



**Publisher**

<http://jssidoi.org/esc/home>



---

**THE SUPREME AUDIT INSTITUTIONS READINESS TO UNCERTAINTY\***

**Zbyslaw Dobrowolski**

*Jagiellonian University, Institute of Public Affairs, ul. Prof. S. Lojasiewicza 4, 30-348 Krakow, Poland*

*E-mails: [zbyslaw.dobrowolski@uj.edu.pl](mailto:zbyslaw.dobrowolski@uj.edu.pl)*

*Received 18 February 2020; accepted 30 June 2020; published 30 September 2020*

**Abstract.** The inefficient fight against the COVID-19 pandemic and earlier insufficient readiness to counteract terrorist attacks raise the question about the role of the supreme audit institutions (SAIs) in the situation, in which decision-makers take decisions in uncertainty conditions. The states did not prove themselves in conditions of uncertainty. In all countries, the situation is the same, too late decisions regarding anti-epidemic quarantine, lack of necessary measures to protect doctors and patients, too few respirators. Based on the analysis of several randomly selected SAIs from different parts of the Globe, this study found that the audit methodology tailored to a predictable environment became inappropriate in uncertainty conditions. Most of analysed SAIs did not find weak signals and wild cards related to pandemic. Those who found such signals did not use them in foresight, which results that parliaments, governments and the public are not ready for global threats. It creates risks for entrepreneurs.

**Keywords:** institutions and entrepreneurship; supreme audit institutions; uncertainty; risk; foresight; weak signals

**Reference** to this paper should be made as follows: Dobrowolski, Z. 2020. The Supreme Audit Institutions Readiness to Uncertainty, *Entrepreneurship and Sustainability Issues*, 8(1), 513-525. [http://doi.org/10.9770/jesi.2020.8.1\(36\)](http://doi.org/10.9770/jesi.2020.8.1(36))

**JEL Classifications:** M42, M49

**Additional disciplines** (besides field of economics reflected in JEL classifications): management

## **1. Introduction**

In most countries, modern SAIs started their activities at the beginning of the 20th century. Initially, SAIs carried out only financial audits, and after II World War also performance and compliance audits. SAIs guarded public finances and helped governments spend money wisely in times of economic prosperity and welfare policy (c.f., Mosher, 1979; Kożuch & Dobrowolski, 2014; the European Court of Auditors, 2019). Researches showed SAIs role in a stable environment (c.f., Pollitt et al., 1999; González-Díaz & Fernández, 2008; Blume & Voigt, 2011; González-Díaz et al., 2013; Bringselius, 2014; Jeppesen et al., 2017; Van Acker & Bouckaert, 2018; Cordery &

---

\* *This work was supported by Jagiellonian University, Poland*

Hay, 2019; Dobrowolski & Sułkowski, 2020). However, the environment has changed from predictable to uncertainty. There is a research gap do SAIs ready to carry out their audit service in uncertainty conditions. This study filled this research gap. Based on the analysis of several randomly selected SAIs, it was found that the audit methodology tailored to a predictable environment became inappropriate in uncertainty conditions.

The paper proceeds as follows: First, the previous research on supreme audit institutions reviewed. After that, the research method is discussed, followed by the analysis of several SAIs from all inhabited continents. Based on study results one may offer the potentially radical suggestion that SAIs should change their current auditing methodology; otherwise, they will be useless for states, firms and societies; This paper ends conclusion and opportunities for further research.

## **2. Theoretical Framework**

### **2.1. Forecasting, Foresight, Weak signals and Wild Cards**

The most crucial challenge for organisations operating in conditions of uncertainty is the ability to respond to unpredictable situations actively. Such unpredictable situations, beyond the realm of rational expectations, have become known as “Black Swans” (Löfberg & Olsson, 2014). One may generalise that “Black Swans” are unknown events with very low-probability and extremely high-impact, or extreme risk events (Ivantsov, 2016). The organisation can work in an unpredictable environment when is based on the structure and content of social relations (c.f. Coleman, 1990; Prusak & Cohen, 2001; Adler & Seok-Woo, 2002). Risks and uncertainties are an integral part of all organisations (Laloux, 2014). The importance of trust in organisations has been recognized for some 2,500 year ago (Newton et al., 2018). Trust enables the exchange of information (Luchman, 2017) and plays a crucial role in economy interactions (Hawlitschek et al., 2018). An organisation needs trust capital, which facilitates innovation, and this is possible thanks to the easy exchange of information (Hargadon & Sutton, 1997; Gabbay & Zukerman, 1998; Hansen, 2002). Trust favours the ability to mobilise in the face of challenges, and it promotes agility (Chung & Gibbons, 1997; Walker, Kogut & Shan, 1997; Dobrowolski & Sułkowski, 2020). However, uncertainty facilitates dichotomic situation, where social capital protects the organisation in conditions of uncertainty and is simultaneously destroyed by uncertainty. In such circumstances, social capital needs to be strengthened (Kraatz, 1998; Koźmiński, 2004; Koźuch & Dobrowolski, 2014).

Entrepreneurs have long been ready to adapt to changes in their business environment continually. The ability to identify future trends and anticipate changes in a dynamic environment, as well as the ability of companies to cope with uncertainty is becoming a vital (Varum & Melo, 2010). Decision-makers of public organisations, including country-level, should also have the same skills. Foresight can help tame many unknowns and identify the event horizon.

Foresight is broadly presented in literature. Researchers have pointed out that foresight approach goes further than forecasting, because not only looks into the future but also includes utilising implementations for the present (c.f., Ansoff, 1980; Martin, 1995; Barker & Smith, 1995; Miles, 2008; Cuhls, 2008; Liebl & Schwarz, 2010; Cuhls, 2003; Georghiou et al., 2008; Kayser & Blind, 2017; Iden et al., 2017; Greenblott, O'Farrell, & Olson, 2018; Cuhls, 2019). Cuhls (2003) cited Gordon and Helmer (1964), Bright and Schoeman (1973), Linstone and Thuroff (1975), Martino (1983) aptly noticed that in forecasting, the area to be observed or the research questions have to be known in advance. Forecasting normally ends with the identification of the possible future. Meanwhile, foresight is more than prognosis or prediction. Foresight leads to the selection of one of the different future options and creation conclusion for the present, and decision for one of the options. It holds the promise of managing uncertainty.

Foresight is not the planning. It can be seen as the bridge between past experiences, current and the future (Cuhls, 2003; Andriopoulos & Gotsi, 2006; Georghiou et al., 2008; Popper, 2008, Popper, 2008a). Martin (1995) defines

foresight as the process involved in systematically attempting to look into the longer-term future of science, technology, the economy and society to identify the areas of strategic research and the emerging of generic technologies likely to yield the most enormous economic and social benefits. This definition assumes the positive effects of this process. However, this does not have to be the case if one considers the fact that totalitarian governments can use foresight. Cuhls (2012) defines foresight as the systematic debate of complex futures. In the undertaken, though brief, attempt to conceptualise the concept of foresight one can formulate a generalisation that according to Coates foresight is the overall process of creating an understanding and appreciation of information generated by looking ahead. Foresight is, therefore, closely tied to planning, but it is not planning—merely a step in planning (Ansoff, 1980; Cuhls, 2003).

Foresight includes identification of weak signals and wild cards. Weak signals are early, often inaccurate, signs of impending events. These events, after the occurrence, affect individuals, groups and organisations and their environment in the very indefinite future (Botterhuis et al., 2010). Weak signals are precursor events or can be described as early warnings, namely slight changes in the current state of affairs or existing trends that—if observed and correctly interpreted—may hint at a growing likelihood of occurrence of a specific Wild Card. These signals may be unclear at the beginning, but they may become more precise in time (if monitored) or more reliable, perhaps in combination with other signals. Wild Cards are potential future events with a low likelihood of occurrence but with high impact in the future, if they occur (Mendonca et al., 2004; Smith & Dubois, 2010; Hauptman, Hoppe & Raban, 2015; Qi & Tapio, 2018). Researchers (Mendonca et al., 2004) advocate the implementation of a weak signal methodology and identification of wild cards by scanning the decision environment. They suggest the nurture of improvisation capabilities, which help exist in an unpredictable environment. This approach may lead to organisational agility. In sum, the weak signals approach may be perceived by the context of strategic flexibility or peripheral vision (Ilmola & Kuusi, 2006). Weak signals can be used to identify and prevent some pathologic phenomena. For example, lone-wolf terrorists leave digital traces on the Internet, which is the form of weak signals that can be gathered, fused, and analysed (Brynielsson, 2013).

## **2.2. Uncertainty and risk**

Uncertainty differs from the risk. While, the risk is defined as the situation of winning or losing something important for individual, group or organisation, uncertainty is a condition where there is no knowledge about the future events. In opposition to uncertainty, risk can be measured and quantified, and the potential outcomes are known. Uncertainty is linked with the unpredictable future events. Risk can be mitigated if proper measures are taken to control it. On the other hand, uncertainty is beyond the control of the individual, group or organisation (Cook, 1988; Alaszewski & Coxon, 2008; Dobrowolski, 2008; Samson, Reneke & Wiecek, 2009; Renn, Klinke & van Asselt, 2011; Pástor & Veronesi, 2013; Surbhi, 2017; Clark, 2019).

Inability to determine risk and formulate scenarios has occurred in all countries. The importance of risk assessment presents many researchers (Simunic & Stein, 1990; Friedlob & Schleifer, 1999; Reamer, 2000; Chang et al., 2008; Phillips, 2011; Wang & Li, 2011; Christensen, Glover, & Wood, 2013; Amir, Kallunki & Nilsson, 2014; Gramling & Schneider, 2018). There is a lack of research on SAIs role in foresight.

## **2.3. Supreme audit institutions**

Analysed SAIs basically are not the part of the judiciary. In some countries like Greece or Portugal, SAIs are part of the judiciary. In others, even if SAIs (e.g., France, Italy, Spain) perform the jurisdictional function, they do not belong to the judiciary. SAIs are not part of the executive branch of the State. Finally, SAIs are not part of the legislative branch of State, although they are subject to parliaments. SAIs review and evaluate the public organisations and other financed from public funds. The manner, in which the SAI carries out its audit derives from the SAIs Laws enacted by the Parliaments. SAIs establish the facts based on audit evidence, determines the

cause and effects of irregularities or best practices, and makes proposals to eliminate irregularities in and or improve auditees' activities. SAIs publish audit reports but do not disclose classified information. The possibility of SAIs influencing audited entities is not the result of their authority over the audited, but because they act on behalf of Parliaments and because they disclose information to the public through the media (González, López & García, 2008; González-Díaz, García-Fernández & López-Díaz, 2013; Bringselius, 2014; Kožuch & Dobrowolski, 2014; the European Court of Auditors, 2019). SAIs promote the concept of New Public Management and Good Governance (Dye & Stapenhurst, 1998; O'Donnell, 1998; Contact Committee of Presidents of the SAIs of the European Union, 1998; Pollitt et al., 1999; Stapenhurst & Titsworth, 2001; Tores & Pina, 2002; Kožuch & Dobrowolski, 2014; Jeppesen et. at., 2017; Johnsen, 2019; the European Court of Auditors, 2019; Dobrowolski & Sułkowski, 2020).

SAIs perform several functions. First, the control function. They act on behalf and for the benefit of their parliaments by auditing and assessing the implementation of public policies and programs. SAIs do not question political goals but evaluate their implementation by public organizations. The information function is crucial for the effectiveness of SAIs. SAIs except in a few cases do not have authority over the audited. It means that they audit their activities and formulate audit conclusions and recommendations, which are not obligatory. The audited may or may not follow SAIs' recommendations. Informing not only the audited but also their decision-makers and the public about the audit results increases the impact of SAI on the audited. This issue is well recognized in the literature (c.f., González, López & García, 2008; González-Díaz, García-Fernández & López-Díaz, 2013; Bringselius, 2014; Dobrowolski, 2017; Cordery & Hay, 2019). SAIs also perform other functions, including preventive, training, investigation, standardization and advisory. The latter function deserves special attention. This function is a natural consequence of the control function. SAIs have a significant amount of information obtained during audits of a wide range of organizations, including private ones using public funds. In such a situation, formulating audit conclusions and recommendations, SAIs may indicate not only the causes and effects of systemic shortcomings but also examples of best practices that can be applied more widely in the public sector.

### **3. Methodology**

Literature studies and observation of the scale of countries' problems with supplying healthcare equipment and materials necessary to combat COVID-19 pandemic leads to the following hypothesis: SAIs ineffectively perform an advisory function due to the audit methodology is not tailored to the uncertainty conditions. The study aims to determine whether SAIs using foresight help their parliaments, governments and decision-makers from audited entities take decision wisely in the uncertainty conditions? To achieve this goal and to verify the hypothesis, the SAIs audit methodology presented in their webpages were analysed. This analysis aimed to determine whether the SAIs identified weak signals and wild cards regarding a coming pandemic that threatened life, health and the economy. The SAIs from following countries were randomly selected for the study: Germany, Austria, Finland, Belgium, Netherlands, France, Estonia, Bulgaria, Bosnia and Herzegovina, Ireland, Slovenia, Sudan, Denmark, Dominican Republic, Serbia, Sri Lanka, Indonesia, Georgia, Trynidad and Tobago, China, Vietnam, Thailand, Uruguay, Kyrgyzstan, Ghana, Japan, Guatemala, India, Fiji, Liberia, Papua New Guinea, Australia and the USA. The research includes years 2015-2019 and 2020 (before the occurrence of COVID-19 in China). The sample of all 33 examined SAIs was 17% of the total of 195 full members of the International Organization of Supreme Audit Institutions (INTOSAI). Consistent with an abductive approach (Lukka, 2014; Lukka & Modell, 2010), the insights in this paper have emerged iteratively through consideration of both theory and the empirical case.

#### 4. Results

Analysed SAIs have statutory rights to determine audit topics and audited entities. They use audit methodology based on risk assessment and ex-post audit approach. SAIs audit the completed activities of audited entities and formulate conclusions regarding future audited activities based on an analysis of past operations. SAIs inform public opinion about audit results and provide conclusions and recommendation in audit reports. Besides, the President of German SAI shall serve ex officio as Federal Performance Commissioner (Mosher, 1979; Dobrowolski, 2004; Dobrowolski, 2017; the European Court of Auditors, 2019; ANAO, Legislation and Standards; Bundesrechnungshof, Legal Bases; Bundesrechnungshof, The President of the Bundesrechnungshof as Federal Performance Commissioner; SAI of Guatemala, legislación; Belgium Court of Audit, Competences; NAOF, Legislation; SAI of Japan, Audit Activities; SAI of India, Our Mandate; Algemene Rekenkamer, Organisation; SAI of Fiji, Legal and Professional Frameworks; SAI of Liberia, Audit mandate; SAI of Papua New Guinea, About the Auditor-General's Office; Ghana Audit Service, The Auditor-General's Reports; SAI of China, Laws and Regulations; SAI of Bulgaria, National Audit Office Act; SAI of Bosnia and Herzegovina, Law on Audit of the Insitutions of Bosnia and Herzegovina; SAI of Sudan; SAI of Dominican Republic, Marco Legal Institucional; SAI of Republic of Serbia, Audit the State Audit Institutions; SAI of Sri Lanka; SAI of Georgia; SAI of Indonesia, Legal Framework; SAI of Trynidad and Tobago, Mandate; SAI of Vietnam; Legal status; SAI of Thailand, State Audit Act; SAI of Kyrgyzstan; SAI of Uruguay).

There is a lack of information about SAIs analysis of pandemic threat (before COVID-19 occurrence in China in 2020) on the SAIs' webpages from the following countries: Germany, Austria, Finland, Belgium, Netherlands, Bulgaria, Ghana, Japan, Guatemala, India, Fiji, Liberia, Papua New Guinea, Bulgaria, Bosnia and Herzegovina, Ireland, Slovenia, Sudan, Denmark, Dominical Republic, Serbia, Sri Lanka, Georgia, Indonesia, China, Vietnam, Thailand, Uruguay, Kyrgyzstan, Trynidad and Tobago.

Four analysed SAIs (from USA, Australia, France and Estonia) carried out an ex-post evaluation of government operations related to pandemic risk. Two analysed SAIs (from USA and Australia) showed the risk related to pandemic threat. In 2005 the American SAI named the U.S. Government Accountability Office (GAO) aptly pointed out that if avian influenza strains directly infect humans and acquire the ability to be readily transmitted between people, a pandemic could occur. GAO found real threat stating that modelling studies suggest that pandemic effect in the United States could be severe, ranging from 89,000 to 207,000 deaths and from 38 million to 89 million illnesses. GAO underlined the fact the Department of Agriculture, and the Food and Drug Administration have made efforts to enhance their coordination of surveillance efforts for diseases that arise in animals and can be transferred to humans, such as SARS and certain strains of influenza with the potential to become pandemic. In 2000, GAO recommended complete the national plan for responding to an influenza pandemic, but the plan has been in draft format since August 2004. Absent a completed federal plan, key questions about the federal role in the purchase, distribution, and administration of vaccines and antiviral drugs during a pandemic remain unanswered. Other challenges with regard to preparedness for and response to an influenza pandemic exist across the public and private sectors, including challenges in ensuring an adequate and timely influenza vaccine and antiviral supply; addressing regulatory, privacy, and procedural issues surrounding measures to control the spread of disease, for example, across national borders; and resolving issues related to an insufficient hospital and health workforce capacity for responding to a large-scale outbreak such as an influenza pandemic. Based on this analysis one may formulate the conclusion that GAO found risk areas in the functioning of the State and different organisations (GAO, 2005).

In 2007 American SAI – U.S. Government Accountability Office (GAO) aptly identified crucial problems. Analysis Federal Executive Boards' (FEBs) ability to contribute to Influenza Pandemic preparedness GAO found examples of inconsistent funding for the FEBs nationwide, which create uncertainty for the boards in planning and committing to provide emergency support services. (GAO, 2007).

Australian National Audit Office (ANAO) aptly showed that an influenza pandemic might have enormous social and economic consequences. Besides the potential human suffering and death caused by pandemic, ANAO presented the World Bank estimation concerning the economic losses resulting from a human influenza pandemic. It could be as high as USD 800 billion a year. ANAO pointed out that it is not possible to predict when the next pandemic will occur or how long it will last. The new threat can spread rapidly across the globe, causing a worldwide crisis with high numbers of cases and deaths (ANAO, 2007). This statement shows that ANAO pointed to the unpredictability of the environment in which states and other organizations operate.

Based on audit review, ANAO stated that Australia had undertaken considerable planning and preparedness activities over the last three years to prevent, prepare for and respond to an influenza pandemic. Essential plans have been developed that coordinate a whole of government response at the national level, supported by the State and Territory governments and healthcare systems. Australia has established national disease surveillance programs, an onshore laboratory capability, case investigation and contact management processes. Infection control measures and guidance on clinical management practices that target the containment and management of an influenza pandemic have also been developed. ANAO determined that all regions have pandemic plans, either as stand-alone plans or included in general health emergency plans. However, a pandemic will place increased demand on existing healthcare systems. Therefore, the critical factor in managing the Stockpile is ensuring that items can be deployed to those in need when they need it (ANAO, 2007).

In 2017 ANAO stated that responsible public organisation did not clearly define in their plans what circumstances and to what extent the appropriate public organisations will become involved in a communicable disease emergency. ANAO also showed that administrative process and public communications need to be improved. The departments learnt from the past but did not record or assess their progress towards implementation (ANAO, 2017). Both SAIs (from the USA and Australia) did not advice how to select one of the different future options and create conclusion for the present, and decision for one of the options.

In 2001 the French Court of Auditors made public the report (article 58 of the LOLF, 2nd paragraph) on the use of the funds for the fight against the influenza A (H1N1) V pandemic. SAI pointed out despite the existence since 2005 of a plan to prepare for an H5N1 influenza pandemic inspired by World Health Organisation recommendations, the management of the A (H1N1) V pandemic cannot be considered as totally satisfactory. The previous health crisis generated the need to set up for the first time the new interministerial organization for crisis management, led by the Ministry of the Interior. Generally, the Interministerial Crisis Cell (CIC) ensured effective coordination of the actions of the various ministries and agencies concerned, even if all the duplicates of work could not be eliminated. SAI ex-post reviewed the government activities and found, that the public authorities conducted, in secret and with urgency, unprecedented negotiations with pharmaceutical laboratories. These negotiations have reduced the negotiating margins of the State. SAI focused on previous government activities and did not carry out foresight and did not recognize the weak signals of the upcoming pandemic, although SAI has had a clear picture of the State preparedness to the previous pandemic (Cour des comptes, 2010).

The National Audit Office of Estonia has evaluated the Estonian preparedness for several scenarios – an outbreak of avian influenza, an influenza pandemic, and other disasters, and found that the State institutions were not ready to deal with emergencies quickly and effectively. For example, decisions were not being made systematically regarding the need for examining risks. SAI audit was based on the evaluation of former threats and did not show does the State identify weak signals and make proposals to reduce uncertainty (Mattson, 2007).

## Conclusions

This research was, in many cases, pioneering because the SAIs' role in foresight was not the subject of research. The aim of this research was achieved. States, entrepreneurs and consumers live in more uncertainly environment. In such circumstances, the risk-based audit approach is not sufficient. There is a need to use foresight methods. SAIs should not only evaluate the correctness of data and methods used in foresight but also advise decision-makers through promoting and using foresight and how to use the foresight properly. The study showed that SAIs through risk-based approach and ex-post audits realised preventive functions showing the causes and effects of improper audited public activities. They publish audit results informing stakeholders which areas of government activities are proper against established audit criteria. 29 out of 33 analysed SAIs did not provide any information about their analysis of pandemic threat on their webpages (before COVID-19 occurrence in China in 2020). It seems that they did not recognise weak signals related to the pandemic threat, and they did not use foresight. Two analysed SAIs (from the USA and Australia) aptly showed the risk related to the pandemic threat but it was based on risk assessment and not on foresight. Two SAIs (from France and Estonia) evaluated previous government operations related to a pandemic threat, but they did not show how do their governments identify weak signals of severe upcoming pandemic.

This study shows that any SAIs did not audit governments' foresight related to the pandemic and did not advise decision-makers how to use foresight in uncertainty conditions. Therefore, this research confirmed arguments of Christensen, Glover, and Wood (2013) that the overall uncertainty has increased in recent decades, but the related audit methodology, based on risk assessment, have changed very little. The study confirmed the hypothesis that SAIs ineffectively perform an advisory function due to the audit methodology is not tailored to the uncertainty conditions.

This article can be useful for practitioners. The proposed article can form a source for an inquiry process at any SAI, thus contributing to a better contextual diagnosis of the stage where SAI is in the process of building the quality of its process.

## Limitations and future research

The author conducted research mostly within the SAIs, which have webpages in English. All analysed SAIs, belong to INTOSAI and declared fulfilment of INTOSAI auditing standards and guidelines. Due to the lack of detailed information on how do SAIs follow the INTOSAI requirements the author thus needs to show modesty towards the generalizability of findings and encourage future researchers to tests whether research findings hold in other SAIs, which belong to INTOSAI.

## References

- Adler, P.S., & Seok-Woo, K. (2002), Social capital: prospects for a new concept, *Academy of Management Review*, 27(1): 17-40. <https://doi.org/10.5465/AMR.2002.5922314>
- Alaszewski, A. & Coxon, K. (2008). The everyday experience of living with risk and uncertainty, *Journal Health, Risk & Society*, 10(5): 413-420. <https://doi.org/10.1080/13698570802383952>
- Algemene Rekenkamer, Organisation. Retrieved from <https://english.rekenkamer.nl/organisation>
- Amir, E., Kallunki, J. & Nilsson, H. (2014). The association between individual audit partners' risk preferences and the composition of their client portfolios, *Review of Accounting Studies*, 19: 103-133. <https://doi.org/10.1007/s11142-013-9245-8>

- ANAO (2007). Australia's Preparedness for a Human Influenza Pandemic. Retrieved from <https://www.anao.gov.au/work/performance-audit/australias-preparedness-human-influenza-pandemic>
- ANAO (2017). Department of Health's Coordination of Communicable Disease Emergencies. Retrieved from <https://www.anao.gov.au/work/performance-audit/department-health-coordination-communicable-disease-emergencies>  
ANAO, Legislation and Standards. Retrieved from <https://www.anao.gov.au/about/legislation-and-standards>
- Andriopoulos, C. & Gotsi, M. (2006). Probing the future: Mobilising foresight in multiple-product innovation firms, *Futures*, 38(1): 50-66. <https://doi.org/10.1016/j.futures.2005.04.003>
- Ansoff, H.I. (1980), Strategic Issue Management, *Strategic Management Journal*, 1(2): 131-148. <https://www.jstor.org/stable/2486096>
- Barker, D. & Smith, D.J.H. (1995). Technology foresight using roadmaps, *Long Range Planning*, 28(2): 21-28. [https://doi.org/10.1016/0024-6301\(95\)98586-H](https://doi.org/10.1016/0024-6301(95)98586-H)
- Belgium Court of Audit, Competences. Retrieved from <https://www.ccrek.be/EN/Presentation/Competences.html>
- Blume, L., & Voigt, S. (2011). Does organizational design of supreme audit institutions matter? A cross-country assessment, *European Journal of Political Economy*, 27(2): 215-229. <https://doi.org/10.1016/j.ejpoleco.2010.07.001>
- Botterhuis, L., van der Duin, P., de Ruijter, P. & van Wijck, P. (2010). Monitoring the future. Building an early warning system for the Dutch Ministry of Justice, *Futures*, 42(5): 454-465. <https://doi.org/10.1016/j.futures.2009.11.030>
- Bright, J.R. & Schoeman, M.E.F. (1973). *A Guide to Practical Technological Forecasting*. Englewood Cliffs, NJ: Prentice Hall
- Bringselius, L. (2014). The Dissemination of Results from Supreme Audit Institutions: Independent Partners with the Media? *Financial Accountability & Management*, 30(1): 75-94. <https://doi.org/10.1111/faam.12028>
- Brynielsson, J., Horndahl, A., Johansson, J., Kaati, L., Mårtensson, Ch. & Svenson, P. (2013), Harvesting and analysis of weak signals for detecting lone wolf terrorists, *Security Informatics*, 2(11): 1-15. <https://doi.org/10.1186/2190-8532-2-11>
- Bundesrechnungshof, Legal Bases. Retrieved from <https://www.bundesrechnungshof.de/en/bundesrechnungshof/institution/rechtsgrundlagen>
- Bundesrechnungshof, The President of the Bundesrechnungshof as Federal Performance Commissioner. Retrieved from <https://www.bundesrechnungshof.de/en/bundesrechnungshof/bundesbeauftragter-bwv>
- Chang, S.I, Tsai, Ch. F., Shih, D.H. & Hwang, Ch. L. (2008). The development of audit detection risk assessment system: Using the fuzzy theory and audit risk model, *Expert Systems with Applications*, 35(3): 1053-1067. <https://doi.org/10.1016/j.eswa.2007.08.057>
- Christensen, B. E., Glover, S. M., & Wood, D. A. (2012). Extreme estimation uncertainty in fair value estimates: Implications for audit assurance, *Auditing: A Journal of Practice & Theory*, 31(1): 127– 46. <https://doi.org/10.2308/ajpt-10191>
- Chung, L.H. & Gibbons, P. T. (1997). Corporate Entrepreneurship: The Roles of Ideology and Social Capital, *Group & Organization Management*, 22(1):10-30. <https://doi.org/10.1177/1059601197221004>
- Clark, C.W. (2019). *Uncertainty in Ecomics* (pp. 47-64). In Cashdan, E. (ed.). *Risk and Uncertainty in Tribal and Peasant Economies*. Abingdon, Oxon, UK, New York: Routledge.
- Coleman, J.S. (1990). *Foundation of Social Theory*, Cambridge, Ma: Harvard University Press.
- Cook, R. M. (1988). Uncertainty in risk assessment: A probabilist's manifesto, *Reliability Engineering & System Safety*, 23(4): 277-283. [https://doi.org/10.1016/0951-8320\(88\)90039-7](https://doi.org/10.1016/0951-8320(88)90039-7)
- Cordery, C. J., Hay, D. (2019). Supreme Audit Institutions and Public Value: Demonstrating Relevance, *Financial Accountability & Management*, 35(2): 128-142. <http://dx.doi.org/10.1111/faam.12185>

Court des comptes (2010). Communication a la Commission Des Affaires Sociales Du Senat (article LO 132-3-1 du code des juridictions financières). L'Utilisation Des Fonds Mobilises Pour La Lutte Contre La Pandemie Grippale A(H1N1) V. Retrieved from [https://www.ccomptes.fr/sites/default/files/EzPublish/59342\\_grippe\\_A\\_H1N1.pdf](https://www.ccomptes.fr/sites/default/files/EzPublish/59342_grippe_A_H1N1.pdf)

Cuhls, K.E. (2003). From forecasting to foresight processes—new participative foresight activities in Germany, *Journal of Forecasting*, 22(2-3): 93-111. <https://doi.org/10.1002/for.848>

Cuhls, K.E. (2008). Methoden der Technikvorausschau – eine internationale Übersicht (Methods of Technology Foresight – an international overview). Stuttgart, Germany: IRB Verlag. Retrieved from <http://www.isi.fraunhofer.de/isime/dia/docs/v/de/Methodenvorausschau.pdf>

Cuhls, K.E. (2019). Horizon Scanning in Foresight – Why Horizon Scanning is only a part of the game, *Futures & Foresight Science*, 2(1): 1-21. <https://doi.org/10.1002/ffo2.23>

Cuhls, K.E. (2012). Zukunftsforschung und Vorausschau. In W.J. Koschnick (ed.), FOCUS-Jahrbuch 2012. Prognosen, Trend- und Zukunftsforschung (pp.319- 339). München: Focus Magazin Verlag GmbH.

Dobrowolski, Z. & Sułkowski, Ł. (2020). Implementing a Sustainable Model for Anti-Money Laundering in the United Nations Development Goals, *Sustainability*, 12: 244. <https://doi.org/10.3390/su12010244>

Dobrowolski, Z. (2017). *Combating Corruption and Other Organisational Pathologies*. Frankfurt Am Main: Peter Lang GmbH, Internationaler Verlag der Wissenschaften.

Dobrowolski, Z. (2004). *Kontrola wydatków publicznych w systemie demokracji amerykańskiej*. Warszawa: Wydawnictwo Sejmowe [Auditing of Public Expenditure in American Democracy. Warsaw: The Publishing House of Parliament].

Friedlob, G. & Schleifer, L. (1999), Fuzzy logic: application for audit risk and uncertainty, *Managerial Auditing Journal*, 14(3): 127-137. <https://doi.org/10.1108/02686909910259103>

Gabbay, S.M. & Zuckerman, E.W. (1998), Social capital and opportunity om corporate R&D: the contingent effect of contact density on mobility expectations, *Social Science Research*, 27(2): 189-217. <https://doi.org/10.1006/ssre.1998.0620>

GAO (2005). Influenza Pandemic: Challenges Remain in Preparedness GAO-05-760T: Published: May 26, 2005. Publicly Released: May 26, 2005. Retrieved from <https://www.gao.gov/products/GAO-05-760T>

GAO (2007). Influenza Pandemic: Federal Executive Boards' Ability to Contribute to Pandemic Preparedness. GAO-07-1259T: Published: Sep 28, 2007. Publicly Released: Sep 28, 2007. Retrieved from <https://www.gao.gov/products/GAO-07-1259T>

Georghiou, L., Harper, J. C., Miles, I., Keenan, M., & Popper, R. (2008). *The handbook of technology foresight, concepts and practice*, PRIME series on research and innovation policy. Cheltenham, UK & Northampton, MA: Edward Elgar.

Ghana Audit Service, The Auditor-General's Reports. Retrieved from <https://ghaudit.org/web/reports>

González, B., López, A., & García, R. (2008), Supreme Audit Institutions and their communication strategies, *International Review of Administrative Sciences*, 74: 435-461. <https://doi.org/10.1177/0020852308095312>

González-Díaz, B., García-Fernández, R., & López-Díaz, A. (2013). Communication as a Transparency and Accountability Strategy in Supreme Audit Institutions, *Administration and Society*, 45(5): 583-609. <https://doi.org/10.1177/0095399712438376>

Gordon, T.J. & Helmer, O. (1964). *Report on a Long-Range Forecasting Study*. Santa Monica, California: Rand Corporation.

Gramling, A. & Schneider, A. (2018), Effects of reporting relationship and type of internal control deficiency on internal auditors' internal control evaluations, *Managerial Auditing Journal*, 33(3): 318-335. <https://doi.org/10.1108/MAJ-07-2017-1606>

Greenblott, J.M., O'Farrell, T. & Olson, R. (2018). Strategic Foresight in the Federal Government: A Survey of Methods, Resources, and Institutional Arrangements, *World Futures Review*, 11(3): 245-266. <https://doi.org/10.1177/1946756718814908>

Hansen, M.T. (2002), Knowledge Networks: Explaining Effective Knowledge Sharing in Multiunit Companies, *Organization Science*, 13(3): 223-353. <https://doi.org/10.1287/orsc.13.3.232.2771>

- Hargadon, A. & Sutton, R.I. (1997). Technology Brokering and Innovation in a Product Design Firm, *Administrative Science Quarterly*, 42(4): 716-74. <https://doi.org/10.2307/2393655>
- Hauptman, A., Hoppe, M. & Raban, Y. (2015). Wild cards in transport, *European Journal of Futures Research*, 3(1): 1-24. <https://doi.org/10.1007/s40309-015-0066-9>
- Hawlitshchek, F., Notheisen, B., & Teubner, T. (2018). The limits of trust-free systems: A literature review on blockchain technology and trust in the sharing economy, *Electronic Commerce Research and Applications*, 29: 50-63. <https://doi.org/10.1016/j.elerap.2018.03.005>
- Iden, J., Methlie, L. B., & Christensen, G. E. (2017). The nature of strategic foresight research: A systematic literature review, *Technological Forecasting and Social Change*, 116: 87-97. <https://doi.org/10.1016/j.techfore.2016.11.002>
- Ilmola, L. & Kuusi, O. (2006). Filters of weak signals hinder foresight: Monitoring weak signals efficiently in corporate decision-making, *Futures*, 38(8): 908-924. <https://doi.org/10.1016/j.futures.2005.12.019>
- Ivanstov, E. (2016). *Financial Disaster, Risk Management and Survival Strategy in the World of Extreme Risk*. Abingdon, Oxon, New York: Routledge Taylor & Francis Group.
- Jeppesen, K. K., Carrington, T., Catasús, B., Johnsen, A., Reichborn-Kjennerud, K., & Vakkuri, J. (2017). The Strategic Options of Supreme Audit Institutions: The Case of Four Nordic Countries, *Financial Accountability & Management*, 33(2): 146-170. <https://doi.org/10.1111/faam.12118>
- Johnsen, A. (2019). Public sector audit in contemporary society: A short review and introduction, *Financial Accountability & Management*, 35(2): 121-127. <https://doi.org/10.1111/faam.12191>
- Kayser, V. & Blind, K. (2017). Extending the knowledge base of foresight: The contribution of text mining, *Technological Forecasting and Social Change*, 116: 208-215. <https://doi.org/10.1016/j.techfore.2016.10.017>
- Koźmiński, A.K. (2004). *Zarządzanie w warunkach niepewności*. Warszawa: Wydawnictwo Naukowe PWN
- Koźuch, B., & Dobrowolski, Z. (2014). *Creating public trust: an organizational perspective*. Frankfurt Am Main: Peter Lang GmbH, Internationaler Verlag der Wissenschaften.
- Kraatz, M.S. (1998). Learning by Association? Interorganizational Networks and Adaptation to Environmental Change, *The Academy of Management Journal*, 41(6): 621-643. <https://doi.org/10.2307/256961>
- Laloux, F. (2014). *Reinventing Organizations: A guide to creating organizations inspired by the next stage in human consciousness*. Brussels: Nelson Parker
- Liebl, F. & Schwarz, J. O. (2010). Normality of the future: Trend diagnosis for strategic foresight, *Futures*, 42(4): 313-327. <https://doi.org/10.1016/j.futures.2009.11.017>
- Linstone, H.A., Thuroff, M. (1975). *The Delphi Method, Techniques and Application*. London, Amsterdam, Don Mills, Ontario, Sydney, Tokyo.
- Löfberg, P., & Olsson, A.T. (2014). Black Swan Investing. An empirical study in context of efficient markets. Master thesis. Lund University. School of Economics and Management. Retrieved from <http://lup.lub.lu.se/luur/download?func=downloadFile&recordId=4679676&fileId=4679710>
- Luchman, N. (2017). *Trust and Power*. Cambridge, The United Kingdom: Polity Press.
- Lukka, K. (2014). Exploring the possibilities for causal explanation in interpretive research. Accounting, *Organizations and Society*, 39(7): 559– 566. <https://doi.org/10.1016/j.aos.2014.06.002>
- Lukka, K., & Modell, S. (2010). Validation in interpretive management accounting research. Accounting, *Organizations and Society*, 35(4): 462– 477. <https://doi.org/10.1016/j.aos.2009.10.004>
- Mattson, T. (2007). National Audit Office: limited comprehension and diffusion of responsibility hinders the effective running of the state in emergency situations. Retrieved from

<https://www.riigikontroll.ee/Suhtedavalikkusega/Pressiteated/tabid/168/557GetPage/1/557Year/2007/ItemId/44/amid/557/language/en-US/Default.aspx>

Martin, B.R. (1995). Foresight in science and technology, *Technology Analysis & Strategic Management*, 7(2): 139-168. <https://doi.org/10.1080/09537329508524202>

Martino, J.P. (1983). *Technological Forecasting for Decision Making, 2nd edition*. New York, Amsterdam, Oxford: North-Holland.

Mendonca, S., Pina e Cunha, M., Kaivo-oja J. & Ruff F. (2004). Wild cards, weak signals and organizational improvisation, *Futures*, 36(2): 201-218. [https://doi.org/10.1016/S0016-3287\(03\)00148-4](https://doi.org/10.1016/S0016-3287(03)00148-4)

Miles, I. (2008). From futuresto foresight. In L. Georghiou (Ed.) *The handbook of technology foresight, concepts and practice*, PRIME series on research and innovation policy (pp. 24–43). Cheltenham, UK and Northampton, MA: Edward Elgar.

Mosher, F. C. (1979). *The GAO: The Quest for Accountability in American Government*. Boulder Colorado: Westview Press.

NAOF, Legislation. Retrieved from <https://www.vtv.fi/en/naof/legislation/>

Newton, K., Stolle, D. & Zmerli, S. (2018). *Social and Political Trust* (p.37) In Uslaner, E.M. (ed.). *The Oxford Handbook of Social and Political Trust*. New York: Oxford University Press.

Pástor, L. & Veronesi, P. (2013), Political uncertainty and risk premia, *Journal of Financial Economics*, 110(3): 520-545. <https://doi.org/10.1016/j.jfineco.2013.08.007>

Phillips, J. (2011). Target, Audit and Risk Assessment Cultures in the Probation Service, *European Journal of Probation*, 3(3): 108-122. <https://doi.org/10.1177/206622031100300308>

Pollitt, Ch., Girre, X., Lonsdale, J., Mul, R., Summa, H., & Waerness, M. (2002). *Performance or Compliance? Performance Audit and Public Management in Five Countries*. New York: Oxford University Press Inc.

Popper, R. (2008). Foresight methodology. In L. Georghiou, J. Casingena, M. Keenan, I. Miles, & R. Popper (Eds.), *The Handbook of Technology Foresight* (pp. 44–88). Cheltenham: Edward Elgar.

Popper, R. (2008a). How are foresight methods selected? *Foresight - The journal of future studies, strategic thinking and policy*, 10(6): 62-89. doi: <https://doi.org/10.1108/14636680810918586>

Prusak, L. & Cohen, D. (2001), How to invest in social capital, *Harvard Business Review*, 79(6): 86-93. <https://doi.org/10.1093/0195165128.003.0001>

Qi, J. & Tapio, P. (2018). Weak Signals and Wild Cards Leading to Transformative Disruption: A Consumer Delphi Study on the Future of e-Commerce in China, *World Futures Review*, 10(1): 44-82. <https://doi.org/10.1177/1946756717752921>

Reamer, F. G. (2000). The Social Work Ethics Audit: A Risk-Management Strategy, *Social Work*, 45(4): 355–366. <https://doi.org/10.1093/sw/45.4.355>

Renn, O., Klinke, A. & van Asselt, M. (2011). Coping with Complexity, Uncertainty and Ambiguity in Risk Governance: A Synthesis, *AMBIO*, 40: 231–246. <https://doi.org/10.1007/s13280-010-0134-0>

SAI of Guatemala, legislación. Retrieved from <https://www.contraloria.gob.gt/index.php/issai-gt-2/#>

SAI of Japan, Audit Activities. Retrieved from <https://www.jbaudit.go.jp/english/effort/index.html>

SAI of India, Our Mandate. Retrieved from <https://cag.gov.in/menu-links/our-mandate>

SAI of Fiji, Legal and Professional Frameworks. Retrieved from <http://www.oag.gov.fj/legal-and-professional-frameworks/>

SAI of Liberia, Audit mandate. Retrieved from <https://gac.gov.lr/audit-mandate/>

SAI of Papua New Guinea About the Auditor-General's Office. Retrieved from <http://www.ago.gov.pg/index.php/about-the-ago>

- SAI of China. Laws and Regulations. Retrieved from <http://www.audit.gov.cn/en/n747/n757/index.html>
- SAI of Bulgaria. National Audit Office Act. Retrieved from <https://www.bulnao.government.bg/en/articles/national-audit-office-act-1035>
- SAI of Bosnia and Herzegovina. Law on Audit of the Insitutions of Bosnia and Herzegovina. Retrieved from <http://www.revizija.gov.ba/Content/Read/zakoni-o-reviziji>
- SAI of Sudan. The Interim National Constitution of the Republic of the Sudan 2005. Retrieved from <http://www.audit.gov.sd/wp-content/uploads/2018/04/The-Interim-National-Costitution-of-the-republic-of-the-sudan-2005.pdf>
- SAI of Dominican Republic. Marco Legal Institucional (Legal Framework). Retrieved from <https://www.camaradecuentas.gob.do/index.php/sobre-nosotros/marco-legal>
- SAI of Republic of Serbia. Audit the State Audit Institutions. Retrieved from <http://www.dri.rs/about-us/about-us.183.html>
- SAI of Sri Lanka. Our Vision, Mission and Values. Retrieved from <http://www.auditorgeneral.gov.lk/web/index.php/en/about-us/main-our-vision-mission-and-values>
- SAI of Georgia. Purpose, Legal Basis and Principles. Retrieved from <https://www.sao.ge/en/about-us/Overview>
- SAI of Indonesia. Legal Framework. Retrieved from [https://www.bpk.go.id/menu/legal\\_framework](https://www.bpk.go.id/menu/legal_framework)
- SAI of Trynidad and Tobago. Mandate. Retrieved from <http://138.128.179.50/content/mandate>
- SAI of Vietnam. Legal status. Retrieved from <https://www.sav.gov.vn/en/Pages/legal-status.aspx>
- SAI of Thailand. State Audit Act. Retreived from <https://www.audit.go.th/en/state-audit-act-0>
- SAI of Kyrgyzstan. Закон КР "О Счетной палате Кыргызской Республики" (the SAI law). Retrieved from [https://www.esep.kg/index.php?option=com\\_content&view=category&layout=blog&id=23&Itemid=133&lang=ru](https://www.esep.kg/index.php?option=com_content&view=category&layout=blog&id=23&Itemid=133&lang=ru)
- SAI of Uruguay. Normativas. (Legal Framework). Retrieved from <http://www.tcr.gub.uy/normativas.php?cat=28>
- Samson, S., Reneke, J.A., Wiecek, M.M. (2009). A review of different perspectives on uncertainty and risk and an alternative modeling paradigm, *Reliability Engineering & System Safety*, 94(2): 558-567. <https://doi.org/10.1016/j.ress.2008.06.004>
- Simunic, D.A. & Stein, M. T. (1990), Audit risk in a client portfolio context, *Contemporary Accounting Research*, 6(2): 329-343. <https://doi.org/10.1111/j.1911-3846.1990.tb00762.x>
- Smith, Ch. J. & Dubois, A. (2010). The 'Wild Cards' of European futures: Planning for discontinuities? *Futures*, 42(8): 846-855. <https://doi.org/10.1016/j.futures.2010.04.016>
- Stapenhurst, R. & Titsworth, J. (2002). *Features and Functions of Supreme Audit Institutions. Africa Region Findings & Good Practice Infobriefs; No. 208*. Washington, D.C.: The World Bank.
- Surbhi, S. (2017). Difference Between Risk and Uncertainty. Retrieved from <https://keydifferences.com/difference-between-risk-and-uncertainty.html>
- The European Court of Auditors (2019). *Public Audit in the European Union. The Supreme Audit Institutions of the EU and Its Member States*. Strasbourg: European Court of Auditors.
- Tores, L., & Pina, V. (2002). Delivering Public Services—Mechanisms and Consequences: Changes in Public Service Delivery in the EU Countries, *Public Money & Management*, 22(4): 41-48. <https://doi.org/10.1111/1467-9302.00328>
- Van Acker, W., & Bouckaert, G. (2018). The impact of supreme audit institutions and ombudsmen in Belgium and The Netherlands, *Financial Accountability & Management*, 35(2): 55-71. <https://doi.org/10.1111/faam.12182>
- Varum, C. & Melo, C. (2010). Directions in scenario planning literature – A review of the past decades, *Futures*, 42(4): 355-369. <https://doi.org/10.1016/j.futures.2009.11.021>

Walker, G., Kogut, B. & Shan, W. (1997). Social Capital, Structural Holes and the Formation of an Industry Network, *Organization Science*, 8(2): 109-208. <https://doi.org/10.1287/orsc.8.2.109>

Wang, Y. & Li, M. (2011). The Role of Internal Audit in Engineering Project Risk Management, *Procedia Engineering*, 24: 689-694. <https://doi.org/10.1016/j.proeng.2011.11.2719>

### ***Acknowledgements***

*This work was supported by Jagiellonian University, Poland*

**Zbyslaw DOBROWOLSKI** is the Professor of Jagiellonian University, Poland and member of the Scientific Council at the Financial Ombudsman, Minister of Finance. He was the editor of the International Journal on Governmental Financial Management, USA. He is co-author of worldwide INTOSAI auditing standards and guidelines. Author of numerous scientific papers, including twenty monographs. Research interests: business excellence, risk management, sustainability, public management.  
**ORCID ID:** [orcid.org/0000-0003-1438-3324](https://orcid.org/0000-0003-1438-3324)

Make your research more visible, join the Twitter account of ENTREPRENEURSHIP AND SUSTAINABILITY ISSUES:  
[@Entrepr69728810](https://twitter.com/Entrepr69728810)

---

Copyright © 2020 by author(s) and VSI Entrepreneurship and Sustainability Center  
This work is licensed under the Creative Commons Attribution International License (CC BY).  
<http://creativecommons.org/licenses/by/4.0/>

