G.A., Henríquez, P.A., Mascareño, A. (2020) Sentiment analysis of Twitter data during critical events through Bayesian networks classifiers, Future Generation Computer Systems, 106, 92-104.

Twitter is a fast growing online platform where people can create, post, update, and read short text messages called tweets. The Twitter platform may even indirectly influence traditional media agenda setting particularly in critical events, as journalists gather information from tweets and retweet valuable messages shared by users. The scientific study of the semantic content of these tweets is called sentiment analysis. In general, sentiment analysis is a method for identifying and categorizing the polarity of a given text, where the goal is to determine whether a particular document has either

a positive or a negative value according to a standard categorization.

Sentiment analysis has been traditionally tackled as a classification task (supervised learning) where the user decides which classification algorithm to use. Support Vector Machines (SVM) is one of the most popular classifiers. We present a review of the most commonly used algorithms for sentiment classification. From this review, we notice that most algorithms can be considered as black box models that make it difficult to understand how the words (features) interact during the classification process. In this paper, we analyze the

performance of Bayesian network classifiers, which are probabilistic graphical models that effectively combine the quantitative aspect of the classification task with a qualitative dimension constructed by the probabilistic relationships among the attributes.

Understanding the qualitative dimension of Twitter communication is particularly useful in critical situations not only for scientific or methodological purposes. Major critical events such as natural disasters (earthquakes, floods, hurricanes, wildfires) or political transitions (independence movements, coups,

Microfounding the Fama-MacBeth Regression

Pablo Castañeda; Jorge Sabat

Since the canonical work of Eugene Fama and Kenneth French, hundreds of papers have sought to identify the asset pricing model that best explain stock returns. Traditionally this “zoo of new factors”, as referred to by Cochrane (2011), has been mined by regressing realized returns on the factors itself, or assets' factor loadings, rejecting models based on the estimated intercept of the regressions, the sign of the estimated regression coefficients, or the cross-sectional R².

We propose a new approach to identifying the factors that best explain equilibrium prices. Our key innovation is to note that researchers can evaluate factors relevance by exploiting the observed sector asset allocation of active mutual fund managers and using these holdings to back out the factor model that is consistent with mutual funds' asset allocation, as well as, market portfolio returns. Our method works because reveals active fund managers' preferences over factor models when they take investment decisions. Consistency in our setting is, then, determined by the ability of the systematic factors to best explain the observed risk-return trade-off in the market portfolio (in-sample), as well as by the out-of-sample explanatory power of the beliefs produced by tested factor models.

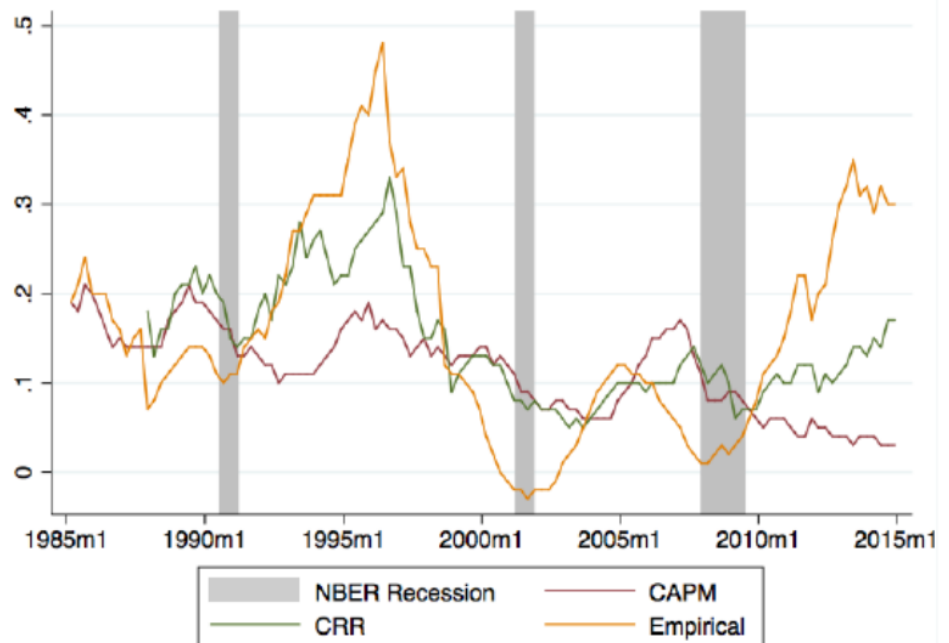
Our main result suggests that the macrofounded factor model of Chen et al. (1986) is the one that produces highest implied Sharpe ratio, at the same time that is comparable with the historical Sharpe ratio obtained by the market portfolio. Moreover, the implied Sharpe ratio produced by

Our analysis is conducted on active mutual fund managers because they represent 57% of the assets under management as of March 2017 (EPFR Global). Active funds also account for 95% of the trading volume (Vanguard). The empirical literature suggest that funds asset allocation can provide valuable information.

The primary novelty of our methodology is that it estimates the implied factor risk premiums that are consistent with the asset allocation of

active mutual fund managers under a specific factor model. Essentially, we learn about the state variables that are of interest to managers from their observed asset allocation. Such state variables will determine asset prices in a standard Pareto-efficient equilibrium. However, if prices are determined in a rational expectation equilibrium, and if active mutual fund managers can be thought of as the informed investors, studying their portfolio choice is useful to understand prices.

We propose a new approach to identifying the factors that best explain equilibrium prices. We provide evidence that macroeconomic risk factors capture other dimensions of equity risk that are not present in the factors used in the extant empirical asset pricing literature.



the implied Sharpe ratio produced by the macrofounded model is the only one that can track a model-free estimation of the Sharpe ratio of the market portfolio. Surprisingly, as we can see in the figure below, we find that the implied Sharpe ratio produced by the CAPM, or any of the other

models typically used in the empirical asset pricing literature are similar. This result suggests that macroeconomic risk factors capture other dimensions of equity risk that are not present in the factors used in the empirical asset pricing literature.