A Study on Sustainable Efficiency of Licensed Warehousing System and Related Policies[1]

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Abstract

Lisanslı depoculuk sistemi veya diğer bir adıyla depo makbuz sistemi, dünyanın hemen her kıtasındaki birçok ülkede benzer bir mantıkla ve fakat farklılıklarıyla uzun yıllardan beri özellikle hububat başta olmak üzere tarım ürünleri piyasasının etkin çalışması ve gıda arz güvenliğinin daha iyi sağlanması amacıyla kullanılmaktadır. The system offers certified storage services where depositors receive warehouse receipts proving ownership and quality of stored goods. These receipts can be used as collateral for access to credit or trade, thus helping producers postpone sales, stabilize supply/prices, and improve market liquidity. The problems and risks on licensed warehousing are weak legal/regulatory frameworks, the lack of quality control and auditing, the low participation of banks and operational and governance risks such as abuse, inadequate insurance, or poor record keeping, which can lead to losses and systemic insecurity. Policy action and institutional recommendations a clear legal framework for receipts and secured transactions, model laws/guidelines that exemplify good practice should be adopted or adapted, strong licensing, inspection, and audit regimes are crucial, linkages with banks and credit sources are also important, insurance and risk management tools are another important area, secure records, including electronic warehouse receipts and digitalization of records, increase transferability, reduce fraud, and expedite transactions , capacity building and stakeholder engagement are another key aspect of licensed warehousing and warehouse operators, banks, and regulatory personnel should be trained, and manufacturers and traders should be consulted to establish trust and practical guidelines. Licensed warehousing system in Türkiye came to agenda in 2005 by enacting the low and implementation started in 2016 and reached the capacity od 13.6 million tons. The benefits and shortcoming of the system in Türkiye are similar to those in the world. Small size producers, instable incentives, imbalances in capacity, high dependency on Grain Board, low awareness of producers about the system and effective auditing are the other important obstacles for the system to work effectively in sustainable manner. On the other hand, Uzbekistan does not have a fully operational, market-style warehousing Receipt System, but does, however, have concrete legal and digital building blocks that make a near-term transition feasible. Therefore, this would be one of the current issues in Uzbekistan's Agriculture and warehousing receipt system could be an innovative solution. Examples of good practice in the world should be taken into consideration while doing studies and implementing the system in Uzbekistan.

Inroduction

Licensed warehouses are utilized in many developed and developing countries to prevent price fluctuations in the agricultural sector and maintain the balance of supply and demand (**Sezal 2017; Doğan and Bulut, 2021; Yavuz, 2021**). The licensed warehousing system is a crucial institutional infrastructure that facilitates and records agricultural product trade, expands the market for products, contributes to the development of product markets and price stability in these markets, and facilitates industrialists' procurement of the raw materials they need for production (**Ergin and**

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Bal, 2020; Lidaşder, 2021). It is crucial for the smooth functioning of many agricultural product markets in Turkey. The world's first known official example of a licensed warehousing system was established in 1730 in Osaka, where rice producers secured certain quality and quantity of production through forward-looking contracts and received certificates, which were considered currency in the economy of the time (**Deniz et al., 2011; Memiş and Keskin, 2015**). The concept of licensed warehousing first emerged in the United States, where the Chicago Board of Trade established in 1848 traded corn and wheat products based on forward-looking contracts, storing the products of producers and other suppliers, and issuing product receipts for purchased products (**Kaya, 2017**). The United States is the country with the most developed licensed warehousing system, with approximately 10,000 licensed warehouses with a capacity of 620 million tons (TMO, 2016). Licensed warehousing plays an important market-stabilizing role in the agricultural sector in EU countries, India, Canada, Kazakhstan, and Russia, in addition to the US.

The licensed warehousing system established in Turkey based on Law No. 5300, enacted in 2005, most closely resembles the federal Warehouse Receipt System model established in the United States in 1916 based on the U.S. Warehouse Act. In the US, the Agricultural Marketing Service of the US Department of Agriculture (USDA) is responsible for the system, while in Turkey, the General Directorate of Internal Trade of the Ministry of Commerce is responsible. Ownership of stored goods is represented by a "transferable warehouse receipt" in the US and an "electronic product receipt (ELÜS)" in Turkey. The platforms where product receipts are traded are the Product Specialized Stock Exchange (TÜRİB) in Turkey and the Commodity Exchange in the US. In Turkey, the system is a public-private hybrid warehouse and centrally managed, while in the US, it is a decentralized system under federal standards (Kaya, 2018; Yazar and Seçer, 2023).

Studies on Licensed Warehousing in the World

In the European Union, for example, in the Netherlands and France, private and cooperative warehouse certification is more prevalent, despite limited government licenses, and warehouses are integrated into commodity exchanges and forward-looking markets. In Eastern European countries such as Bulgaria, Hungary, Serbia, and Ukraine, private-public hybrid storage systems, supported by the World Bank, have been successful in the 1990s and 2000s due to effective management (FAO, 2015). In Latin American countries such as Brazil, Argentina, Mexico, and Colombia, depository certificates and guarantees have been widely used to finance agricultural exports. Systems in Sub-Saharan African countries such as Ethiopia, Tanzania, Zambia, and Ghana are operating as rapidly expanding reform-oriented pilot storage initiatives supported by the FAO and the World Food Programme (WFP) (Aboagye, 2023; Mapunda et al., 2019). In Asia-Pacific countries such as India, China, the Philippines, and Indonesia, large-scale systems linked to food security programs and government procurement are in place (Gunawan, et al., 2019). The Food Corporation of India is an example of such systems. In the Middle East, similar systems are in effect in Egypt, Jordan and Türkiye.

Licensed warehousing, or warehouse receipt systems (WRS), offers certified storage services where depositors receive warehouse receipts proving ownership and quality of stored goods. These receipts can be used as collateral for access to credit or trade, thus helping producers postpone sales, stabilize supply/prices, and improve market liquidity (Giovannucci et al., 2000). The literature highlights the primary benefits of licensed warehousing: first, improved access to finance; when legal/regulatory frameworks and storage controls are strong, banks can provide loans against receipts, increasing farmers' liquidity and investment capacity. Second, price stabilization and market efficiency: by enabling storage and delaying sales, the warehouse receipt system stabilizes revenues by reducing post-harvest oversupply and price declines (FAO, 2015). The third main benefit is the

reduction of post-harvest losses, that is, reducing spoilage through proper storage and contributing to national food security targets (UNDP, 2024).

The problems and risks identified in the literature on licensed warehousing fall under four main headings. Among these are weak legal/regulatory frameworks, such as unclear rules regarding receipt transfer and creditor priority. This can undermine creditor confidence. Model laws/guidelines are frequently recommended in this regard (UNIDROIT, 2021). Another is the lack of quality control and auditing. If warehouses cannot reliably certify quality/quantity, receipts lose value and market confidence is lost (Giovannucci et al., 2000). Another is the low participation of banks when banks are inexperienced or have weak collateral practices. In this case, many programs report a learning curve for financial institutions. Case studies, such as those in Bulgaria, indicate that participation increases as banks gain experience (Coulter, 2009). Additionally, operational and governance risks such as abuse, inadequate insurance, or poor record keeping, which can lead to losses and systemic insecurity (USDA, 2025).

Policy action and institutional recommendations for licensed warehousing are frequently encountered in previous studies. We will attempt to highlight some of the most important of these. There should be a clear legal framework for receipts and secured transactions. This legislation should specify how receipts are transferred, the priority of receivables, and how they are treated in the event of bankruptcy. Model laws/guidelines that exemplify good practice should be adopted or adapted (UNIDROIT, 2021). Strong licensing, inspection, and audit regimes are crucial. Independent inspections, routine audits, and enforced licensing standards protect depositors and lenders (USDA, 2025). Linkages with banks and credit sources are also important. Technical support and guarantee schemes for banks to structure Warehouse Receipt lending will help scale up lending against receipts (Hollinger et al., 2009). Insurance and risk management tools are another important area. Product/warehouse insurance, rating standards, and reconciliation systems reduce counterparty risk (Giovannucci et al., 2000). Secure records, including electronic warehouse receipts (e-WR, ELUS) and digitalization of records, increase transferability, reduce fraud, and expedite transactions (UNIDROIT, 2021). Capacity building and stakeholder engagement are another key aspect of licensed warehousing. Warehouse operators, banks, and regulatory personnel should be trained, and manufacturers and traders should be consulted to establish trust and practical guidelines (Coulter, 2009).

Relevant literature indicates that when the legal/institutional environment is strong and enforcement is effective, the Licensed Warehousing System has increased credit flows, reduced losses, and improved price outcomes. Where legislation is weak, results are limited, and systems can fail or underperform (Giovannucci et al., 2000). Digitization (e-receipts, records) and integration with modern trade/finance systems related to licensed warehousing are important recent issues and recent trends (UNIDROIT, 2021). Studies highlight the need for rigorous impact evaluations. Many descriptive/case studies exist, but fewer randomized or quasi-experimental impact evaluations measure long-term welfare impacts on smallholder farmers. Therefore, more high-quality impact studies are needed for policy design (Giovannucci et al., 2000).

Studies on Warehousing System in Türkiye

Türkiye'de ise lisanslı depoculuğun ilk temelleri 1937 yılında kurulan, ancak limanlardaki antrepoların devlet tekeline alınması ile bankaların depoculuk faaliyeti yapmaları nedeniyle uygulanamayan UMAT-Umumi Mağazalar A.Ş ile atılmıştır (**Yıldırım, 2019**). Toprak Mahsulleri Ofisinin (TMO) 1993 yılında umumi mağazacılık sistemini tekrar başlatmasıyla hububat alımlarında emanet alım sistemi uygulanmaya başlanmıştır. Üretici, sanayici ve tüccarların arz döneminde oluşan düşük fiyatlardan

ürününü satmak yerine TMO'da emanete bırakması neticesinde makbuz senedini teminat göstererek finansman ihtiyacını karşılama, dilediği zaman herhangi bir TMO işyerinden ürününü geri alma veya ürününü satma imkânı getirilmiştir. Türkiye'de lisanslı depoculuk faaliyetleri resmi olarak 2005'te çıkarılan Tarım Ürünleri Lisanslı Depoculuk Kanunu ile başlamış olup özel sektörün herhangi bir faaliyette bulunmaması neticesinde 2010 yılında TMO-TOBB ortaklığında Ankara'nın Polatlı ilçesinde 40.000 ton kapasiteli ilk lisanslı depo kurulmuştur (**Yıldırım, 2019**). TMO'nun belirli kriterlere göre 2016 yılından itibaren 10 yıl kiralama garantisi vermesiyle (TMO, 2020) hızlı bir şekilde yaygınlaşmaya başlayan lisanslı depoculuk sisteminde 2025 yılı sonu itibariyle 659 şirket 26,3 milyon ton kapasiteli lisanslı depo için kuruluş izni alarak, 362 tanesi toplam 14,2 milyon ton kapasitesi ile 53 ilde faaliyetlerini sürdürmektedir (**Ticaret Bakanlığı, 2025**).

Research also demonstrates that, despite its current advantages, there are significant challenges hindering the sustainability and development of licensed warehousing in Turkey. Significant challenges have been identified, including the fact that nearly all producers operating in the agricultural sector in Turkey are family businesses with low production scales and lack sufficient financing (Yavuz, 2021); the low level of awareness among producers about the licensed warehousing system; the current quality and classification system's failure to classify and distinguish wheat varieties; and inadequate inspections (Ceyhan et al., 2018); the real decline in support amounts while analysis, rental, and transportation fees are constantly increasing (Doğan and Bulut, 2021); and the increased stockpiling (Yıldırım, 2020). Another important issue regarding licensed warehousing is the ongoing support purchases implemented in Turkey. Current market conditions and low production scales mean that a segment of the population, including the majority of farmers, will earn very little from licensed warehousing, with a significant portion selling their products to traders and industrialists (Kaya, 2017). Producers who deliver to licensed warehouses actually apply to licensed warehouses to sell their products to the Turkish Grain Board (TMO). The fact that the TMO makes purchases on its behalf alongside licensed warehouses during periods when support prices are announced leads producers to prefer the TMO over licensed warehouses, as they perceive the TMO as a more reliable institution and prefer to operate according to traditional methods. This situation can hinder new investments, both by reducing the effectiveness of licensed warehouses and by preventing investors from achieving the expected benefits. Therefore, it is crucial to expand the licensed warehousing system based on demand and increase the level of utilization for all stakeholders in the system, especially producers. This importance has been further exacerbated by the disruptions in the food supply chain during the COVID-19 pandemic. In order to achieve all these goals more accurately, it is essential to analyze the effectiveness of current practices in the licensed warehousing system in Turkey and the impact of the policies that guide these practices, and to improve current practices/policies and/or present alternative policy recommendations.

Studies on licensed warehousing in Turkey have generally investigated the effects of licensed warehousing on agricultural products markets (Deniz et al., 2011; Memiş and Keskin, 2015), government incentives within the scope of licensed warehousing (Sezal, 2017; İçöz and Peker, 2019), and producers' utilization of licensed warehousing (Ergin and Bal, 2020; Doğan and Bulut, 2021). The most comprehensive study on licensed warehousing was conducted by Ceyhan et al. (2018) in 2016 and 2017 with a total of 61 people, including 44 actors and 17 depositors (traders and producers), including 11 licensed warehouse operators operating in the grain sector, in 7 provinces. As a result of the research, the effects of the licensed warehousing system on farmers' incomes and the deficiencies of the system were determined and a SWOT analysis was conducted and it was stated that the licensed warehousing does not yet have an effective operation due to the newness of the system and the problems experienced in the application arising from the actors and communication and trust between the actors.

In the study that aimed to examine the attitudes and behaviors of producers towards the licensed warehousing system (Tengiz and Ayyıldız, 2023), a survey was conducted with 76 grain producers in the Yerköy district of Yozgat for the 2021-2022 production period and it was stated that although the producers were aware of the system, their knowledge level and widespread use of the system were low. Therefore, it was emphasized that the need to address the deficiencies in education and information in the widespread adoption of licensed warehousing was emphasized. In the study where the transaction performance of licensed warehousing companies was measured using multi-criteria decision-making methods (Ergun et al., 2022), data for the period January 2018–November 2021 was used and significant differences were identified between the performances of the companies. It was suggested that performance criteria should be clarified and comparative analyses should be increased for the development of the sector in the context of institutional effectiveness. The study examining the role of the licensed warehousing system in the financialization and commoditization processes in agriculture (Güler and Değirmenci, 2020) found that the system is not only storage; It emphasizes that recording the product in terms of quality, quantity and traceability plays a key role in ensuring producers' access to credit and financing and in ensuring agriculture-industry integration, as well as enabling agricultural products to become financial instruments. In a study conducted to evaluate the benefits of the licensed warehousing system in the Central Anatolia region from the perspective of producers and warehouse owners (Çolak and Üçler, 2024), a survey was conducted with 110 licensed warehouse representatives. While it was stated that the system provided high benefits in areas such as preventing quality losses and safe storage, it was determined that the system was effectively usable, but there were regional differences and levels of implementation. In a study conducted to determine the opinions of olive oil producers on licensed warehousing and the product voucher system (Savran and Demirbaş, 2017), a face-to-face survey was conducted with 53 olive oil companies. The majority of producers did not have sufficient information about the system, and therefore, the need to be informed about the purpose and operation of the system was emphasized with the statement, "The system cannot be used to its full potential due to ambiguities."

Recent Studies on Efficiency of the System in Türkiye

These latest studies conducted in Turkey have frequently addressed producers' knowledge of the system, their adoption rates, and their expectations for economic benefits. They have determined that the licensed warehousing system offers the potential to reduce quality losses in agricultural products, standardize storage, and create safe storage conditions. Furthermore, a lack of information and training has been identified as a significant obstacle to the system's effectiveness. Performance measurements of licensed warehousing companies have been conducted, demonstrating areas for improvement in terms of institutional effectiveness and competitiveness. The system's advantages include transforming the storage system into a financial instrument, facilitating trade, and providing financial solutions to producers through product vouchers. It has also been emphasized that implementation varies by region, impacts vary across product groups such as grains, legumes, and oilseeds, and that the system is directly linked to government support, legislation, and regulatory infrastructure, and therefore, these conditions must be met for its widespread adoption. It is recommended that producers have sufficient knowledge about the system, that the impact of the system be detailed in different regions and different product groups, that performance analyses be conducted with more comprehensive and up-to-date data at the company level, that more work be done on the effectiveness of mechanisms such as licensed storage, access to credit/financing, and product voucher transactions, and that the harmony between legal regulations, the capacity of businesses, and the practical operation of the system be investigated.

Research findings indicate that licensed warehousing plays a key role in preserving agricultural products, maintaining price stability and developing registered trade. However, imbalances in capacity, unsustainable incentives, a lack of oversight and excessive dependence on the Turkish Grain Board (TMO) limit the effectiveness of the system (Veysi et al, 2025). Information & knowledge are decisive in both participation and quantity delivered. Farm size stratification: Larger farms are key drivers of warehouse throughput, perceptions of cash flow benefits & storage safety directly influence behavior, institutional membership (coops) supports participation but does not strongly influence quantity, Policy implication such as strengthening support policies, awareness campaigns, and trust-building in LIDAS is as important as improving accessibility (Yavuz.a et al, 2025). The licensed warehousing variable was found to be negative and statistically significant in price volatility. This result indicates that the licensed warehousing system reduces or moderates short-term speculative pressures on wheat prices. The literature suggests that licensed warehousing can be an effective mechanism for reducing volatility, and consistent with this result, the current study confirms that licensed warehousing activities play a stabilizing role, particularly in the corn and wheat markets (Merve et al, 2025). Based on the SWOT analysis results, increasing and diversifying support, increasing the number and quantity of warehouses, institutionalizing businesses, conducting regular and effective audits, informing farmers about the system and its operations, ensuring more efficient use of ELUSs, facilitating access to credit, and ensuring that licensed warehousing is carried out by qualified personnel within the sector will improve the licensed warehousing system (Yavuz.b et al, 2025). The licensed warehousing system offers significant advantages to producers in terms of storage, price stability, and access to financing. However, in order to increase the effectiveness of the system, it is critical to intensify information activities, strengthen the warehouse infrastructure and make support mechanisms more inclusive (Kaya et al, 2025).

The case in Uzbekistan

In terms of grain production, Uzbekistan produces around 6.75-million-ton wheat, 0.72-million-ton corn and 0.13-million-ton barley. In total around 9 million ton of gran is produced. This means that Uzbekistan has potential to establish warehousing receipt system for wheat production which is 1/3 of wheat production in Türkiye.

Does Uzbekistan have warehouse Receipt System? The short answer not yet in the sense of a fully operational, market-style warehousing Receipt System. Uzbekistan does, however, have concrete legal and digital building blocks that make a near-term transition feasible. These building blocks are (1) warehouse document law, (2) electronic consignment-note regime, (3) the d-xarid.uz platform, and (4) an agricultural risk-insurance law.

The *market* version of an e-WRS requires (a) a registry that supports lien/pledge recording and bank access, (b) legal clarity and practice on negotiability and priority, (c) widespread bank adoption and standardized lending protocols, (d) mandatory third-party grading and periodic audits, and (e) insurance products operationally tied to receipts. Public sources do not yet demonstrate these are in place at market scale.

These reforms are promising and could lay the foundation for a true Warehousing Receipt System, but some key pieces such as registry, private-sector uptake, collateral usage may still need to catch up. So, this would be one of the current issues in Uzbekistan's Agriculture and warehousing receipt system could be an innovative solution. Examples of good practice in the world should be taken into consideration while doing studies and implementing the system in Uzbekistan.

Conclusion

It is World wide accepted that lincesed warehousing system has very important role in the efficiency of food supply security.

The system is a crucial institutional infrastructure that facilitates and records agricultural product trade, expands the market for products, contributes to the development of product markets and price stability in these markets, and facilitates industrialists' procurement of the raw materials they need for production

Relevant literature indicates that when the legal/institutional environment is strong and enforcement is effective, the Licensed Warehousing System has increased credit flows, reduced losses, and improved price outcomes.

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