Book Review

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Forecasting, Planning and Strategy in a Turbulent Era
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The central goal of this book is to explore the possibility of adjusting forecasting, planning, and strategising in the face of challenges created by the turbulent times of volatility, uncertainty, and interconnectedness. In addition, the book looks to provide insight into the creation of tools and strategies for dealing with crisis management, taking advantage of opportunities, as well as being ready for the unforeseen. Data-intensive solutions, decision-making based on forecasting, and applications-oriented action take centre stage in reducing uncertainty as well as increasing the resilience of decision-makers.

Forecasting is a practice that plays a critical role in today's decision-making environments. Most of us rely on forecasts in business, government, and everyday life. Despite the importance of forecasting in modern society, we still know little about how to apply it effectively. This book provides insights on forecasting, planning, and strategy for people working in business, public policy, and research. The study of forecasting as a formal discipline has emerged and is continuing to grow. Unfortunately, research shows that forecasting is often misunderstood or underused in organisations. By examining both practical and theoretical aspects of modern forecasting, researchers can begin to address the challenges of working in unpredictable and rapidly changing environments. In this book, the authors analyse cases and examples that help readers understand how forecasting tools are used in the real world. The content gives a broad view of how to improve planning, strategic thinking, and the ability to respond to uncertainty. A variety of issues related to forecasting in turbulent times are discussed in detail. Collectively, all of these discussions emphasise the book's main argument: in addition to having models, forecasting is also about increasing resilience and influencing strategic decision-making during times of uncertainty and tumult.

Chapter 1: China's interventions during the Shanghai COVID-19 lockdown and their economic impact

In the first chapter of the book, the public health, economic, and consumer behaviour effects of one of the lengthiest and most severe pandemic lockdowns, the Shanghai

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COVID lockdown of 2022, are examined to evaluate how effective government interventions were during this time. In contrast to the simplistic narrative that the Shanghai authorities simply failed to achieve their stated goal of 'zero-COVID', the author actually presents a much more nuanced analysis which uses various forecasting models, specifically ARIMA (Autoregressive Integrated Moving Average) and compartmental models, with a fine-tooth comb, to gauge the true effectiveness or ineffectiveness of the Shanghai lockdown in controlling the COVID outbreak. Two key analytical dimensions are foregrounded in this assessment: (1) How effective were public health measures, like testing and lockdowns, in actually regulating the virus? And conversely, (2); How much effect did these public health measures have on the economy, as gauged by stock market performance? The analysis found here underscores the trade-off that is seen throughout the book between increasing public health resilience while still trying to do the same for economic stability.

Chapter 2: The effect of the Russia–Ukraine crisis on Thailand's agricultural industry

Chapter 2 discusses which methods are better to predict pricing volatility in Thailand's agricultural sector in the midst of being affected by the Russia–Ukraine Conflict. Three methods of forecasting were compared namely, Generalised Autoregressive Conditional Heteroskedasticity with 1 lag of squared error and 1 lag of past variance (GARCH 1,1), Long Short-Term memory (LSTM) and the Extreme Gradient Boosting (XGBoost). Accuracy metrics such as Root Mean Square and Mean Absolute Error and Coefficient of determination were all used to figure out which of these forecasting techniques were better suited to predict the volatility of specific commodities. The chapter goes into depth emphasising the usefulness of using GARCH in order to model clusters of volatility within a standard time series fashion; nevertheless, the authors acknowledge the weaknesses in using GARCH to capture more complex patterns existent in high frequency data. On the other hand, deep learning LSTM model shows better forecasting performance in handling similar data but requires many iterations as well as computer and energy usage. The XGBoost is the method that seems to be the best approach in handling missing data and making predictive accuracy as optimal as possible from the other methods mentioned. The XGBoost indeed outperforms the other models in numerous important metrics; however, it requires sophisticated engineering and design so that it can do appropriate machine learning. The chapter suggests that it is the machine learning models, specifically XGBoost and LSTM, which can provide valuable and useful insights for policymakers and market participants that are aiming to strategise and make policies that are favourable to either their business or the public based on accurately predicting price fluctuations and mitigating accurately predicted risks in volatile agricultural markets. This comparative analysis of these forecasting techniques emphasises how important it is to select the appropriate predictive method that is customised specifically to the unique dynamics of the specific sectors in question. Through showing the differences between statistical models that are traditional to those that use machine learning, this chapter continues highlighting and adds on to the book's main idea of selecting the best forecasting tools that fits the situation of volatility specific to whatever sector where predictability is needed.

Chapter 3: Forecasting Hawaiian tourism recovery in the midst of COVID-19: comparing statistical techniques

Chapter 3 shows us methods to predict effects on Hawaiian tourism before and after pandemics, specifically the one due to COVID-19. The data utilised was domestic arrival data from 2016 to mid-2023. The study compares the effectivity of two different data aggregation methods combined with an additional other two methods to properly forecast changes in Hawaiian tourism demand before and after pandemic effects: one called Bottom-Up (BU) and the other is Non-Overlapping Aggregation (NOA). The other two that were paired with BU and NOA were Seasonal Auto-Regressive Integrated Moving Average (SARIMA) and Exponential Smoothing (ETS). The researchers wanted to see which of these combinations can most accurately predict changes in tourism demand specifically during the major seven month lockdown in Hawaii, due to COVID, which itself is a significant disruption. The chapter reveals that BU, in general, is the aggregation method that provides more accurate results since it retains more of the structure from the original data. The NOA on the other hand is less precise; however, it can still reduce data noisiness and can make the model training process much easier.

The predictive method that is said to do a good job in predicting Hawaiian tourism demand (seasonally fluctuating data) is the SARIMA which consistently outperformed the ETS. SARIMA forecasting technique is better than ETS in capturing the seasonal cyclical patterns of ups and downs as well as the irregularities that came about in the data due to the pandemic. The main idea of the chapter is that the BU aggregation technique when paired with SARIMA provides the best results to predict fluctuation in tourism demand (as least for Hawaii tourism at this time) especially if doing the evaluations on a weekly basis. The chapter does suggest being cautious with generalisations especially noting that there is not a solution for predicting outcomes that can fit all occasions and situations. Predictive analysis must be designed to the specific problem at hand and different combinations of data aggregation and predictive methods may work better in other situations depending on what is the researcher's primary focus. This chapter's research continues to touch on the book's point that there is no one size fits all method for forecasting and that having a resilient forecasting model depends on matching the relevant one to the context where it can work best.

Chapter 4: Forecasting the Market of Airbnb in cities of London and Los Angeles

Chapter 4 examines a study evaluating machine learning forecasting techniques for predicting AIRBNB demand in two major cities, Los Angeles (LA) and London. Techniques such as Decision Trees, Random Forest, and XGBoost were used to determine how pricing, availability, room type, and host activity contributed to changes in AIRBNB demand. The AIRBNB data from LA was not linear so multilinear regression models were not ideal for such complex data. However, when several decision tree machine learning models are combined, like XGBoost and Random Forest, this combination provides significantly better accuracy, particularly after iterations. DBSCAN was also used, but it was used on the AIRBNB data of London to do clustering specifically to sort listings by room type before any forecasting model was applied. In any case, regardless, XGBoost is what seemed to do better than other machine learning predictive models because of its demonstration of stronger accuracy in estimating demand across room types and geographic clusters.

During the application of the forecasting techniques, some valuable insights were generated. For example, LA showed to have high demand during Winter and Summer holidays, which is common sense (but now you got the data to back it up and the forecasting technique that shows to predict results accurately). Homes like those of Sherman Oaks LA also show to be highly available for rent. Other sensible insights include London showing that its listings, particularly in the more central and populous areas, are much more expensive especially post 2017, after the changes to pricing due to regulatory limits imposed by the 90-day AIRBNB Rule. In both the case of LA and London, XGBoost seems to be the best predictor model of AIRBNB demand with high R-squared values and low error margins across various demand scenarios.

The chapter ends by suggesting that forecasting methods such as XGboost are particularly effective in predicting short-term rental demand. The study has its setbacks specifically with its DBSCAN usage since it couldn't handle categorical variables. Also, derivative-demand proxies that were created to potentially fill in data gaps produced unnecessary dependency. Yet, the study makes a persuasive case for the usefulness of using machine learning data driven models to inform decision/ policy makers, and even AIRBNB hosts, in such a way that they will be better to create better pricing strategy, operational planning and/or regulatory response. In addition, in particular for AIRBNB hosts, the use of this forecasting method with the revealed results can play a major role in maximising revenue and improving market stability. In all, this chapter shows the need for rapidly shifting markets to have appropriate updates to their policy and strategy that lean on advanced data driven models to help with doing resilient forecasting.

Chapter 5: Strategic risk management for China under the Belt and Silk Road Initiative

Chapter 5 of this book is not about predictive models, but it is about how Chinese companies can lessen the risk of expansion through cooperative efforts with the Chinese government – specifically using funds and support from government initiatives such as BRI and its digital counterpart, the Digital Silk Road. Then it uses two frameworks of thought, Institutional Based View (IBV) and Volatility Uncertainty, Complexity & Ambiguity (VUCA) as a means to evaluate the success or non-success a company is having when expanding. IBV helps explain how external structures like government support play into company success, while VUCA gives us the context for how messy and unpredictable the global market really is. China Telecom's expansion is analysed, followed, and has the IBV and VUCA frameworks applied to it. China Telecom is used by the authors to show how it expands, how it survives tough markets, and how that expansion only makes sense when you look at it through these two lenses, IBV AND VUCA. This chapter basically points out that resilience, while being methodological in its achievement, it also has an institutional and a political aspect to it: this was illustrated by the superb synergy between China government and Chinese businesses illustrated in this part of the book.

Chapter 6: Payment medium transitions in Greece during their 2015 financial crisis

Chapter 6 studies impact of monetary controls on residents of Greece. The study uses qualitative data, specifically 3 interview rounds with 20 individuals utilising grounding theory to find out how people in Greece coped with the new forms of mandatory payments to make purchases as a result of the 2015 government-imposed Bank holiday and capital controls. These holidays and controls were measures implemented in Greece after it lost access to emergency loans when the Troika program expired, and after the ECB blocked liquidity support. Consequently, Greece was facing bankruptcy, so the government shut down banks and limited people's ability to withdraw cash in the attempts to stabilise the economy system. Notable restrictions included government-imposed ATM withdrawal limit and mandatory debit card acceptance imposed on shops in addition to making online banking more assessable. Tourists were exempt from these restrictions.

The interviews were conducted over a one-year time span in order to track changes and long-term effects of the government response. The studies show that there was a significant and progressive shift towards making digital payments with few cash transactions. In addition, sharing of cash and cards among community and family members was another coping strategy noted when dealing with these governmental measures of payment control. The finding suggests that such leaning toward using digitised payment modes has stuck around even after the mandates and may even potentially improve tax tracking since digital payments with credit cards are traceable as opposed to cash. The researchers acknowledge the limitation of the study size and the sample size; however, they make the case that the study offers insight as to how irregular financial shocks can alter daily financial and social behaviour. The researchers also suggest that such small studies can serve as a primer for bigger studies that can evaluate the long lasting socioeconomic effects that economic crisis or irregularities might have on households in terms of financial and social behaviour. Overall, resilience in this chapter is not from a technical tool standpoint, as with previous chapters, but it is shown as something that emerges from adaptive human behaviour under severe systemic shocks.

Chapter 7: Pharmaceutical resilience strategies in the face of supply disruption and pandemics

Chapter 7 discusses the strategies by which pharmaceutical corporations can develop their ability to survive and recover from unexpected global shocks, such as pandemics, wars, or economic disasters. Although it is less focused on a particular country or case study, the chapter takes a holistic view of how pharmaceutical companies can reassess their supply chain and forecasting systems. One of the hypotheses discussed in this chapter suggests that corporations need to diversify their sources to prevent reliance on any one region, especially China, and include multi-sourcing as a strategic strategy to limit severe delays or failures during crises. In addition, the chapter proposes greater transparency and interconnectivity across the entire supply chain using advanced technological systems, such as artificial intelligence, blockchain, and machine learning processes. These technologies are vital in detecting vulnerabilities in the supply system,

anticipating imminent disruptions, and optimising organisational responses during crises in a more efficient and timely manner. The chapter further presents a hybrid forecasting system that combines epidemiological forecasts with prescriptions developed using artificial intelligence systems and historical data points, with the intention of improving the accuracy of future condition forecasts and allowing more informed strategic business choices. This system is especially beneficial in high-risk regions where traditional methods might prove to be less effective. The other major theme discussed is the need for increased collaboration between pharmaceutical companies, their suppliers, and regulatory agencies to reduce friction and delays during crises. Although the chapter is not rich in detailed case studies, it highlights the need to capitalise on lessons learned from COVID-19, and to reformulate the operational processes of pharmaceutical companies under duress. It argues that resilience should be institutionalised as a core capability – an area that should be strategically planned and not just serve as a reactive measure taken after a disaster. While these are typically speculative suggestions and not empirically grounded, this chapter seeks to outline a protocol that could be used by pharmaceutical companies to deal with international uncertainty. With this chapter, it is seen that resilience is not something to be implemented into systems during crisis or right when it hits: there must be strategic measures and best practices in place within the health system before systemic shocks occur.

Chapter 8: Changes in the Chinese healthcare system after SARS and COVID-19

Chapter 8 presents an in-depth analysis of China's healthcare system's transformation during the COVID-19 pandemic, clarifying structural shortcomings as well as expedited reforms. The chapter shows how China's modern experiences with epidemics, including H1N1 and SARS, paved the way for a conclusive reorganisation of public health infrastructure during the pandemic, including increased access to medical care for rural areas, new facility construction by the thousands, and increased public expenditures on healthcare. However, even with such advances, the system's long history prioritising cure over prevention, coupled with poor public awareness and urban-rural disparities, revealed lingering vulnerabilities. Additionally, the chapter points to predictive analytic efforts and technological integration, specifically by way of artificial intelligence, blockchain, large data, and telemedicine, to help spark a revolution in disease intelligence and health care delivery, specifically by way of facilitating real-time outbreak monitoring and resource allocation. The technological advances, combined with public health programs and the 'Healthy China 2030' campaign, represents an overall strategic effort to institutionalise resilience and promote preventive care. Quantitative developments, including a 12.2% rise in health expenditures during 2022, an 8% rise in health personnel, and increased public health education levels to nearly 28%, represent such advances. While reform remains inconsistent, specifically regarding implementation with regards to rural areas, Chapter 8 suggests that China's investments in smart public health infrastructure represent a potential global benchmark to develop health resilience in the future. More broadly, this chapter continues to touch on the importance of resilience in health systems to be fuelled not only by resources, but also by predictive and policy integration.

Chapter 9: Digital transformation in China's post-pandemic era

Chapter 9 provides an overall record of China's digital evolution since the pandemic began, highlighting digitalisation as a central element of Chinese-style modernisation. The chapter lays out the development of the digital economy from the end of the 1990s through the series of stages of the information internet, consumer internet, industrial internet, and finally to digital intelligence. It shows how the COVID-19 pandemic surged digitisation integration into government, health, education, and trade departments. China's digital economy achieved over 50 trillion yuan by 2022, scoring 41.5% contribution to national GDP. Notable infrastructure developments are seen from rampant 5G network installation, dramatic rises in computing power, and near-full internet accessibility to education institutions. The chapter further discusses digitalisation of medicine, development of e-government services, and digital payment infrastructure underlying transactions and giving rise to new industry development. Hiccups remain, however, with regards to fragmented innovation system, shortages of high-end research talent, data quality, and risks posed by cybersecurity, further irritated by geopolitical tension and the ethical challenges arising from developments in emerging fields, especially those concerning artificial intelligence. The chapter ends by predicting a future where continued digital developments are aided by developments in smart industries, improved infrastructure within China's hinterlands, and initiatives such as China's Digital Silk Road, with a view to filling existing global infrastructure deficits. Overall, digitalisation is thus seen to be less a technological change but a digital strategy to China's modernisation, global competitiveness, and achievement of shared prosperity. Furthermore, it becomes super clear that the way government policies and infrastructure of a nation are created and implemented will determine how resilient a nation is in responding and recovering from volatility especially as technology permeates more facets of existence.

Chapter 10: Development of digitalization in Greece before and after the pandemic

Chapter 10 examines how the run of successive crises, notably the 2008 financial crisis and the COVID-19 pandemic, triggered the digital transformation of Greece in the last twenty years. Greece began behind other EU countries in digital literacy, sporadic modernisation policy, and extensive use of cash but made cautious steps towards digital government with incentives like Taxisnet, the electronic filing system of declarations of taxation, and the KEP (Citizens' Service Centres), which concentrated bureaucratic services. However, take-up was restricted, and policy inconsistency curbed progress. The breakthrough came with the imposition of capital controls in 2015, triggering immediate substitution away from cash and towards digital banking and card payment, improved tax compliance in the process, and the creation of political will to drive further digital reform. The introduction of the National Digital Strategy (2016–2021) and the more ambitious 'Digital Bible' (2020–2025) constituted the shift in strategy, mapping the rise of broadband penetration, digitalising public administration, improving support to small and medium enterprises (SMEs), and inscribing innovation in education and health. The COVID-19 pandemic was an accelerator, allowing for the successful launch of Gov.gr, the centralised government platform in Greece, and tenfold growth in the take-up of digital public services in two years. Though the bottleneck in digital competencies, rural

infrastructure, and long-term administrative consistency continue to constrain, Chapter 10 chronicles the Greek experience in terms of crisis-generating modernisation where necessity drove overdue structural change into a faster-moving, digitally integrated state. In all, this case shows that government systems can actually be pushed to change for the better and faster when crisis hits provided that the country has the right tools and intelligent strategies in place as Greece showed when it helped its people adapt and bounce back stronger after their financial crisis.

Chapter 11: Poverty and precarity post-COVID-19 in Türkiye: lessons learned

Chapter 11 analyses how the COVID-19 crisis has uncovered the inadequacy of income-based measures of poverty, thus focusing the debate on a multidimensional poverty index (MPI). While aggregate poverty rates were reported to have shown marginal improvements between the years 2018 and 2021, Chapter 11 states that these averages hid huge differences between 'precarious' workers. Precarious workers are defined more by their environmental settings than by formal contractual terms, and include those who are engaged in insecure, temporary, or informal work, regardless of their enjoyment of stable social protection. The evidence points to such groups having a disproportionately high rate of poverty when measured through the MPI dimensions, especially in terms of health, education, and material deprivation. The poverty rates among precarious workers were found to come very close to doubling those for stable workers according to data computed utilising the SILC (Survey on Income and Living Conditions) survey. Importantly, the vulnerability that these individuals face cannot be solely attributed to the mechanisms triggered by the pandemic, nor can it be seen as an emerging phenomenon; it is instead a result of long-standing policies that have liberalised labour markets, particularly through the reductions in job protection and union shields since the early 2000s. Even allowing for the pre-existing pandemic-related expenditures and regional infrastructure investments, the pandemic's response was largely based on cash transfers, with added objectives derived from the short-term interventions, rather than tackling structural vulnerabilities. The chapter concludes by pointing out that renewal of the MPI to measure poverty in Türkiye needs policies going beyond relief; it requires region-specific reforms, continuous public expenditure, and a rethinking of the poverty measures to better capture economic insecurity and promote social inclusion. The analysis of Turkish precarious workers emphasises that for such a demographic – along with Turkey itself – to have healthy resilience, there needs to be, once again, appropriate policies and strategies in place that are in alignment with real-world weaknesses that the country has in meeting the economic needs of the precarious workers. This ties back to the book's emphasis on managing uncertainty.

Chapter 12: European Union's response to ongoing crises, including the COVID-19 pandemic, geopolitical tensions, and climate change

Chapter 12 gives an assessment of European Union development from a crisis-inflicted phase to a prolonged crisis management, or so-called 'perma-crisis', phase, but one that, at the same time, shows institutional resilience and geopolitical confidence. It identifies nine mutually interconnected challenges, such as the COVID-19 pandemic, Ukraine conflict, climate change, immigration, and rising geopolitical competition with both the

United States and China, as all together place heavy burdens on EU's governance institutions. To counter them, European Union has taken large recovery plans, including the €750 billion Next Generation EU (NGEU) package, launched regulatory initiatives such as the Digital Markets and Services Acts, and called, inter alia, for increased integration of policy approaches to climate, such as demonstrated by Green Deal and rule-of-law conditionality within EU budget instruments. The policies are a remarkable shift from reactive policymaking to agenda-setting, especially regarding digitisation, defence, and European Union's leadership in climate policy. Nevertheless, long-term pressures endure, especially concerning immigration's burden-sharing, structural change to the economy, and dependency of European Union on external defence, even though with existing inequalities within the levels of EU's policy fields' sovereignty-sharing. While this chapter does not use quantitative models, it discusses financial thresholds and institutional change to present an argument that EU development from crises, though uneven, increased international recognition and internal solidarity through innovations, political versatility, and EU's widened toolbox. In effect, the EU's response to its 'perma-crisis' demonstrates that having sound governance, proactive forecasting, and strategic planning in place contributes to strong resilience, once again reinforcing the importance of exceptional adaptability during times of volatility and uncertainty.

Let this book be juxtaposed amidst two books within the same predictive analysis field: namely Superforecasting (The Art and Science of Prediction) (2015) and The Signal and The Noise (Why So Many Predictions Fail-But Some Don't) (2015). The juxtaposition serves the purpose of bringing to light the fact that most works in this field focus heavily on quantitative, statistical, and algorithmic forecasting methods; however, this book takes a much broader, holistic and unique approach. While the authors have noted explicitly and implicitly that this book is especially useful for policymakers and decision-makers, it also seems to challenge data scientists to broaden their viewpoint beyond just numbers and models. It urges them to also incorporate qualitative insights – like those in Chapter 6, where the authors discuss interviews with everyday Greek citizens that reveal the true impacts of economic disruption and policy mandates on real citizen behaviour. It also seems to suggest best practices for supply chain stability for the pharmaceutical industry but not through the use of any data analytics but through hypothetical frameworks and strategic protocols that are focused on making resilience, diversification of sourcing, and collaboration enhancement a norm in the companies within the pharmaceutical industry. Though philosophical in nature, the approach is intended to guide these pharmaceutical companies in proactively managing uncertainty and pandemic disruptions, even beyond what traditional quantitative forecasting methods can offer. Some can look at this as the book's limitation, but to a person willing to broaden their thinking, the major allocation to conceptual rather than fully quantitative predictive data analytics, can be useful to expand the field and the minds of not only decision makers but the analyst themselves.

Chapters 8 through 12 broaden the scope of forecasting by examining how government policies influence a country's ability to navigate crises. Using China, Türkiye, and the European Union, the book highlights how these countries' policy decisions – both successful and flawed – directly affect economic stability and social outcomes in turbulent times. Once again, this approach encourages analysts to consider the real-world political and institutional context behind the data, challenging a purely quantitative perspective and highlighting the need for a holistic understanding of forecasting's role in shaping policy and society. To be clear, the authors note that the

book is especially useful for policymakers and decision-makers; however, it cannot be over emphasised that the book serves as an implicit call for data scientists to expand their toolkit – embracing qualitative insights, informal methods, and broader contextual thinking to refine and better guide the statistical modelling and predictive dynamics of the field.