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## Financial, Legal and Organisational Security of Compensatory Exchange Systems Using the Example of Local Currencies

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**Abstract:**

**Purpose:** The purpose of this article is to identify the factors shaping the perception and evaluation of local currency systems and to analyse the financial and economic as well as legal and institutional determinants of financial compensatory exchange systems.

**Design/Methodology/Approach:** The methods used in the article include a critical analysis of the literature, a comparative method and structural equation modelling (SEM).

**Findings:** The study showed that legal and institutional determinants proved to be a predictor of economic and social determinants, as well as for the overall assessment of the local currency system, while financial and economic determinants, although important, appear to play a secondary role.

**Practical Implications:** The local compensatory exchange systems operating in Poland, which use local currencies as one of their tools, require a financial commitment not only on the part of entities that create such ventures, but also on the part of the state, which could secure them in legal and institutional terms. These two main determinants could influence the success of such systems in the local economy and ensure a higher level of confidence and economic security for specific regions and entities operating therein.

**Originality/Value:** In addition, local compensatory exchange systems could strengthen local entrepreneurship, the economic security of entities and the local community.

**Keywords:** Compensatory exchange systems, complementary finance, complementary currencies, finance security, legal security, local economy, security.

**JEL Codes:** A12, D02, F52, G21, K22, M21.

**Paper Type:** Research paper.

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## **1. Introduction**

Local compensatory exchange systems, in particular the system of local currencies (local currencies), have received little attention in Poland, if only because, for various reasons, they are not of interest to the state, in particular local governments.

These systems can be some of the important tools that make it possible to maintain economic security in the region at an optimal level. The financial aspects of the development of compensatory exchange systems rest with their founders, creators and project leaders of such systems, organised mainly on the basis of voluntary membership. Therefore, financing this type of projects requires either committing own financial capital or raising capital from external sources.

Considering the legal aspects of the development of compensatory exchange systems, it must be said that they have not yet obtained separate legislation that would regulate them directly. The main normative acts in Poland that secure the operation and security of these systems (and thus the operation of local currencies in Poland) include the Act of 23 April 1964 - Civil Code<sup>2</sup> and the Act of 29 August 1997 - Tax Ordinance<sup>3</sup>.

However, the functioning of the compensatory exchange systems is not contrary to the provisions of the Constitution of the Republic of Poland of 2 April 1997<sup>4</sup>, the Act of 29 August 1997 on the National Bank of Poland<sup>5</sup> or the Act of 7 July 1994 on the denomination of the zloty<sup>6</sup>.

The organisational side of such systems also raises many dilemmas. As a rule, they are based on the standard that creates compensatory exchange systems and the standards of barter and settlement transaction systems, known as Mutual Credit Systems (MCS).

An organisationally well-functioning system requires the construction of a network of connections between the entities that constitute its parts, the operation and maintenance of which is the responsibility of the system administrator and organiser.

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<sup>2</sup>*Act of 23 April 1964 - Civil Code (Journal of Laws of 2024, item 10261, as amended).*

<sup>3</sup>*Act of 29 August 1997 - Tax Ordinance (Journal of Laws of 2025, item 111, as amended).*

<sup>4</sup>*Constitution of the Republic of Poland of 2 April 1997 (Journal of Laws of 1997, no. 78, item 483, as amended). Compiled on the basis of: Journal of Laws of 1997, no. 78, item 483; Journal of Laws of 2001, no. 28, item 319; Journal of Laws of 2006, no. 200, item 1471; Journal of Laws of 2009, no. 114, item 946.*

<sup>5</sup>*Act of 29 August 1997 on the National Bank of Poland (Journal of Laws of 2022, item 2025).*

<sup>6</sup>*Act of 7 July 1994 on the denomination of the zloty (Journal of Laws of 1994, no. 84, item 386; Journal of Laws of 1995, no. 16, item 79).*

The main purpose of the article is to identify the factors that determine the perception and evaluation of local currency systems, as well as to analyse the financial and economic as well as legal and institutional determinants for the operation of local compensatory exchange systems, in particular local currencies, which contribute to an increased level of security for the local economy and its entities.

The objectives of the article are:

- to characterise the financial, legal and organisational aspects of the development of tools that assist local development in Poland, using existing compensatory exchange systems as an example and
- to identify financial, legal, and organisational solutions that ensure the security and proper functioning of compensatory exchange systems in the local economy.

The research methods used in the article include a critical analysis of the literature, a comparative method and structural equation modelling (SEM) using the WLSMV estimator, theta parametrisation and ordinal variables.

The article consists of two parts: theoretical and empirical. The theoretical part focuses on the financial, legal and organisational security aspects associated with the operation of compensatory exchange systems. In the empirical part, the authors present the results of a study aimed at obtaining opinions on the financial and economic as well as legal and institutional determinants of local currencies and the security of trading in them.

The article is the result of a research internship by Dr Nina Stepnicka conducted at the General Tadeusz Kościuszko Military University of Land Forces in Wrocław between 15 October 2024 and 15 January 2025 under the supervision of Dr hab. Izabela Nowicka, prof. at the MULF, and in collaboration with Dr Wojciech Horyń, prof. at the MULF (i.e., the co-authors of the article).

Working as part of the research team contributed to achieving the stated objective of the internship, i.e., to improve competences in research skills and working as part of a scientific and research team, aimed, among other things, at preparing publications in the field of financial, legal and organisational security in the area of local currency systems.

I would like to thank Dr Izabela Nowicka, prof. at the MULF - Vice-Rector for Scientific Affairs at the General Tadeusz Kościuszko University of Land Forces in Wrocław, and Dr hab. Wojciech Horyń, prof. at the MULF - Dean of the Faculty of Security Sciences at the General Tadeusz Kościuszko University of Land Forces in Wrocław, for their assistance, commitment and fruitful scientific cooperation.

## **2. Compensatory Exchange Systems and Local Currencies - A Definitional Approach**

A compensatory exchange system can be defined through the prism of a local currency system (hereafter: local currency), which is a dematerialised form of debt settlement that, by operating in an online environment (i.e., the online space), forms its system.

The security of the aforementioned systems requires raising the important issue of the terminology used in the domestic and foreign literature by authors studying this matter. According to Inmaculada Caravaca Barroso and Gemma González Romero, local currencies ‘are intended to serve as a unit of exchange’ to assign a value to goods and services exchanged.

According to these authors, ‘this creates money for the local environment, which, in addition to being based on relationships of trust and reciprocity, is exclusively focused on meeting the needs of people, communities and local environments. These are local currencies and therefore their circulation is limited either to a community or to a territory, which explains why monetary authorities tolerate their issuance’.<sup>7</sup>

Other authors, such as Lott Boonstra, Arjo Klamer, Eleftheria Karioti, Aldo Do Carmo and Sander Geenen define compensatory exchange systems through the prism of a local currency, regarded as a form of complementary money that can be ‘an instrument of change in the economic and social sphere’. This makes it capable of stimulating the exchange of goods between individuals and companies, which ‘would not take place without this alternative money.

An additional measure of trade can contribute to a strong and resilient economy. Complementary money has the potential to strengthen local communities by improving relationships and offering an alternative reward for services, reinforcing local identity’.<sup>8</sup>

Lance Breitstein and Paolo Dini, on the other hand, consider compensatory exchange systems, including local currency systems, to be community currencies that serve the purpose of supplementing the national currency in order to boost the local economy’.<sup>9</sup>

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<sup>7</sup>I. Caravaca Barroso, G. González Romero, *Una mirada alternativa al desarrollo local. Las monedas sociales en la aglomeración urbana de Sevilla*, ‘*Scripta Nova Revista Electrónica de Geografía y Ciencias Sociales*’ 2019, no. 23, pp. 1–27.

<sup>8</sup>L. Boonstra, A. Klamer, E. Karioti, A.J. Do Carmo, S. Geenen, *Complementary Currency Systems: Social and Economic Effects of Complementary Currencies*, Erasmus Universiteit Rotterdam, Rotterdam 2013.

<sup>9</sup>L. Breitstein, P. Dini, *Asocial constructivist analysis of the 2007 banking crisis: Building trust and transparency through community currencies*, ‘*Journal of Banking Regulation*’ 2012, vol. 13, pp. 36 – 62.

A critical analysis of the literature has shown that local compensatory exchange systems and the local currencies that constitute them are regarded as economic and social (including community) tools, means and instruments that:

- are issued as *non-profit* initiatives to support the transformation and socio-economic development at the local and regional level to protect, stimulate or reorient a region's economy<sup>10</sup>;
- generate positive economic, social and environmental impacts, such as reducing social exclusion, improving local economies, promoting local sustainable consumption and contributing to the fight against poverty and social exclusion<sup>11</sup>;
- encourage starting up small businesses and stimulate entrepreneurial spirit, with lower financial risks, including contributing to a change in market orientation in trade and commerce<sup>12</sup>;
- enhance business activity, encourage local businesses to operate in this market, support local citizens in buying or selling goods and services by networking with others in the region and play a key role in developing local economies, building social relationships of local residents and finding effective solutions to local environmental problems<sup>13</sup>;
- contribute to building and promoting local sustainability<sup>14</sup>,

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<sup>10</sup>S.M. Belmonte, J. Puig, M. Roca, M. Segura, *Crisis mitigation through cash assistance to increase local consumption levels – A case study of a bimonetary system in Barcelona, Spain, Journal of Risk and Financial Management* no. 14, pp. 1 – 3. Cf.: G. Gómez, P. Dini, *Making sense of a crank case: Monetary diversity in Argentina (1999–2003)*, 'Cambridge Journal of Economics' 2016, no. 40, pp. 1421 – 1437.

<sup>11</sup>Cf.: G.M. Gómez, A.H.J. Helmsing, *Selective spatial closure and local economic development: What do we learn from the Argentine local currency systems?*, 'World Development' 2008, vol. 36, book 11, pp. 2489 – 2511; M. Kwon, C. Lee, Y. Xiao, W.A. McIntosh, *Community currency activities, community attachment, and quality of life: A case study of the Crooked River Alliance of TimeBanks*, 'Time&Society' 2017, vol. 28, no. 3, pp. 1181 – 1220; M.S. Peacock, *Complementary currencies: History, theory, prospects*, 'Local Economy' 2014, vol. 29, nos 6 – 7, pp. 708 – 722.

<sup>12</sup>A. Michel, M. Hudon, *Community currencies and sustainable development: A systematic review*, 'Ecological Economics' 2015, vol. 116, pp. 161 – 162.

<sup>13</sup>A. Ključnikov, M. Civelek, V. Krajčík, J. Polach, *Customer attitude to the local currency implementation*, 'Marketing and Management of Innovations' 2020, no. 4, pp. 76 – 85.

<sup>14</sup>S. Witt, Ch. Lindstrom, *Local currencies in the twenty-first century*, 'World Affairs: The Journal of International Issues' 2005, no. 9(1), p. 158; G. Seyfang, N. Longhurst, *Desperately seeking niches: Grassroots innovations and niche development in the community currency field*, 'Global Environmental Change' 2013, no. 23, pp. 881 – 882; G. Seyfang, N. Longhurst, *Growing green money? Mapping community currencies for sustainable development*, 'Ecological Economics' 2013, no. 86, pp. 65 – 77; A. Michel, M. Hudon, *Community currencies and ...*, op. cit., pp. 160 – 171; Campinas, *Social and solidarity economy: Towards inclusive and sustainable development*, International Training Centre of the International Labour Organization 2014.

- lead grassroots solutions for its benefit, are based on social economy principles and match the local situation, interests and values of the communities involved<sup>15</sup>;
- can contribute to sustainable development because of, among other things, the promotion of local development, including the promotion of local economic activity by preventing global wealth outflows and increasing the circulation of money in the local economy, healthy local patriotism, trust developing with inherent norms of reciprocity and collaboration<sup>16</sup>;
- support new forms of exchange;
- are seen as a vehicle for economic and social change, but also challenge the official monetary systems of states<sup>17</sup>;
- use (as monetary networks) a specific medium of exchange to supplement the national currency (they usually emerge in times of economic crisis due to their countercyclical function, among other reasons)<sup>18</sup>;
- promote interaction through the use of specific financial mechanisms that facilitate access to money and increase the speed with which it is spent<sup>19</sup>;
- allow the promotion of cooperation, trust and cohesion within the community for everyone's benefit;
- support building cultural values and communities by increasing trust and stronger relationships between businesses and users<sup>20</sup>;

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<sup>15</sup>G. Seyfang, A. Smith, *Grassroots innovations for sustainable development: Towards a new research and policy agenda*, 'Environmental Politics' 2007, vol. 16, book 4, p. 585; K. Suzuki, R. Kawashima, T. Tomokiyo, *A study on the effectiveness of the community currency on the elderly and residents' life*, 'Journal of Architecture Planning' 2006, no. 609, p. 61.

<sup>16</sup>A. Michel, M. Hudon, *Community currencies and ...*, op. cit., pp. 161 – 162; S. Richey, *Manufacturing trust: Community currencies and the creation of social capital*, 'Political Behavior' 2007, vol. 29, no. 1, p. 76; G. Seyfang, N. Longhurst, *Growing green money...*, op. cit. Cf.: E.F. Schumacher, *Small Is Beautiful: Economics as If People Mattered*, 1st ed., Blond&Briggs, London 1973, p. 319; C.C. Williams, *Local Exchange and Trading Systems (LETS) in Australia: A new tool for community development?*, 'International Journal of Community Currency Research' 1997, no. 1, pp. 1 – 11; G. Seyfang, *Money that makes a change: Community currencies, North and South*, 'Gender and Development' 2001, vol. 9, is. 1, pp. 60 – 69; J.D. Graugaard, *A tool for building community resilience? A case study of the Lewes Pound*, 'Local Environment' 2012, vol. 17, is. 2, pp. 243 – 260.

<sup>17</sup>C. Meyer, M. Hudon, *Alternative organizations in finance: Commoning in complementary currencies*, 'Organization' 2017, vol. 24, no. 5, pp. 629 – 647; A. Michel, M. Hudon, *Community currencies and ...*, op. cit., pp. 160 – 171.

<sup>18</sup>L. Sartori, P. Dini, *From complementary currency to institution: a micro-macro study of the Sardex mutual credit system*, 'Stato e Mercato: Quadrimestrale di Analisi Dei Meccanismi e Delle Istituzioni Sociali, Politiche ed economiche' 2016, no. 107, p. 273.

<sup>19</sup>C. Meyer, M. Hudon, *Alternative organizations in ...*, op. cit., pp. 629 – 647.

<sup>20</sup>Cf.: H. Alia, E. Spiegelman, *Convertible local currency and trust: "It's Not You, It's Me" – A field experiment in the French Basque Country*, 'Local Economy' 2020, vol. 35, is. 2, pp. 105 – 120; M. Fare, P.O. Ahmed, *Complementary currency systems and their ability to support economic and social changes*, 'Development and Change' 2017, vol. 48, is. 5, pp. 847 – 872; M. Fare, C. de Freitas, C. Meyer, *Territorial development and community*

- foster social interactions, streamline information channels through interaction with other members and have the effect of intensifying attachment to the community while increasing civic engagement<sup>21</sup>.

In summary, a local currency (or local currency system) refers to an agreement within a community to accept a non-national currency as a form of means of payment, but on a voluntary basis, without the need to recognise, accept and exchange it.

These systems include compensatory exchange and local currencies, but their purpose is not to replace the conventional national currency, but to fulfil essential economic and social functions for which the official currency was not designed. These systems are also complementary to the national currency, as participants in the systems use them alongside the national currency<sup>22</sup>.

### **3. Local Compensatory Exchange Systems vs. Financial Security and Financial and Economic Determinants**

The financial security of local compensatory exchange systems, including local currencies, is based on several concepts - terms that are important for the definition of these systems and exist in parallel with them. These include such concepts as, e.g., trade, instrument of change, unit of exchange, local identity, money, local community, transaction, cooperation, reciprocity and trust. All of them make it possible to delineate two main levels that allow local complementary currency systems to be integrate into economic practice and influence their financial security.

These include the economic level (determined by concepts such as trade, exchange, money and transaction) and the social level, also known as community level (determined by concepts such as local identity, community, cooperation, reciprocity and trust). For each of these levels, it is possible to identify financial security risks that affect the operation of local complementary currency systems.

Considerations of financial security, as well as the financial and economic determinants of local compensatory exchange systems, should take into account to the local currency, its overarching tool. To emphasise the importance of financial

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*currencies: Symbolic meanings in Brazilian community development banks, 'International Journal of Community Currency Research' 2015, no. 19(D), pp. 6 – 17; A. Michel, M. Hudon, Community currencies and ..., op. cit., pp. 161 – 162; J. Stodder, B. Lietaer, The Macro-Stability of Swiss WIR-Bank Credits: Balance, Velocity, and Leverage, 'Comparative Economic Studies' 2016, no. 58, pp. 570 – 605.*

<sup>21</sup>M. Kwon, C. Lee, Y. Xiao, *Exploring the role of neighborhood walkability on community currency activities: A case study of the crooked river alliance of TimeBanks, 'Landscape and Urban Planning' 2017, vol. 167, pp. 302 – 314.*

<sup>22</sup>Cf.: B. Lietaer, *The Social Impact of Electronic Money: A Challenge to the European Union? European Commission's Forward Studies Unit, Brussels 1999.*

security to local complimentary currency systems, it should also be shown that it can affect various entities in the socio-economic environment and the economic system as a whole: customers, businesses, the local economy and the national economy.

Each of these entities has separate financial security risks associated with it, which can be prevented or mitigated by compensatory exchange systems. These include, for example, restrictions on the competitiveness of business entities (especially foreign ones) that pose a threat to local entities, the possibility of reaching new market participants, improved security of transactions, a positive impact on the financial competitiveness of the region and the local community, the possibility of minimising or eliminating the risks associated with business transactions concluded and the sources of their funding, etc.

Local compensatory exchange systems, including local currencies, play an important role in the economy, thereby affecting its financial and economic security. The main tasks that these systems perform in the local economy, thus influencing its level of financial security, can include:

- supporting business development in the local economy;
- assisting businesses in obtaining additional sources of financing;
- creating an opportunity for businesses to survive during an economic and financial crisis;
- increasing the number of customers of businesses;
- impact on the development of local communities;
- facilitating and economising production, and meeting unique local and regional needs;
- enabling local businesses to actively participate in local initiatives to carry out transactions without using the national currency;
- arranging cooperation between business entities without previous commercial relations and strengthening existing cooperation;
- creating a more favourable environment for innovation and development;
- supporting health care, education and environmental protection;
- helping to make better use of the region's potential, skills and experience<sup>23</sup>.

Local compensatory exchange systems, including local currencies, are tools, means and instruments of a financial nature. They are regarded as a secure financing and collaboration alternative that eliminates external intermediaries and providing direct

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<sup>23</sup>M. Soltysiak, *Waluta lokalna – empiryczna analiza poziomu znajomości i akceptacji wśród przedstawicieli młodego pokolenia [Local currency - an empirical analysis of the level of knowledge and acceptance among representatives of the young generation]*, 'Annales Universitatis Mariae Curie-Skłodowska, Sectio H Oeconomia' 2021, vol. 55, no. 1, pp. 67-84.

interaction between partners. Their use can also provide a hedge against financial risk and a solution for avoiding the negative effects of deepening bank money crises<sup>24</sup>.

#### 4. Local Compensatory Exchange Systems vs. Legal Security

The provisions of the Act of 29 August 1997 on the National Bank of Poland stipulate that the National Bank of Poland (NBP) is the 'central bank of the Republic of Poland' and has the exclusive right to issue monetary signs (Article 4)<sup>25</sup>, i.e., banknotes and coins nominated in zlotys and groszes (Article 31).

This means, therefore, that the NBP is responsible for the value of Polish currency, and entrusting the NBP with the exclusive competence to issue money (i.e., the performance of the issuing function) rules out the admissibility of issuing money by any other entity.

This makes the NBP's competence, which is a component of the state's financial authority, exclusive and indivisible and prevents it from being transferred or shared. Only the state has the right to issue money and control the amount of money in circulation<sup>26</sup>, which is confirmed by the provisions of Article 4 of the Act on the National Bank of Poland<sup>27</sup>. This means that, having the exclusive right to issue money, the National Bank of Poland acts as the monetary authority<sup>28</sup>.

Polish law does not provide for the possibility of issuing complementary money, understood as legal tender, as part of compensatory exchange systems. The legal acts indirectly regulating complementary currency systems, including compensatory exchange systems, in Poland are:

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<sup>24</sup>E. Szemerédi, T. Tatay, *Sharing communities – Community currency in the sharing economy*, 'Society and Economy' 2021, no. 43(1), pp. 38 – 39. Cf.: V. Andreoni, *The trap of success: A paradox of scale for sharing economy and degrowth*, 'Sustainability', no. 12(8), pp. 1 – 17.

<sup>25</sup>E. Myślak, *Narodowy Bank Polski w systemie ustrojowym Rzeczypospolitej Polskiej* [National Bank of Poland in the system of government of the Republic of Poland], Wydawnictwo Uniwersytetu Jagiellońskiego, Krakow 2013, p. 54.

<sup>26</sup>J. Olesiak, Ł. Pajor, *Pojęcie pieniądza w ujęciu prawnym. Rozważania na tle art. 227 ust. 1 Konstytucji RP* [The concept of money in legal terms. Deliberations against the backdrop of Article 227 (1) of the Constitution of the Republic of Poland], [in:] *Instytucje prawa finansowego a wartości konstytucyjne. Księga dedykowana Profesor Teresie Dębowskiej - Romanowskiej* [Financial law institutions vs. constitutional values. A book dedicated to Professor Teresa Dębowska-Romanowska], (eds.) M. Bogucka – Felczak, T. Nowak, J. Olesiak, Wydawnictwo Uniwersytetu Łódzkiego, Łódź 2025, p. 150.

<sup>27</sup>Act of 29 August 1997 on the National Bank of Poland (*Journal of Laws of 2022, item 2025*).

<sup>28</sup>E. Komierzyńska – Orlińska, *Regulacyjna funkcja Narodowego Banku Polskiego. Zagadnienia podstawowe* [The regulatory function of the National Bank of Poland. Basic problems], 'Studia Prawnoustrojowe' 2024, no. 63, pp. 139 – 141.

- Act of 23 April 1964 - Civil Code<sup>29</sup>;
- Act of 15 February 1992 on corporate income tax<sup>30</sup>;
- Act of 29 August 1997 – Tax Ordinance<sup>31</sup>;
- Act of 11 March 2004 on value added tax<sup>32</sup>;
- Act of 2 July 2004 on freedom of business activity<sup>33</sup>;
- Act of 6 December 2008 on excise tax<sup>34</sup>;
- Act of 6 March 2018 - Entrepreneurs' Law<sup>35</sup>;
- Regulation of the Minister of Finance of 31 July 2024 on a joint application for an individual interpretation<sup>36</sup>;
- Regulation of the Minister of Finance of 31 July 2024 on an application for a general interpretation<sup>37</sup>;
- Regulation of the Minister of Finance of 31 July 2024 on an application for an individual interpretation<sup>38</sup>.

The lack of unambiguous legislation that relates to compensatory exchange systems, including complementary currencies, results in contradictory positions arising around them regarding their definition, distinction or classification. An emerging contradiction relates to the classification of transactions carried out in complementary currency systems as one of the following types of contract: barter, swap or unnamed civil-law contract not regulated by the Civil Code.

Article 353<sup>1</sup> stipulates that 'parties entering into a contract may arrange the legal relationship at their own discretion, as long as its content or purpose do not contradict the properties (nature) of the relationship, the law or the principles of social co-existence'.<sup>39</sup> Contrary to the quoted provision, a compensatory exchange system can be interpreted based on the content of Article 603 on the exchange contract, by which 'each party undertakes to transfer to the other party the ownership

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<sup>29</sup>Act of 23 April 1964 - Civil Code (*Journal of Laws of 2024, item 10261, as amended*).

<sup>30</sup>Act of 15 February 1992 on corporate income tax (*Journal of Laws of 2025, items 278, 340, 620, 680*).

<sup>31</sup>Act of 29 August 1997 - Tax Ordinance (*Journal of Laws of 2025, item 111, as amended*).

<sup>32</sup>Act of 11 March 2004 on value added tax (*Journal of Laws of 2025, items 775, 894, 896*).

<sup>33</sup>Act of 2 July 2004 on freedom of business activity (*Journal of Laws of 2017, items 2168, 2290, 2486; Journal of Laws of 2018, items 107, 398*).

<sup>34</sup>Act of 6 December 2008 on excise tax (*Journal of Laws of 2025, items 126, 222, 340*).

<sup>35</sup>Act of 6 March 2018 – Entrepreneurs' Law (*Journal of Laws of 2024, items 236, 1222, 1871; Journal of Laws of 2025, items 222, 621, 622, 769*).

<sup>36</sup>Regulation of the Minister of Finance of 31 July 2024 on a joint application for an individual interpretation (*Journal of Laws of 2024, item 1197*).

<sup>37</sup>Regulation of the Minister of Finance of 31 July 2024 on an application for a general interpretation (*Journal of Laws of 2024, item 1200*).

<sup>38</sup>Regulation of the Minister of Finance of 31 July 2024 on an application for an individual interpretation (*Journal of Laws of 2024, item 1211*).

<sup>39</sup>Act of 23 April 1964 - Civil Code (*Journal of Laws of 2024, items 1061, 1237; Journal of Laws of 2025, item 769, p. 65*).

of a thing in exchange for an obligation to transfer the ownership of another thing'<sup>40</sup>, and additionally on the content of Article 604 in the light of which 'the provisions on sale shall apply mutatis mutandis to an exchange contract, each party being at the same time the seller and the buyer'.<sup>41</sup>

The resulting discourse, including the contradictions regarding the correct definition of and reference to compensatory exchange system, including a complementary currency, can be seen, among other places, in the position presented by Krzysztof Wiesław Żukowski and Lidia Rubińska<sup>42</sup> and the provisions of the individual interpretation issued in 2017, for the Polish local currency Zielony<sup>43</sup>.

Krzysztof W. Żukowski and Lidia Rubińska point out that a complementary currency system that terminologically and semantically can be considered as an equivalent to a local compensatory exchange system is a type of contractual relationship for the exchange of goods and services between parties. Contrary to popular belief, transactions using a complementary currency are similar to barter contracts.

According to the aforementioned authors, this position is not justified because the basic principle of a barter contract is the mutual exchange of goods or services between parties, each of whom is a creditor and at the same time a debtor, which means that a complementary currency is not a form of transfer and exchange.

An exchange of goods and services in barter transactions takes place without the use of money or other contractual means of payment and there is an exchange of goods of the same value, whereas if the values of the goods and/or services exchanged differ, then the situation is one of an exchange contract in which each party undertakes to transfer ownership of an item to the other party in exchange for a commitment to transfer ownership of another item.

This means that, under a complementary currency system, the purchase of goods and services takes place in this particular currency without the use of a universally applicable currency, and therefore the contractual relationship entered into by the

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<sup>40</sup>Article 603 of the Act of 23 April 1964 - Civil Code (*Journal of Laws of 2024, items 1061, 1237; Journal of Laws of 2025, item 769*), p. 124.

<sup>41</sup>Article 604 of the Act of 23 April 1964 - Civil Code (*Journal of Laws of 2024, items 1061, 1237; Journal of Laws of 2025, item 769*), p. 124.

<sup>42</sup>K.W. Żukowski, L. Rubińska, *Transakcja w zielonym to nie barter ani zamiana [A transaction in zielony is neither barter nor exchange]*, 'Dziennik Gazeta Prawna' (online), <https://podatki.gazetaprawna.pl/artykuly/897648,transakcja-w-zielonym-to-nie-barter-ani-zamiana.html> (accessed on 28 July 2025).

<sup>43</sup>Individual interpretation, Director of National Fiscal Information, Bielsko - Biala 2017, pp. 1 - 2. The excerpts from the tax interpretation quoted in the text refer to the Polish local currency Zielony and are quoted with the permission of Dariusz Brzozowiec - representative of Zielony Admin Sp. z o.o.

subjects of the complementary currency system - customers and business entities - is not a barter or exchange contract, but is an unnamed civil-law contract, not regulated by the Civil Code, to which the provisions of Art. 353<sup>1</sup> expressing the principle of freedom of contract, which is one of the basic norms governing civil law, apply.

According to the authors, these provisions refer to Article 353 of the Act of 23 April 1964 - Civil Code in the light of which 'parties entering into a contract may arrange the legal relationship at their own discretion, as long as its content or purpose do not contradict the properties (nature) of the relationship, the law or the principles of social co-existence'<sup>44</sup>.

According to Krzysztof W. Żukowski and Lidia Rubińska, transactions carried out in a complementary currency system are lawful, and trading in this currency within the system is fully legal, despite the fact that it is not a universally applicable national currency.

A different position on this issue is reflected in the provisions of the individual interpretation issued by the Director of National Fiscal Information, which concerned the complementary currency Zielony in Poland.

In light of the provisions of the interpretation, the complementary currency allows the participants in the system to make purchase and sale transactions involving goods or services from another participant in the system, and in exchange for these goods or services they can settle the receivables resulting from the transactions with the complementary currency instead of the Polish zloty.

Furthermore, the settlement unit within the system is a type of contractual mode of payment as in civil-law contracts and, as a contractual (local) currency, is not subject to banking law. The applicant, as a participant in the system within its business activities, also purchases goods and services from other entrepreneurs.

The system of settlements in the complementary currency is a platform for multilateral barter that involves recording successive barter purchase and sale transactions between the participants where the unit of account is the aforementioned currency, and the transactions that arise within the local compensatory exchange system (i.e., in the complementary currency) are multilateral barter transactions.

By joining the system, the entrepreneur agrees to accept the complementary currency in transactions with other entrepreneurs, and the system of settlement in the complementary currency is based on standards creating local currency and barter-settlement transaction Mutual Credit Systems (MSC), involving the opening of

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<sup>44</sup>*Act of 23 April 1964 - Civil Code (Journal of Laws of 2024, item 10261, as amended), p. 65.*

participants' settlement accounts, where the administrator allows debiting the accounts under certain conditions<sup>45</sup>.

A local compensatory exchange system is not a currency, money, a monetary sign or a monetary unit, because from a legal point of view it does not fulfil this role as an official currency. According to selected sources, this alternative form of payment for products and services is a medium of exchange (rather than a means of payment) that circulates alongside the national currency on the basis of collective agreements between users. Polish legislation therefore does not provide for the possibility of issuing complementary money, understood as legal tender, i.e. having the power to compulsorily redeem liabilities.

Compensatory exchange is identified with exchange for goods and services only, mainly due to the lack of a banking institution with cash reserves to guarantee its convertibility. This makes it impossible to attribute to it the characteristics of money understood as a legal tender<sup>46</sup>. A complementary currency is therefore a contractual settlement unit equivalent to a unit of the national currency<sup>47</sup>.

The legal dilemma is resolved by the provisions of the individual tax interpretation for the local currency, which contradict the position presented by the aforementioned authors. A compensatory exchange system, therefore, is neither money nor currency in the legal sense, as mentioned in the earlier subchapter of the wording of Article 358<sup>1</sup> (1) and (2) of the Act of 23 April 1964 - Civil Code<sup>48</sup>, according to which 'if the object of the obligation from the moment of its creation is a sum of money, the satisfaction of the consideration shall be effected by payment of a nominal sum, unless specific regulations provide otherwise (...).

The parties may stipulate in the contract that the amount of the monetary consideration shall be determined according to a measure of value other than money'.<sup>49</sup> This means that a liability is expressed at a nominal value, but the parties to the transaction are obliged to mutually agree that the receivable from the

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<sup>45</sup>Individual interpretation, Director of National Fiscal Information, Bielsko - Biala 2017, pp. 1 - 2. The excerpts from the tax interpretation quoted in the text refer to the Polish local currency Zielony and are quoted with the permission of Dariusz Brzozowiec – representative of Zielony Admin Sp. z o.o.

<sup>46</sup>M. Sołtysiak, *Waluta lokalna – empiryczna analiza poziomu znajomości i akceptacji wśród przedstawicieli młodego pokolenia [Local currency - an empirical analysis of the level of knowledge and acceptance among representatives of the young generation]*, 'Annales Universitatis Mariae Curie-Skłodowska, Sectio H Oeconomia' 2021, vol. 55, no. 1, p. 69.

<sup>47</sup>P. Gruz, C. Rudziński, *Zielony i inne waluty lokalne [Zielony and other local currencies]*, 'Raport CSR' (online), <https://raportcsr.pl/zielony-i-inne-waluty-lokalne/> (accessed on 24 August 2025).

<sup>48</sup>Article 358<sup>1</sup> (1) and (2), Act of 23 April 1964 - Civil Code (Journal of Laws of 2024, item 10261, as amended), pp. 66 - 76.

<sup>49</sup>*Ibidem*.

transaction will be settled through a value other than money, i.e., through a complementary currency<sup>50</sup>.

## **5. Safety in the Organisation of a Compensatory Exchange System**

Compensatory exchange systems are nowadays some of the common solutions that operate in countries where such initiatives are undertaken. Important from the point of view of the system, including the complementary currency itself, is its architecture, which affects its functionality and correct use.

The key to the operation of a local compensatory exchange system, i.e., a system of complementary currencies, is an *online* platform with embedded transaction software designed by the system's administrator, who is both a participant and organiser. The software is responsible, among other things, for making changes to participants' accounts according to their actions, transaction history, *online* payment systems, the mobile application, etc. The transactional software allows the participants to create commercial offers linked to the system's website<sup>51</sup>.

In addition, the transaction system is linked to an accounting system, which monitors invoicing, settlement of receivables and payables, calculation of commissions on transactions, etc. Settlement of transactions is handled by a special unit that keeps the participants' accounts. The issuer of the complementary currency (e.g., a union, association, etc.) oversees the issuance of money in the system<sup>52</sup>.

A new business entity signing a contract and joining the complementary currency system pays the administrative fees specified in the contract. A settlement account is created for it, which is set up in a similar manner as a bank account. After registration, the entity gains access to the user database, i.e., the group of potential customers (whether or not they are offering a product/service for sale at the time), gains access to the platform's content and settlement account, and is given the opportunity to create sales proposals and requests for proposals (not binding until the conclusion of a purchase and sales contract)<sup>53</sup>.

After creating an account and accessing the database, the entity is given two options to start collaborating with other entities operating in the complementary currency

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<sup>50</sup>*Individual interpretation, Director of National Fiscal Information..., op. cit.*

<sup>51</sup>*Cf.: N. Stepnicka, B. Sadowska, R. Walasek, G. Zimon, D. Brzozowicz, Sustainable local development in relations to complementary currencies on the example of the polish currency Zielony, 'Technological and Economic Development of Economy' 2023, vol. 29, no. 2; N. Stepnicka, G. Zimon, D. Brzozowicz, The Complementary Currency Zielony in Poland and Its Importance for the Development of Local Economy Entities during the COVID-19 Pandemic Lockdown, 'Sustainability' 2021, no. 13.*

<sup>52</sup>*Ibidem.*

<sup>53</sup>*N. Stepnicka, B. Sadowska, R. Walasek, G. Zimon, D. Brzozowicz, Sustainable local development ..., op. cit., pp. 631 – 632.*

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system. The first option refers to the creation by the business entity of a proposal to sell its products and/or services for units of the complementary currency (usually surplus production of a given company, such as spare rooms in a hotel and goods in a manufacturer's warehouse).

The second option boils down to the fact that a business entity that has joined the complementary currency system does not have to create proposals, but can start functioning in the system by purchasing selected products and/or services.

It then benefits from an interest-free debit on its account that it obtains from the system's administrator, which it must settle within a certain period of time (to repay the debit, the entity must make a sale transaction in the complementary currency).

The second option also allows it to save the national currency, which has a positive impact on its cash flow<sup>54</sup>. Transactions carried out using the complementary currency within the framework of *online banking* or *mobile banking* are fully legal under Polish tax law.

The main responsibilities of the administrator of the complementary currency system include:

- registration of the participant in the user database published on the website based on the contract;
- creation of a user account containing a record of all transactions made in the system;
- keeping a record of transactions in the participant's account in electronic form for a period of several years (e.g. 5 years);
- publishing information about the participant on the website and corresponding with participants in the forms established by the contract.

The tasks of the system administrator include:

- administration of the website (updating, maintenance, etc.);
- managing the flow of commercial information (concerning the products and services that will be bought/sold in the system);
- administration and management of the transaction system, including:
  - management of system users' accounts, tasks arising from the participation agreement, whereby the administrator is responsible for storing information on booked transactions for a period of 5 years (in accordance with Polish tax law);
  - administration of a settlement system using a contractual payment unit in the system on behalf of the participant;

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<sup>54</sup>*Ibidem*, pp. 623 – 627.

- managing the debit policy (i.e. managing the money supply, monitoring, designing and responding to the money supply in the system);
- managing inflation and deflation<sup>55</sup>.

In addition to the important role of the system administrator, there is a sense of trust associated with the sense of security resulting from the operation of the compensatory currency, which can either have a positive impact on the operation of the system or can limit its utilisation by the users.

## **6. Research Problem and Theoretical Model - Empirical Analysis**

The research problem of this analysis is formulated as the following question: ‘What factors shape the perception and opinions about local currency systems?’

On the basis of a literature review and questions contained in the research tool, a theoretical model was formulated, which assumes that perceived financial and economic as well as legal and institutional determinants are fundamental predictors for the shaping of social determinants (understood as a sense of security and trust in the system) and the overall opinion about the operation of a local currency (related to the role and actions of the system's administrator).

The study was conducted using the structural equation modelling (SEM) method with a WLSMV estimator, theta parametrisation and ordinal variables. A total of 184 people took part in the study. The characteristics of the study sample are shown in Table 1:

**Table 1.** *Research sample characteristics*

<b>Section</b>	<b>Category</b>	<b>n</b>	<b>%</b>
Gender	Female	142	77.2
Gender	Male	42	22.8
Age	< 25	89	48.4
Age	36–45	54	29.3
Age	46–55	39	21.2
Age	56+	2	1.1
Place of residence	Town	112	60.9
Place of residence	Village	72	39.1
Participant's status	Entrepreneur (not using local currencies)	98	53.3
Participant's status	Consumer/user of a local currency	65	35.3
Participant's status	Entrepreneur (using local currencies)	21	11.4

**Source:** *Prepared by the authors.*

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<sup>55</sup>*Ibidem*, pp. 629 – 630.

The model assumes that the financial and economic as well as legal and institutional determinants affect the general opinion both directly and indirectly, through social determinants, which are a mediating variable.

## 7. Research Hypotheses

Based on the defined theoretical model, the following research hypotheses have been posed:

- H1: The perception of financial and economic determinants has a significant positive impact on the formation of social determinants.
- H2: The perception of legal and institutional determinants has a significant positive impact on the formation of social conditionality.
- H3: The perception of financial and economic determinants has a significant positive impact on the overall opinion about the local currency system.
- H4: The perception of legal and institutional determinants has a significant positive impact on the overall opinion about the local currency system.
- H5: Social determinants have a significant positive impact on the overall opinion about the local currency system.
- H6: There is a significant positive correlation between the perception of financial and economic as well as legal and institutional determinants.

## 8. Description of structural equation modelling (SEM) results

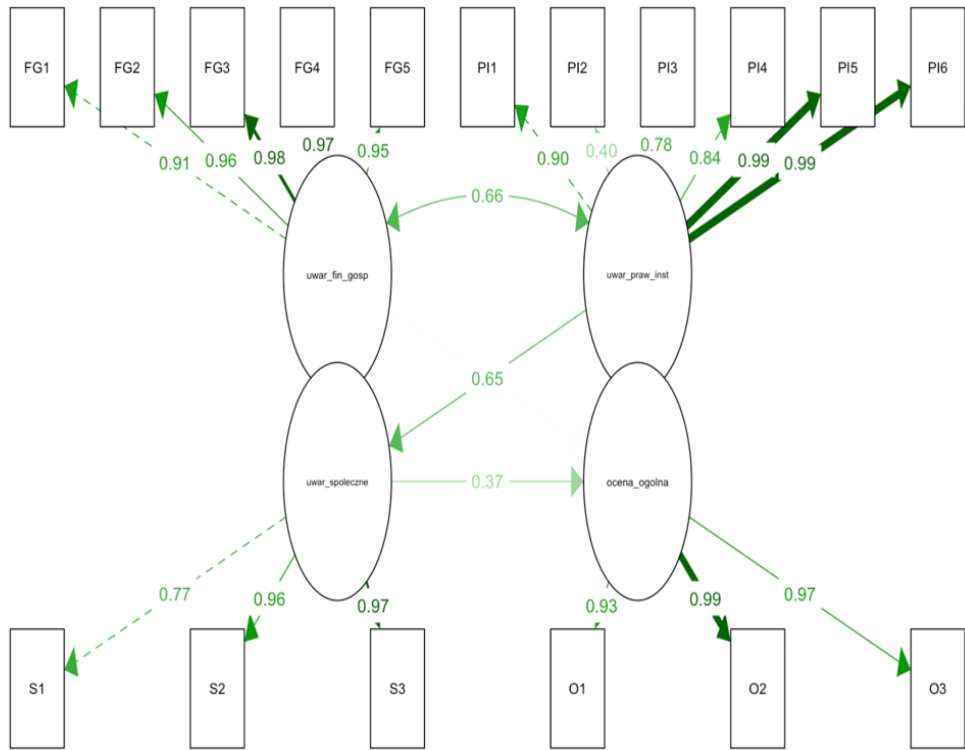
The model was estimated using the maximum likelihood (ML) method on a sample of 184 respondents. A detailed analysis of the results is presented below.

The first step in the evaluation of the model is to analyse the fit indices, which determine the extent to which the theoretical model reflects the empirical data.

- Chi-square test: Its result was 2,023.809 with 113 degrees of freedom ( $p < 0.001$ ). This result is statistically significant, which formally indicates a discrepancy between the model and the data. However, it should be borne in mind that this indicator is sensitive to sample size.
- Comparative fit indices: The values of key indicators, such as the CFI (Comparative Fit Index = 0.713) and the TLI (Tucker-Lewis Index = 0.655), are below the acceptable threshold of 0.90.
- Indicators based on residuals: The RMSEA (Root Mean Square Error of Approximation) was 0.303, which significantly exceeds the recommended limit of 0.08. Similarly, the SRMR (Standardised Root Mean Square Residual) of 0.103 is higher than the acceptable 0.08.

Conclusion: All key fit indices show a poor fit of the model to the data.

**Diagram 1.** SEM model: the impact of legal and institutional as well as financial and economic determinants on social determinants and the overall opinion (N=184)



**Source:** Prepared by the authors.

The measurement model defines the relationship between latent variables (constructs) and their indicators (survey questions). The analysis of the standardised factor loadings (Std.all) allows the quality of this measurement to be assessed.

- Financial and economic determinants (uwar\_fin\_gosp): All indicators (FG1-FG5) have very high factor loadings (0.912 to 0.977), indicating their high accuracy in measuring this construct.
- Legal and institutional determinants (uwar\_praw\_inst): The indicators are varied. Most (PI1, PI3-PI6) have satisfactory or high loadings (0.781 to 0.989). However, index PI2 ('Lack of regulation...') has a very low loading (0.398), suggesting that it is a poor measure of this construct.
- Social determinants (uwar\_spoleczne): Indicators S1-S3 have high loadings (0.769 to 0.974), indicating good measurement of the construct.
- Overall assessment(ocena\_ogolna): All indicators (O1-O3) have very high loadings (0.925 to 0.985), indicating excellent measurement quality.

Despite the overall poor fit of the model, the structural path analysis allows a preliminary verification of the hypotheses.

- H1:  $uwar\_fin\_gosp \rightarrow uwar\_spoleczne$ 
  - Standardised path coefficient ( $\beta$ ) = 0.159 ( $p = 0.019$ ).
  - Conclusion: Hypothesis H1 was confirmed. Financial and economic determinants have a significant, albeit weak, positive impact on social determinants.
- H2:  $uwar\_praw\_inst \rightarrow uwar\_spoleczne$ 
  - $\beta = 0.654$  ( $p < 0.001$ ).
  - Conclusion: Hypothesis H2 was confirmed. Legal and institutional determinants have a strong, positive and statistically significant impact on social determinants.
- H3:  $uwar\_fin\_gosp \rightarrow ocena\_ogolna$ 
  - $\beta = 0.007$  ( $p = 0.871$ ).
  - Conclusion: Hypothesis H3 was rejected. No statistically significant direct impact of financial and economic determinants on the overall opinion about the system was found.
- H4:  $uwar\_praw\_inst \rightarrow ocena\_ogolna$ 
  - $\beta = 0.615$  ( $p < 0.001$ ).
  - Conclusion: Hypothesis H4 was confirmed. Legal and institutional determinants have a strong, positive and significant impact on the overall opinion.
- H5:  $uwar\_spoleczne \rightarrow ocena\_ogolna$ 
  - $\beta = 0.368$  ( $p < 0.001$ ).
  - Conclusion: Hypothesis H5 was confirmed. Social determinants (sense of security and trust) significantly and positively influence the overall opinion about the system.
- H6:  $uwar\_fin\_gosp \sim uwar\_praw\_inst$ 
  - Standardised covariance (correlation) = 0.661 ( $p < 0.001$ ).
  - Conclusion: Hypothesis H6 was confirmed. There is a strong positive correlation between perceptions of both types of determinants.
- $uwar\_spoleczne$  ( $R^2 = 0.591$ ): Financial and economic as well as legal and institutional determinants together explain 59.1% of the variance in social determinants.
- $ocena\_ogolna$  ( $R^2 = 0.865$ ): The variables in the model explain as much as 86.5% of the variance in the overall opinion about the local currency system.

## 9. Conclusions and Summary

The analysis presented herein, despite the model fitting problems, provides some important insights. The most important predictor for both social determinants and the overall opinion about the system turned out to be legal and institutional

determinants. A clear and transparent framework for the operation of local currencies seems crucial for building trust and positive perception.

Financial and economic determinants, although important, appear to play a secondary role. Their impact on the overall opinion is fully mediated by social determinants - no significant direct impact was observed. This means that a positive perception of the economic aspects translates into a better opinion about the system mainly by building trust and a sense of security.

As evidenced by the literature analysis and the results of the study, a local currency as a tool for compensatory exchange supports the development of businesses in the local economy, and its use can increase the number of customers for businesses. In addition, a local currency enables businesses to survive during economic and financial crises, and helps them to obtain an additional source of financing, as it makes it possible to carry out transactions without using the national currency.

From the point of view of security and financial and economic determinants, it can be concluded that a local currency can fulfil a positive role in the local economy, contributing to its development, but also stabilising the financial situation of business entities and providing them with financial security, e.g. in times of crisis. The results of the study showed that financial and economic determinants have a significant, albeit weak, positive impact on social determinants.

From the point of view of legal and institutional considerations, important for compensatory exchange systems are transparent legal rules for payment in a local currency, which increase interest in transactions involving the use of this currency. Undoubtedly, the external environment, i.e., the local government (e.g., the municipality), can contribute to the development and operation of a local currency by, among other things, promoting it and, through its acceptance, strengthening cooperation with local businesses.

In addition, the low level of interest in a local currency on the part of authorities and other institutions makes it difficult for them to operate. The introduction of a central bank digital currency (CBDS) and the abolition of cash could have a significant impact on the popularisation of local currencies, while the lack of local currency regulations is a significant barrier to their use. On the basis of the study, it can be concluded that legal and institutional determinants have a strong, positive and statistically significant impact on social determinants.

When looking at security determinants, the use of compensatory exchange systems, in particular the use of a local currency, can enhance the financial security of businesses and customers. Transactions carried out in a local currency can be less risky than transactions that customers complete in the national currency. In addition, using a local currency builds a sense of trust in other buyers and sellers. An important role in ensuring the security of compensatory transactions using a local

currency is played by the system administrator, who, in addition to ensuring security, should anticipate the potential economic and social risks that are associated with the use of the local currency, and prompt intervention by the administrator in difficult situations is important for the interests of buyers and sellers. The study demonstrated that a sense of security and trust significantly and positively influences the overall opinion about the system.

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