

Vlado Kovačević¹
Ljiljana Rajnović²
Predrag Vuković³
Institute of Agricultural Economics, Belgrade, Serbia

SCIENTIFIC REVIEW ARTICLE
10.5937/ekonomika2301059K
Received: December, 15. 2022.
Accepted: February, 2. 2023.

WAREHOUSE RECEIPT FINANCE IN THE AGRICULTURAL SECTORS – LESSONS LEARNED IN SERBIA

Abstract

Aim of this paper is to analyse the role of warehouse receipts in the agribusiness sector, as well as prerequisites for successful public warehouses system. Warehouse receipt emerge as a promising financial instrument for farmers and other owners of agricultural products to provide loan against warehouse receipts. Warehouse receipts also offer alternative investment opportunities for banks by creating a new asset class. The paper analyses the experiences of the Serbia, which introduced the system of public warehouses in 2009. Applied research methodology includes literature review, comparison analyses and Indemnity fund' data analyses. According to the results of this paper, Serbian legal framework can be good example for other countries aiming to establish public warehouses system as a system consisting on all necessary prerequisite to establish successful public warehouse system. After positive experiences in the initial years, the development of the public warehouse system in Serbia came to a standstill in 2015., when two frauds in the public warehouse system occurred, which led to a loss of confidence in public. An important lesson learned in Serbia is that in addition to complete legislation based on the experience of successful public warehouse systems, it is necessary to implement legal provisions in practice. According to the results of the paper, the main cause of the crash of public warehouses in Serbia is despite the legal provision on the establishment of a special inspection for public warehouses, this most important link has never been established in practice. Lessons learned in Serbia can be a useful experience for other countries, in the process of establishing this important system for agribusiness sector. This paper provides first comprehensive analyses of the public warehouse system in the Serbia.

Key words: Warehouse receipts, Public warehouses, Agricultural loans. Indemnity fund

JEL classification: G24, C22, C52, C53

ФИНАНСИРАЊЕ НА БАЗИ РОБНИХ ЗАПИСА – ЛЕКЦИЈЕ НАУЧЕНЕ У СРБИЈИ

Апстракт

Циљ овог рада је да анализира улогу робних записа у агробизнис сектору, као и предуслове за успостављање ефикасног система јавних складишта. Робни записи

¹ vlado_k@iep.bg.ac.rs, ORCID ID 0000-0002-2902-6496

² rajnoviclj@gmail.com, ORCID ID 0000-0002-8209-9088

³ predrag_v@iep.bg.ac.rs, ORCID ID 0000-0002-4723-9815

појављује се као обећавајући финансијски инструмент за пољопривреднике и друге власнике пољопривредних производа за обезбеђивање кредита који као залогу има ускладиштену робу. робни записи такође омогућавају алтернативне могућности улагања за банке стварањем новог финансијског инструмента. У раду се анализирају искуства Србије која је 2009. године увела систем јавних складишта. Примењена методологија истраживања укључује преглед литературе, упоредне анализе и анализу података Компензационог фонда. Према резултатима овог рада, српски правни оквир може бити добар пример другим земљама које теже успостављању система јавних складишта као система који се састоји од свих неопходних предуслова из најбоље праксе интернационалних система јавних складишта. После позитивних искустава у почетним годинама,, развој система у Србији застао је 2015. године, када су се догодиле две преваре у систему јавних складишта, што је довело до губитка поверења у јавна складишта. Важна лекција научена у Србији је да је поред комплетног законодавства заснованог на искуству успешних система јавних складишта, потребно применити и законске одредбе у пракси. Према резултатима рада, главни узрок неуспеха јавних складишта у Србији је да, упркос законској одредби о успостављању посебне инспекције за јавна складишта, ова најважнија карика система никада није успостављена у пракси. Лекције научене у Србији могу бити драгоцено искуство за друге европске земље, земље у развоју и све друге у циљу успостављања овог важног система за пољопривредни сектор. Овај рад даје прве свеобухватне анализе система јавних складишта у Србији.

Кључне речи: Робни записи, Јавна складишта, Пољопривредни кредити. Компензациони фонд

Introduction

Insufficient funding is a major constraint for the agribusiness industry. A large number of countries around the world are helping to solve this problem through the establishment of the public warehouse systems that allow farmers to use the certificate of storage of commodity in public warehouse (warehouse receipts) as collateral to provide short-term loans (Muhović et al., 2019). Warehouse receipts are proved to be suitable solution for farmers, traders, processors to obtained finance (Mahanta, 2012).

Public warehouses are emerged more than hundred years ago and agribusiness sector in USA, Canada, India, Bulgaria, Hungary etc. are benefiting from this system.

In 2009, Serbia established a public warehouse system for agricultural products with the assistance of the FAO, World Bank, and USAID. This was implemented through the enactment of the Law on Public Warehouses.

The Serbian public warehouse system has achieved significant milestones, including issuing licenses for warehouses that handle cereals, oilseeds, and frozen fruits. These licensed warehouses are required to make contributions to the Indemnity Fund, as noted by Zakić et al. (2014). Moreover, public warehouses in Serbia have the authority to store their own commodities or those of third parties.

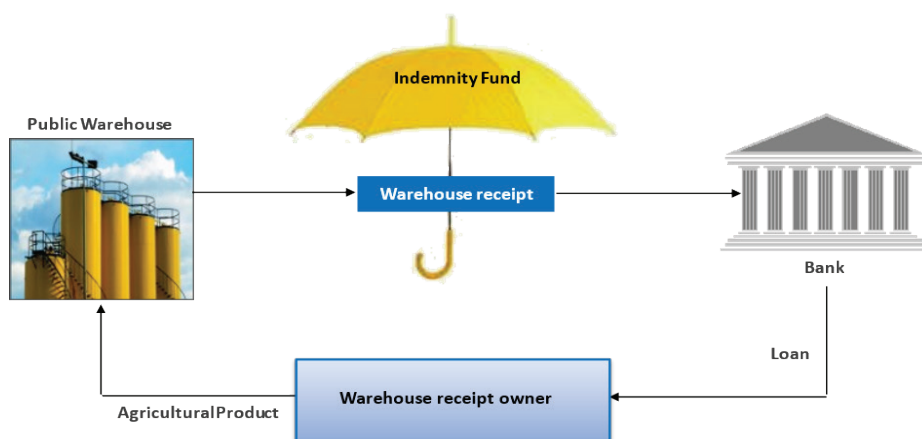
Due to the fact that existence of the stored commodities are guaranteed, the warehouse receipt can serve as collateral for short-term loans or be traded, Coulter and Onumah (2002).

Theoretical backgrounds and Literature review

With public warehouse system farmers have the option to store their products in public warehouses instead of selling in harvest time when prices are typically low. By using warehouse receipts as collateral, they can secure short-term loans to meet their financial requirements. When the market price is higher, farmers can sell their products and use the proceeds to pay off their short-term loans. In addition, Serbia is allowing public warehouses to issue warehouse receipts for stored agricultural products and obtain favourable short-term loans to fulfil their financial needs

Both benefits for the owner of the warehouse receipts, i.e., higher price for commodity stored in a public warehouse in case of sale, as well as the possibility of using the commodity as collateral for a loan, are conditioned by the trust of banks and merchants in the system. Security of delivery of commodity according to the commodity record arises from three rounds of trust built into the system: (1) Only warehouses having required business indicators, storage capacity, and equipment can be granted licenses as reliable storage facilities; (2) the existence of a special inspection service that regularly and extraordinarily monitors commodity in public warehouses and (3) the existence of the Indemnity Fund which, in case the owner of the commodity cannot take it from the public warehouse, compensates the owner of the commodity out of court within five days and initiates proceedings against the public warehouse. Due to such mechanisms for guaranteeing the delivery of commodity, banks that approve loans against warehouse receipt have lower risk (Vasiljević et al., 2015).

Scheme 1. Collateralized Loans Using Warehouse Receipts



Source: Kovačević and Zakić, 2016.

As depicted in Scheme 1, the warehouse receipt financing system can effectively decrease risks and transaction costs associated with collateralized financing, resulting in low-cost loans and a shorter turnaround time for loan issuance. However, to fully reap the benefits of this system, a proper legal framework and institutional setup must be established to instil trust among financiers and commodity market participants, as noted by Höllinger and Lamon (2009).

Attempts to build private warehouse receipts systems based on the contractual obligations (i.e. Russia, Turkey, Kazakhstan) organised mostly by the banks and commodity exchanges are proven to be less effective compared to the legally established public warehouse systems.

Legal framework in Serbia is based on the proven worldwide foundations (Zakić et. Al, 2014).

The Ministry of Agriculture, Forestry, and Water Management of the Republic of Serbia is responsible for the licensing and supervision of public warehouses. Additionally, the Indemnity Fund of the Republic of Serbia has been established to indemnify owners of warehouse receipts through a fast out-of-court procedure in the event of public warehouse default.

In addition to established legal framework, it is also crucial to establish a favourable business environment for the public warehouse system. Serbia provides an excellent example of supportive central bank policies regarding lending against warehouse receipts. In 2011, the National Bank of Serbia introduced an “Adequate credit rating” for loans against warehouse receipts. This decision had a twofold effect: firstly, commercial banks are required to pay only a 5% deposit to the NBS when issuing loans that use a commodity pledge as collateral, which enables lower interest rates due to reduced commitment of funds. Secondly, this decision signals to commercial banks that the commodity record is a first-class security.

Support of the interest rate when lending against post or pre-harvest financial instruments is often an effective practice. European Bank for Development and Reconstruction granted 50.000.000 euros throughout risk share program to three Serbian banks as a support for lending against warehouse receipts in 2011.

Other support measures providing the advantages to the public warehouses are found to be important. One of such measures is Commodity directorate reserves of the Republic of Serbia in 2011 decision to grant automatic status of government warehousemen to the public warehouses. With the loss of the privileged status in 2013, the public warehouses came to the situation to first submit bank guarantees and meet other conditions for obtaining a public warehouse license, and if they want to obtain the status of recognised Commodity directorate reserves' warehouse, the public warehouses need to deposit guarantees and meet all other requirements. This practically requires double the guarantee cost. The practice in all developed systems is that state grain reserves are kept in the safest place - exclusively in public warehouses. Successful practice in Hungary and Bulgaria to store cereals purchased within the EU market intervention measures - Public Intervention (Public Intervention) in public warehouses.

Proper legal framework and significant support resulted in the financing of Serbian agriculture through warehouse receipts has already exceeded 50 million euros, with interest rates about 20% lower than the market average (Indemnity Fund of the Republic of Serbia, 2021).

Among the reasons for hinders the development of the Public warehouses in Serbia is insufficient capacity of the Public Warehouse Inspection Service as the most important factor. This service is responsible for supervising the quantity and condition of commodities in public warehouses to ensure the security of storage. Unfortunately, the inability to hire enough inspectors has prevented the formation of a dedicated unit responsible for controlling public warehouses.

Potential to increase of the security of stored good in the warehouses is by using of new technologies such as blockchain has had positive effects on the public warehouse system by reducing counterparty risk. Additionally, the electronic warehouse receipt based on blockchain technology has become an important digital asset in the field of bulk commodities, serving as a certificate for supply chain financial businesses (Krivokuća et al., 2021; Wang, 2020; Yuanjian et al., 2019).

In 2010. Food and Agricultural Organization (FAO) donated software for electronic Registry of the warehouse receipts. Electronic warehouse receipts are rare worldwide, considering that the dematerialization of the warehouse receipts is more challenging than the dematerialization of the securities, due to the warehouse receipts are individual in characterises. Electronic warehouse receipts have a great role in reducing the risk in the system of commodity records with the view that in the electronic system of commodity records data on all commodity records can be seen in real time. Serbia has applied a kind of semi-electronic Commodity Records System (Kovačević et al., 2016), with the support of the FAO, it has created an electronic register of commodity receipts, while the warehouse receipts themselves are stood in paper form. Unfortunately, the electronic Warehouse receipts register has never been applied in practice.

For the establishment of public warehouse systems based on the best worldwide practice, efforts are being made by UN agencies to develop general legal guidelines for public warehouses (Dubovec and Elias 2017).

Research Design, Methodology, Research Tasks and Hypothesis

The study employed several methods to ensure objective findings, including a comprehensive literature review, descriptive statistics, and comparative analysis.

Data was sourced from the Indemnity Fund of the Republic of Serbia.

Two research hypotheses were formulated:

Research Hypothesis I: A successful public warehouse system should be anchored on a sound legal framework rather than contractual obligations among stakeholders.

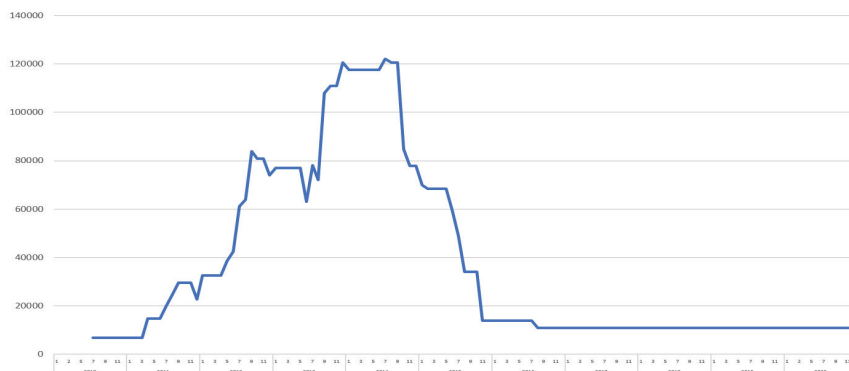
Research Hypothesis II: The key elements of warehouse systems, including licensing and supervision, performance guarantees, and the creation of a conducive business environment, are crucial for the development of the public warehouse system.

Research results and Discussion

The results and discussion of this study are based on a thorough assessment of the current implementation of warehouse receipts in Serbia, aimed at identifying the necessary factors to improve the public warehouse system.

Graph 1 shows the capacity of licensed public warehouses between 2010 and 2020, while Graph 2 presents the number of licensed public warehouses during the same period.

Graph 1. Licensed Capacity of Public Warehouses for Grain and Oilseeds (in tons) from 2010-2020



Source: Indemnity Fund of the Republic of Serbia, 2021

According to Indemnity Fund of the Republic of Serbia, 2021, cold storage capacity of 900 t was licensed as public warehouse in the period July 2011 to July 2012⁴.

Graph 2. Number of Public warehouses for grain and oilseeds in the period 2010-2020



Source: Indemnity Fund of the Republic of Serbia, 2021

⁴ According to Authors best knowledge it is unique attempt to include colling houses in the agricultural commodities public warehouse system due to the challenges in quality determination of the fruits and the fact that often quality cannot be determined at the time of the product deposition.

According to Indemnity Fund of the Republic of Serbia, 2021, one cold storage licensed public warehouses was registered in the period July 2011 to July 2012.

The Serbian Public warehouse path, can be divided into two phases. The from 2010 to 2014 and was characterized by increasing public warehouse capacities and number of licensed warehouses. The second phase began at the end of 2014 and continues to the present day, during which the Serbian public warehouse system deteriorated as a consequence of two large-scale frauds in 2014 and 2015.

Based on the conducted analysis, it can be concluded that the legal framework for public warehouses is exceptionally well-established and can serve as an example for other public warehouse systems.

The analysis shows that the positive public warehouse environment in Serbia has allowed successful start of the public warehouse system, including:

- 1) The legal framework relies on legislation instead of private contracts;
- 2) The Ministry of Agriculture, Forestry, and Water Management of the Republic of Serbia is responsible for licensing and supervising public warehouses;
- 3) Licensing procedure for public warehouses includes financial and technical requirements;
- 4) The Indemnity Fund of the Republic of Serbia has been established to compensate owners of warehouse receipts in case of public warehouse default through a fast out-of-court procedure;
- 5) According to the Law on public warehouses, a dedicated inspection service for public warehouses is mandated under the Ministry of Agriculture, Forestry and Water Management of the Republic of Serbia;
- 6) Public warehouses' storage fees are subsidised by the Ministry of Agriculture;
- 7) Commodity directorate reserves of the Republic of Serbia in 2011 decided to grant automatic status of government warehousemen to the public warehouses;
- 8) European Bank for Development and Reconstruction granted 50.000.000 euros throughout risk share program to three Serbian banks as a support for lending against warehouse receipts in 2011;
- 9) In 2010. Food and Agricultural Organization (FAO) donated software for electronic Registry of the warehouse receipts;
- 10) In 2012. National Bank of Serbia rated as a adequate loans against warehouse receipts.

Based on the analysis conducted in the paper, the reasons for the deterioration of the Serbian public warehouse system are as follows:

- 1) One of the main reason for the deterioration of the Serbian public warehouse system, is that the inspection service responsible for supervising public warehouses within the Ministry of Agriculture, Forestry and Water Management of the Republic of Serbia, which is mandated by law, has not been established in practice. Indemnity fund was not received initial capitalisation resulting in week guarantee performance;
- 2) Electronic warehouse receipts registry with tremendous effect on the risk reduction donated by the FAO was not operational since today;
- 3) Commodity directorate reserves of the Republic of Serbia in withdrawn

granted automatic status of government warehousemen to the public warehouses;

- 4) Despite the known fact that only storable, easy quality determination products are eligible for public warehouse system. Serbia emended colling houses and frozen fruits in to the public warehouse system. Theoretical knowledge is proven in this case as the frozen fruit in the practice has obstacle in: quality cannot be determined on the commodity deposition (first need to be frozen and then classified to determined quality) etc.

In summary, the non-established public warehouse inspection service is the main reason for the deterioration of the Serbian public warehouses, despite having a proper legal framework in place. As a result, millions of euros worth of warehouse receipts are being issued without adequate on-site control.

The research carried out in this paper provides evidence in favor of the first research hypothesis, which states that a successful public warehouse system must be built upon a legal framework rather than a contractual obligation among stakeholders.

The second research hypothesis Implementation of the core elements of the warehouse systems licensing and supervision, guarantee performances and creation of favourable business environment is essential for development of the public warehouse system is also supported.

Conclusion

The use of warehouse receipts is vital for the agribusiness sector to secure loans using stored commodities as collateral. These receipts also play a significant role in facilitating trade, particularly in commodity exchanges. In developing countries, where borrowers often lack sufficient collateral, warehouse receipts are promising financial and trade instruments. The Serbian public warehouse system, as analyzed in this study, has a well-established legal framework that is conducive to the successful development of a warehouse receipt system. The Ministry of Agriculture has established a system of licensing and supervision, and an indemnity fund has been introduced. However, the lack of an inspection service for public warehouses in practice has led to issues, including two large-scale frauds in 2014 and 2015, which resulted in significant losses. The experience in Serbia highlights the importance of implementing a public warehouse inspection service and providing initial contributions to the indemnity fund to guarantee performance from the outset. Additionally, the Serbian experience confirms the theoretical standpoint that only storable products, such as grain and oilseeds, whose quality can be determined at the time of delivery, are suitable for public warehouses. Frozen fruits are not suitable products for public warehouses. The successful implementation of the Serbian system, as well as experiences from Bulgaria, Hungary, Slovakia, and others, demonstrate that warehouse receipts are excellent financial instruments that provide additional collateral for commodity owners, and are essential for the development of commodity exchanges. Given the significant importance of this topic, further scientific research on public warehouse systems is necessary to avoid the mistakes made in Serbia and establish public warehouse systems with effective inspection service.

References

- Coulter, J., Onumah, G. (2002): The role of warehouse receipt systems in enhanced commodity marketing and rural livelihoods in Africa, *Food Policy*, 27(2), 319-337.
- Dubovec Marek and Elias Adalberto (2017): A proposal for UNCITRAL to develop a Model Law on Warehouse Receipts, *Uniform Law Review*, 22(4), 716–730, <https://doi.org/10.1093/ulr/unx042>
- Höllinger Frank and Lamon Rutten (2009): The use of warehouse receipt finance in agriculture in ECA countries, FAO-World Bank Cooperative Programme and FAO - EBRD Cooperative Programme, technical background paper, World Grain Forum 2009, St. Petersburg, Russian Federation, p. 50, Available at: www.eastagri.org/files/FAO_EBRD-Warehouse-Receipt-Financing.pdf
- IFC/WB (2013): Warehouse finance and warehouse receipt systems: A guide for financial institutions in emerging economies, International Finance Corporation, World Bank Group, Washington, D.C., USA, p. 132, Available at: www.mongolbank.mn/conference/books/01.pdf, accessed: 6.4.2015.
- Indemnity Fund of the Republic of Serbia, (2021): Report on the Public warehouses' licensed capacities and number of licensed public warehouses for period 2015-2020, Report received on request on 21st January, 2020
- Indemnity Fund of the Republic of Serbia, Available at: www.kompenzacionifond.gov.rs
- Jovičić Daliborka, Jeremić Ljiljana, Milićević Lazar and Zeremski Aleksandar (2014): Warehouse receipts functioning to reduce market risk, *Economics of Agriculture*, 61(2), 347-365.
- Krivokuća Milan, Čočkaló Dtagan, & Bakator, Mihalj. (2021). The potential of digital entrepreneurship in Serbia. *Anali Ekonomskog fakulteta u Subotici*, (45), 97-115. DOI: 10.5937/AnEkSub2145097K
- Kovačević Vlado, Zakić Vladimir, Milovanović Miloš, Subić Jonel, Jeločnik and Marko (2016): Electronic warehouse receipts registry as a step from paper to electronic warehouse receipts, *Economics of Agriculture*, 3(63), 801-815,
- Kovačević Vlado, Zakić Vladimir (2016): Razvoj finansijskog tržišta za potrebe poljoprivrede, Stanje i perspektive agroprivrede i sela u Srbiji -monografija (rad prezentovan na naučnom skupu Stanje i perspektive agroprivrede i sela u Srbiji, Ekonomski fakultet Beograd, 23.4.2016), Naučno društvo ekonomista Srbije, str. 225-237
- Mahanta Devajit. (2012): Review of warehouse receipt as an instrument for financing in India. *International journal of scientific & technology research*, 1(9), 42-55.
- Muhović Almir, Radivojević Nikola and Čurčić Nikola (2019): research of factors of non-performing agricultural loans by primary data panels, *Economics of Agriculture*, Belgrade, 66(2), 569-578,
- National Bank of Serbia – NBS, Decision on classification of balance sheet assets and off-balance sheet items of the bank, (“Official Gazette of RS”, No. 94/2011, 57/2012, 123/2012, 43/2013, 113/2013, 135/2014, 25/2015, 38/2015, 61/2016, 69/2016, 91/2016, 101/2017, 114/2017, 103/2018 and 8/2019).

- Rule book on determining the amount of membership fee and dinar amount per tons of stored agricultural products which publicly warehouse for agricultural products salaries Indemnity fund (“Official Gazette of the Republic of Serbia”, No. 15/2010)
- Rule book on the conditions that public warehouses must meet in terms of storage space for reception, storage and delivery of agricultural products, equipment for measuring the quantity and determining the quality of public warehouses, values of fixed assets not encumbered by mortgage or other liens, depending on the type of agricultural products which are subject to storage, as well as financial performance indicators (“Official Gazette of the Republic of Serbia”, No. 30/10)
- Su Lei and Wang Haiying (2020): “Analysis on Electronic Warehouse Receipt of Bulk Commodity in Supply Chain Finance Practice,” *2020 International Conference on Computer Information and Big Data Applications (CIBDA)*, Guiyang, China, 2020, pp. 33-36, doi: 10.1109/CIBDA50819.2020.00016.
- The Law on public warehouses for agricultural products, Official Gazette of the Republic of Serbia, No. 41/09.
- Vasiljević Zorica and Kovačević Vlado (2015): Značaj robnih hartija od vrednosti za finansiranje poljoprivrednog sektora u Srbiji, Zbornik radova sa međunarodne naučne konferencije “Menadžment, preduzetništvo i investicije u funkciji privrednog rasta i zapošljavanja”, 3.10.2014., Beograd, Srbija, Institut za poslovna istraživanja – MBA Beograd, Udruženje menadžera Srbije, Beograd, Visoka škola modernog biznisa, Beograd, pp. 232-245, ISBN 978-86-85287-06-0
- Yuanjian Z., Dongmei Qing, Yining L, and L. (2019): Design of Electronic Warehouse Receipts System Based on Blockchain[J]. *Netinfo Security*, 19(6), 84-90.
- Zakić Vladimir, Kovačević Vlado, Ivkov Ivana and Mirović Vera (2014): Importance of public warehouse system for financing agribusiness sector, *Economics of Agriculture*, Belgrade, 61(4), 929-943