

SOME THOUGHTS ABOUT BIOSECURITY, BIOSAFETY AND CRIMINAL LAW

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Abstract: *The study explores the intersection of biosecurity, biosafety, and criminal law in the context of increasing biological threats in the 21st century. With the rise of pandemics, bioterrorism, and accidental releases of pathogens, legal systems must adapt to new challenges. Criminal law plays a central role in defining and punishing conduct that endangers public health and safety. However, legal norms alone are insufficient without preventive measures, scientific collaboration, and international cooperation. The study also discusses the socioeconomic impact of biological crises, such as COVID-19, and their correlation with rising crime rates. It argues for a comprehensive legal framework that integrates criminal accountability, education, and social policy to enhance societal resilience against biological threats.*

Keywords: *criminal law, biological crises, biosecurity, biological threats*

1. Introduction

Biosecurity and criminal law³³⁷ have many points of connection. I will highlight some of them in my present study. In the 21st century, biosecurity has emerged as a pivotal concern at the intersection of public health, environmental protection, economic stability, and national security. The rapid advancement of biotechnology, coupled with global interconnectedness, has magnified the potential consequences of biological threats—whether arising from deliberate acts of bioterrorism, accidental laboratory releases, or naturally occurring pandemics. These developments necessitate a robust and adaptive legal framework where criminal law plays a central role.

The issue of biosafety is becoming increasingly important from the perspective of public health, agriculture, and food safety. Managing biological threats is critical to protecting populations, preventing the spread of diseases, and preserving ecosystems. “Biodefense programs and initiatives have been with us since World War II. These programs were developed out of a need to counter the threat from our enemies and protect military forces and the homeland from biological attack. On the other hand, biosecurity is a more recent development, made up of policies and measures designed to protect the homeland, food supply, and agricultural resources from natural and accidental outbreaks and bioterrorism attacks. Many of the recent initiatives in biodefense and biosecurity came after the fall of the Soviet Union, as officials from NATO countries worried about the potential for Soviet biological weapons falling into the wrong hands. In the United States, the Clinton administration took a fairly proactive stance toward biological threat reduction. The events of September 11, 2001, and the Amerithrax incident further solidified national resolve against weapons of mass destruction (WMD) and acts of terrorism.”³³⁸

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³³⁸ <https://pmc.ncbi.nlm.nih.gov/articles/PMC7182112/>

Biosafety encompasses the control of intentional and accidental releases of biological materials, the oversight of biotechnological developments, and the establishment of preventive measures against the spread of infections and pests. Criminal law plays a significant role in biosafety, especially when dealing with the misuse of biological materials, bioterrorism, or the consequences of negligence. Law provides a framework that clearly defines acts that endanger social norms, public safety, and individual health. Adequate legal regulation is indispensable for developing effective biosafety strategies. The concept of biosafety is not limited to the realm of infectious diseases but extends to challenges related to genetic modifications, biotechnological innovations, and environmental risks. New technologies hold immense potential in the fields of medicine and agriculture, but their use also raises new legal and ethical questions. Therefore, criminal law must keep pace with the advancement of science and technology to effectively address the threats and risks that arise from them.³³⁹ The threat of bioterrorism is one of the greatest challenges in the field of biosafety. Bioterrorism involves acts that use pathogens or toxins to instill fear or cause physical harm. Addressing such threats requires legal regulation at both international and national levels. International cooperation and information exchange are vital for preventing cross-border biological attacks and improving response capabilities. Moreover, criminal laws should sanction incitement to bioterrorism, the illegal possession and distribution of biological materials, and clarify liability for experiments. However, criminal law alone is not always sufficient to ensure biosafety. Preventive measures that operate alongside legal tools are also necessary. These include risk assessment protocols, development of research ethics, tightening of laboratory standards, and organization of safety training. Increasing social awareness and strengthening educational programs also play a key role in maintaining biosafety. The international aspects of biosafety are also noteworthy. Infectious diseases can spread rapidly through global trade and travel, necessitating international collaboration. The World Health Organization (WHO) and other international organizations play a significant role in overseeing biosafety and combating pandemics. Through cooperation between nations, there is an to share best practices and jointly address new challenges. In conclusion, the issue of biosafety is complex and requires an interdisciplinary approach, in which criminal law plays a key role. "Biosafety capacity building is a complex task and requires a multidisciplinary approach, the main components being human resource development, institutional and policy development for regulatory bodies and relevant research institutions, to enable them efficiently and effectively use biotechnology products particularly GM crops, microbes and/or their processed products. In the last decade, various developmental agencies and donors, notably the Food and Agricultural Organization of the United Nations (FAO), the Global Environment Facility (GEF) and the United Nations Environment Programme (UNEP), have been supporting the biosafety capacity building needs of developing/emerging countries through their technical assistance programs."³⁴⁰ Establishing a legal framework that aligns with the nature of threats can aid in prevention, deterrence, and response to biological hazards. However, alongside legislation, there is a need to support scientific research, educational initiatives, and international partnerships to implement effective and sustainable biosafety measures. The challenge for the future is that legal and ethical frameworks continuously adapt to the changing threats and opportunities by keeping pace with the rate of technological advancement.

2. Biosecurity, economic crisis and crime rates

Not only bioterrorism can pose a threat to our future, but also new pathogens created as a result of accidents and accidental biological mutations in laboratories. In severe cases, these can even cause a global economic crisis, as we experienced in 2020. And the economic crisis has an impact on crime, primarily by radically increasing the number of crimes against property. The economists agree that the world epidemic entering 2019 ends from Chinese Wuhan that caused by the COVID-19 virus, better known as the coronavirus will generate a severe economic crisis in 2020. Still, its effects will be sensible in the next years. As always, there is an optimistic, a realistic and a pessimistic scenario.

³³⁹ <https://publications.parliament.uk/pa/ld5802/ldselect/ldjusthom/180/180.pdf>

³⁴⁰ <https://www.sciencedirect.com/science/article/pii/S1871678413001076>

According to some opinions, the world economy will soon recover from the economic crisis; the majority now expect a crisis of greater or lesser duration. Still, in the worst-case scenario, it will be even worse than the Great Depression of 1929-33. The Center for Economics and Business Research (CEBR) has compiled the most pessimistic forecast to date on the short-term outlook for the world economy. Announced: the model calculations prove that this year's global economic recession has become practically inevitable and is expected to be twice as deep as the downturn in 2009. According to the house reviewed forecast the global GDP rate in 2020 will drop at least with 4 percent. The study emphasizes that this would be the deepest global recession since 1931 discounting the wartime years. According to the calculations by CEBR's London analysts, the Italian domestic total output is expected to fall by 11 percentages in this year, the German and the Spanish GDP rate equally with eight percentages, and the performance of the US economy with five percent.³⁴¹ We can also talk about optimistic, realistic and pessimistic versions about the expected increase in crime. Still, one thing seems inevitable: the number of crimes will increase even according to the most optimistic estimates.

“The spread of COVID-19 (in full, the Coronavirus disease 2019), which can cause fever, breathing difficulties and, in severe cases, pneumonia (leading to the death of some patients), raises questions about the criminal liability of persons who transmit the virus or risk its spread to others. In April 2020, the Federal Minister for Health warned that persons spreading the virus in Australia could face jail time and that deliberate transmission may lead to sentences up to life imprisonment. The criminal laws of all States and Territories contain offences criminalising the transmission of disease in certain circumstances. Most of these offences date back to the 1990s and were introduced or amended in response to the rise and spread of HIV/AIDS at that time. In 2020, some Australian jurisdictions introduced additional provisions or extended existing ones specifically to criminalise the transmission of COVID-19 and related conduct. The purpose, design, and application of these offences raise questions about the role of criminal law in preventing the spread of diseases and in combatting the COVID-19 pandemic, about the scope and spectrum of criminal liability, and, importantly, about the implications for human rights and civil liberties. State authorities have an obligation to respond to public health emergencies and protect the lives and wellbeing of those within their jurisdiction. In setting up effective responses to the rapid spread of novel and highly contagious diseases such as COVID-19, governments need to consider, combine, and balance a great number of sometimes conflicting priorities relating to public health, the safety of vulnerable groups and individuals, education, economy and industry, community life, and civil liberties, to name but a few. This may, in some cases, also include coercive measures to prevent the spread of diseases.”³⁴²

At the beginning of the 21st century seemed that international terrorism would be the cause of main economic troubles, instead of this, at the end of 2007 we were greeted by a "classic" global financial crisis. By 2007-2008, the world economy turned into the descending branch of the so-called Kondratyev cycle, and many disasters worsened the situation. For example, the hurricane in New Orleans. Because of the impregnation of the credit market, banks turned to secondary debtors. There was no severe credit review; real estate prices continuously raised. In 2006, more and more credit collapsed, so several real estate agencies became bankrupted, which also took some banks along with them. Out of these bankruptcies the most well-known is the Lehman Brothers. The crisis soon spilt over into the real economy. The root causes of the crisis are still being debated by leading economists. Yet, President Bush's big tax cuts program, which has suddenly left billions of dollars within the population, has undoubtedly played a role, further boosting credit supply to banks. Since the Great Depression of the 20th century, the situation called the most significant economic crisis emerged in 2008 from a global financial crisis that preceded it. The resultant of this the mortgage crisis in the United States, which affected the real estate market for the first time. The real causes of the economic

³⁴¹ <https://www.portfolio.hu/gazdasag/20200323/figyelmeztettek-1931-ota-nem-latott-valsag-koszonthet-a-vilagra-421466>

³⁴² 4. Joseph Lelliott - Andreas Scholenhardt - Ruby Ioannou: Pandemics, punishment, and public health: COVID-19 and criminal law in Australia In: UNSW Law Journal Volume 44(1)

crisis of 2008 have been explained by several experts in many ways. Investigations have often come to very different and not infrequently contradictory conclusions. Overall, it can be said that a complex process has resulted in a global economic crisis by 2008, which has spread from the Americas to the whole world in a short time. There is also a broad consensus among some theories that the immediate cause of the economic crisis was the collapse of the US mortgage bubble.³⁴³

The global economic crisis that erupted in 2020 first started as a health crisis in China (Wuhan) and according to the already mentioned pessimistic scenario is expected to shake the world economy, and in particular Europe, more than the financial crisis of 2008 or crisis caused by the terrorist attacks on September 11, 2001.³⁴⁴ What can be seen from the current crisis without any special visionary skills:

- 1) the coronavirus is expected to claim more deaths worldwide than international terrorism has so far collective in world history,
- 2) the global economic crisis generated by COVID-19 will be comparable with 2008, and with the 1929-33 crisis. The current situation can be even more severe than the other two downfalls.
- 3) Like any economic crisis, this will also have an impact on crime, and the number of known crimes in specific categories of crimes will be increased at least temporarily.

The present study aims to make conservative predictions based on the experiences of the past centuries. So our initial hypothesis is that criminality is likely to increase from the second half of 2020, and this increase will continue for at least 1-2 years, after that. The only question is the extent of the rise and how we can slow or moderate the rise. A recent excellent study that introduces and examines substantive criminal and infringement law rules related to the coronavirus also comes to a similar conclusion: „The coronavirus pandemic means a significant drawback for the life of the whole society, in order to protect life and health, we have to give up several of our activities which have been considered natural, and we can only exercise the right to relocate in a minimal extent. We can only hope that we can survive this period with as little human loss as possible until an effective vaccine will be available to protect against the virus. Until then, we must all be prepared for the fact that the emergency will last even longer, which is expected to mean a recession for the economy. This circumstance – for example, due to the loss of many jobs – could also have a criminogenic effect. After the favourable crime trend of recent years, it cannot be ruled out that the number of criminal offences will increase again as a result of the global crisis. Law enforcement authorities and the actors of criminal justice also have to expect this scenario.”³⁴⁵

The question is not that; there will be a global economic crisis in 2020 or not, economists are only debating how big it will be, whether the pace of growth will slow down, or even the entire world economy could go into recession. Given the impact of the crises of the last two centuries on crime rates, the question is not whether crime will increase, either in Hungary or internationally, but only

³⁴³ Halm Tamás: A gazdasági válság. Okok és tanulságok. [The economic crises. Causes and lesson] In: Kommentár 2009/6. p. 97.

³⁴⁴ IMF, Managing Director, Kristalina Georgieva has painted a devastating picture of the economic impact of the epidemic, according to her even 2021 will not necessarily be about recovery. According to her, the 9 trillion dollars that various governments have already voted for so far will not be enough. Barely a month ago, we had been expecting a definite increase in per capita income in more than 160 of our member states. Today, everything was on top of our heads; we can already see that per capita growth will be negative in more than 170 countries – Georgieva said. The IMF director noted that because it is not known how long the epidemic will last, the outlook is very uncertain, she believes that if the pandemic subsides in the second half of the year, 2021 may already be a year of partial recovery, but the situation may worsen. Investors have already withdrawn more than a hundred billion dollars from these economies, three times as much as during the 2008 economic crisis. https://index.hu/gazdasag/2020/04/09/imf_igazgato_nagy_gazdsagi_vilagvalsag_ota_nem_volt_ekkor_recesszio_jarvany/

³⁴⁵ Ambrus István: A koronavírus-járvány és a büntetőjog MTA Law Working Papers 2020/5. Budapest, 2020. 22. p. file:///C:/Users/USERUJ/Downloads/2020_5_Ambrus.pdf

what its extent will be. We can set up optimistic, realistic and pessimistic scenarios. I will present below the script that I consider to be realistic.

Fortunately, the crisis did not hit the Hungarian economy in a bad situation: "The Hungarian economy - if good things can be found in this fate at all - was hit by the coronavirus in an outstanding state. No matter how big is the catastrophe now, it is true that recent annual GDP growth has ranged from four to five per cent, unemployment has fallen to close to three per cent; employment has reached a historic high. At the same time, the budget deficit has been kept below the EU average, and finally, public debt has also begun to shrink." The initial condition is relatively good. Crime has also declined at an unprecedented rate since the regime change in recent years, at least the number of crimes that have become known has fallen sharply while reaching a record low in 2019, 186.724 crimes that have become known. This number is expected to increase after 2020 as a result of the combined effect of the following factors:

- I. from such a low base, some growth could be forecast even without a crisis, all other things being equal,
- II. Thousands of Hungarian young, single men who have returned home due to the closure of European countries, from whom typical offenders are excluded in a criminological sense, this is also expected to increase the number of known crimes.
- III. the curfew is likely to significantly increase domestic violence and other crimes against persons (life and physical integrity),
- IV. if people lose their jobs it will increase the number of crimes against property and violent property,
- V. The impact of the economic crisis will be linked to these four factors.

Let's look at the latter, on its own, regardless of the previous four factors.³⁴⁶ Based on my earlier research in 2012, the following are probable:

- 1) The crime rates will increase (on average) 4-6 months later after the economic crisis especially in the third quarter of the year of 2020,
- 2) starting from the crisis of 2008, the number of crimes against persons will increase from the end of 2020, but also in the next 1-2 years,
- 3) there will be a definite reduction in the name of offences against traffic regulations in 2020 due to travel and travel restrictions as well as quarantine measures and the reduction of tourism to zero,
- 4) crimes against public order will first show a decreasing (due to quarantine measures) and then an increasing trend (after the lifting of access restrictions),
- 5) an increase in the number of economic crimes is expected, especially in crimes committed with the help of information technology,
- 6) crime against the property will first decrease, and then it will also turn into a definite increase, especially from 2021,
- 7) The number of intentional homicides is also expected to increase as early as 2020.

In several of my published studies in 2020 and 2021, I concluded that crime statistics in Hungary will deteriorate in the coming years due to the global economic crisis caused by the coronavirus. Unfortunately, I was right. "The year 2023 was considered a rather sinful year in Hungary. Since 2018, not as many crimes have been registered as last year, the Money Center reports. Territorially, there are enormous differences in where and to what extent the number of crimes has increased in the country. If, for example, we look at the numbers of all crimes, then in the county of Jász-Nagykun-Szolnok, for example, the number of crimes skyrocketed. Their number increased by 40 percent in a single year, between 2022-2023. Instead of 5,525 cases, 7,748 cases were registered last year. We can also see a high increase of 28 percent in the county of Hajdú-Bihar, where the number of cases jumped from 5,608 to 7,159. But a significant increase in the number of cases was also observed in Borsod-Abaúj-Zemplén County, where the number of crimes committed rose from a very high base of 12,852 to 15,108, which is a 17 percent increase in proportion. The number of crimes also increased by more

³⁴⁶ Obviously, complete independence is not true, as these explanatory variables may also have some degree of stochastic relationship with each other.

than 10 percent in the counties of Pest, Komárom-Esztergom, Vas, Tolna and Csongrád-Csanád, while for example there was no significant change in Budapest, as well as in the county of Heves. On the other side of the coin, however, in Nógrád county, the number of crimes decreased by 14 percent, but in Szabolcs-Szatmár-Bereg county, these numbers also fell by 9 percent, while in Győr-Moson-Sopron, these numbers fell by 6 percent.

3. Conclusion

The challenges posed by biosecurity threats are multifaceted and require a holistic and forward-looking approach. Criminal law, while essential in defining and sanctioning harmful conduct, is but one component of an effective biosecurity strategy. Legal norms provide the necessary deterrence and accountability mechanisms, but prevention, education, scientific innovation, and international cooperation are equally vital. One of the key lessons from recent global crises is that early intervention significantly enhances the effectiveness of response measures. If policymakers can anticipate potential increases in crime linked to biosecurity incidents—such as bioterrorism attacks or pandemics—they can allocate resources more efficiently. This includes strengthening investigative capacities, improving forensic capabilities related to biological materials, and ensuring that legal frameworks are up-to-date with scientific advancements. Moreover, a resilient society requires robust social policies that address the root causes of crime, particularly in times of crisis. As Franz Liszt aptly noted, “the best criminal policy is good social policy.” Addressing social inequalities, supporting vulnerable populations, and maintaining public trust in institutions are all crucial in mitigating the criminogenic effects of economic and biological crises. Looking ahead, it is imperative that criminal law evolves in tandem with technological innovations in biotechnology and synthetic biology. Emerging risks, such as gene editing technologies or dual-use research of concern (DURC), pose new legal and ethical questions that require nuanced regulatory responses. Furthermore, fostering a culture of biosecurity awareness among scientists, policymakers, and the general public will be essential in building societal resilience. In conclusion, biosecurity is not merely a technical or scientific challenge; it is a profoundly legal and social issue. An integrated approach that combines criminal law enforcement with preventive measures, public education, and international collaboration offers the best chance of safeguarding human health, environmental integrity, and global security. By learning from past experiences and anticipating future threats, we can strive to create a safer and more resilient society where biological risks are effectively managed through a balanced and comprehensive legal framework.

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NEKE RAZMIŠLJANJA O BIOSIGURNOSIGURNOSTI, BIOSIGURNOJ BEZBJEDNOSTI I KAZNENOM PRAVU

Apstrakt: Studija analizira povezanost bioobezbeđenja, biobezbednosti i krivičnog prava u svetlu rastućih bioloških pretnji u 21. veku. S obzirom na pojavu pandemija, bioterorizma i slučajnih oslobađanja patogena, pravni sistemi moraju da se prilagode novim izazovima. Krivično pravo ima ključnu ulogu u definisanju i sankcionisanju ponašanja koje ugrožava javno zdravlje i bezbednost. Međutim, pravne norme same po sebi nisu dovoljne bez preventivnih mera, naučne saradnje i međunarodne kooperacije. Studija takođe razmatra socioekonomski uticaj bioloških kriza, kao što je COVID-19, i njihovu povezanost sa porastom stope kriminaliteta. Autorski zaključak je da je potreban sveobuhvatan pravni okvir koji integriše krivičnu odgovornost, obrazovanje i socijalnu politiku kako bi se povećala otpornost društva na biološke pretnje.

Ključne riječi: krivično pravo, biološke krize, biosigurnost, biološke prijetnje