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Measurement issues of an online platform in national accounts through the example of rLoop

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Abstract

Accelerated technological development forces companies to permanent innovation, otherwise they have a competitive disadvantage. Innovation may appear in several areas: organizational structure, work organization, infrastructure, and final product. The new solutions can help also to overcome innovation bottlenecks, however they are challenging for national accounts statisticians.

We chose rLoop registered in USA as an example because it offers innovative solutions in many areas. Its activity is engineering development in an open-source system. This enterprise utilizes the platform and cloud based solutions in many areas of their operations, in order to the real time cooperation between its members. These extraordinary solutions cause measurement issues in several fields of National Accounts. Therefore, rLoop becomes a really omnishamble company from National Accounts' point of view.

First of all, it is not easy to define whether rLoop is a non-profit or a business organization. The vision of rLoop is to develop and launch innovative technology fuelled by a genuine desire to improve the world and humanity and so it defines itself as a non-profit organization. But, the goal of rLoop is to support and work on projects that seems to be feasible to the majority of rLoop members and offers revenue generation. All rLoop members should buy rLoop tokens (RLP) to join the organization. (https://www.rloop.org/whitepaper)

The RLP is a cryptocurrency representing the currently held value of its community, its mission, its potential block chain, finished goods, services, or coupons for finished goods and services. It can be used among others for participation and co-ordination of group decision making, submission and vote of project proposal, authentication of contributions of the work and the share of the developed products, services of the portfolio companies funded by the rLoop Network. (https://blog.rloop.org/rloop-token-rlp-faq-69a9c6699251)

Imagine, by analogy, a stock company where every member buys a stock that gives him or her voting rights in deciding what project the company should support. With the launch of the new project, a new stock will be issued to establish a portfolio company that is still in doubt. Each shareholder can decide whether to join and buy such a project-specific share, and invest his time and work (human capital) to implement a successful project to develop a new product or service. The new product will only be sold by the newly created company and the members may receive dividends.

The settlement of rLoop activity according to SNA 2008 is not easy. The cryptocurrency is not legal in every country. But it is obvious that this organization has an activity of research and development, more than 1000 members from 59 countries from several time zones work remote on different projects. The most famous was the Hyperloop project in 2015-2016. (https://www.rloop.org/projects) Legally, the organization does not have employees and does not pay wages or salaries. Everyone "volunteers" for rLoop. Most participants have a main job and work outside of the rLoop project(s). Why is it worth for someone to invest money and work here? For two main reasons: first, to participate in large-scale (moonshot) projects and increase its own human capital, second, to gain revenue if the result of the project become commercialized. The activity of the rLoop Network raises the following questions:

If the product/services or intellectual property right is commercialized by a portfolio company founded by rLoop, is the correct value, the revenue from the sale or licence fee settled in any cryptocurrency, eg. Ethereum? Is the "dividend" payable to individuals measurable at all? The acquired project-specific RLP tokens through invested RLP tokens or/and successful research contributions of the individuals are probably registered in a country where the company foundation is allowed in cryptocurrency. But will the "dividend" distributed in any cryptocurrency appears in personal tax income returns? We argue that similar to the measurement of the non-observed economy, adjustments in national accounts are necessary to settle this property income. The affected items are not only gross value added of research and development, but the value of developed product/services or intellectual property rights and the "special dividend". It is difficult to estimate the size of rLoop's activity, but due to the fact that the fundraising goal was in 2018 96 840 000 USD with the exchange rate 0.38 USD/RLP (https://coinmarketdaddy.com/currencies/rloop/), we can conclude that it is significant.

1. Introduction

The internet and digitalization has changed the whole economy. Our analysis focuses on two main issues caused by digitalization which are bounded together in several cases: platform economy and cryptocurrency.

Both phenome raise many questions separately, but their combination further complicates the statistical measurement. First of all, main definitions and concepts must be described in order to understand the measuring issues.

According to Baltimore et al (2016), the algorithmic revolution and cloud computing are the basis of the platform economy. Cloud computing plays an important role because of several reasons. Scale matters enormously for the providers of cloud services. The consequence is a radical reduction in the cost of computing resources and that of information and communication technology tools. Users can rent resources and they do not have to build their own computing systems. Using a platform has an operating cost rather than a capital expense.

With the spread of platforms it can be talked about the development of platform economy. But, it is not easy to define platform and platform economy. „A looser definition of a platform […] is one in which social and economic interactions are mediated online." […] „The term "platform" simply points to a set of online digital arrangements whose algorithms serve to organize and structure economic and social activity. In the IT world, the term means a set of shared techniques, technologies, and interfaces that are open to a broad set of users who can build what they want on a stable substrate." (Baltimore et al, 2016, pp.65.)

The platforms can be typologized in five groups according to Baltimore et al (2016, pp. 65), which is summarized in the following table:

Table 1: Types of platform

	Types of platform	Example
1	Operating as platforms for platforms	smartphone operating systems, like: Apple's iOS, Google's Android
2	Make digital tools available online and support the creation of other platforms and market places	GitHub, Zenefits
3.	Mediating the work i.e. transform the work of independent professionals or crowdsource the performance of specific tasks or can create a global virtual labour exchange	platform provided by rLoop
4.	Retail platform	Amazon, eBay, Etsy
5.	Service providing platform	Airbnb, Lyft, Transfergo, Transferwise, Kickstarter

Source: own editing based on Baltimore et al (2016, pp. 65)

The platforms can be structured in another way, based on the qualifications of workforce used and the physical scope of providing services.

Table 2: Structure of work of platforms

	Low-medium-skilled	High-skilled
Virtual/global services	E.g. MTurk	E.g. UpWork, 99Design, CoContest
Physical/local services	E.g. ListMinut, TaskRabbit, Uber	E.g. TakeLessons

Source: De Groen et al (2016)

The platform economy affects the organization of companies and the labour market. Companies can be 'pure' web platforms, the work is done exclusively online. Such company is rLoop. Platform may influence the labour market in very varied forms according to Drahokoupil and Fabo (2016):

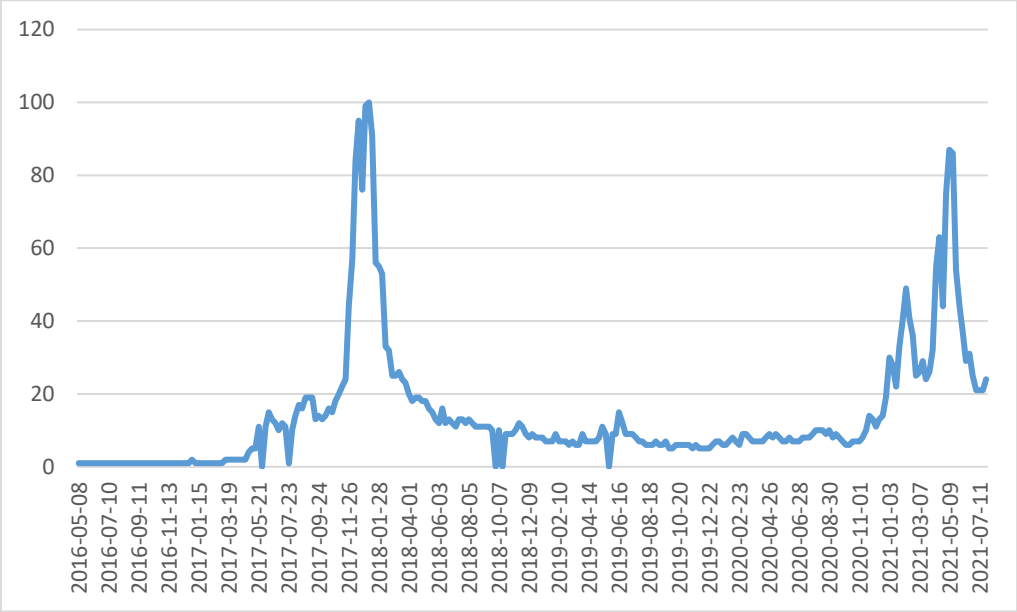
- Platforms may cause the re-organisation of activities that traditionally relied on the employment relationship into activities of self-employment
- Platforms may facilitate the remote provision of services, thus potentially leading to the offshoring of work from local labour markets
- Platforms increase competition by lowering barriers to entry even if they only reorganize self-employment, leading to greater pressure on payment and working conditions.
- The reputation mechanisms used by platforms further contribute to the marketization of the world of work
- Platforms may facilitate an increased breakdown of working activities into individual tasks, which are then differentiated between the ones that require the creative and highly skilled work of 'heads' and those that can be left to 'hands'.

There are also what Neff (2012) calls "venture labourers," that is, the people who work at the platform firms. They receive high wages, and if the firm is successful, the value of the platform is capitalized in the stock market, resulting in remarkable amounts of wealth for the firm's direct employees and entrepreneurs. If the firm falters or fails, these individuals must find new employer.

The spread of cryptocurrency affects not only the financial assets, but the work of organizations also.

Based on the Google Trend data, the keyword ”cryptocurrency” is searched in the last five years in the world very intensively, but in a fluctuating way.

Figure 1: Google Trend data for cryptocurrency



Source: own editing based on Google Trend data

The keyword” cryptocurrency” was the most sought in Nigeria, Singapore, Cyprus, Slovenia and Australia.

The accounting method of cryptocurrency depends on their holding according to the international accounting standards:

Table 3: Accounting method of cryptocurrency

		Standard	
Holders of cryptocurrencies	Cryptocurrency held for trading	IAS 2 Inventories	Fair value less cost to sell
	Cryptocurrency not held for trading	IAS 38 Intangible Assets	Cost model, Revaluation model
Miners of cryptocurrencies		No guidance	

Source: own editing based on https://www.cpdbox.com/accounting-cryptocurrencies-ifrs/

In statistics, a new type of financial assets through block chain technology (cryptographic technology) can be categorized according to the Advisory Export Group of National Accounts (AEG, 2020):

- Crypto assets acting as general means of payment (with or without corresponding liability)
- Payment tokens

- Security crypto assets (debt security crypto assets, equity crypto assets, derivative crypto asset)
- Crypto assets acting as a store of value (with or without corresponding liability).

Data regarding to cryptocurrency prices, market capitalizations can be found on the world's most-referenced price-tracking website for crypto assets, which is CoinMarketCap. As it declares: ”Its mission is to make crypto discoverable and efficient globally by empowering retail users with unbiased, high quality and accurate information for drawing their own informed conclusions.” (https://coinmarketcap.com/about/)

Figure 2: Total Cryptocurrency Market Capitalization

Source: https://coinmarketcap.com/charts/

Figure 3: Major Crypto assets by Percentage of Total Market Capitalization (Bitcoin Dominance)

Source: https://coinmarketcap.com/charts/

ICO Drops is another home page which has created and continuously updates three lists: Active ICOs, Upcoming ICOs, Ended ICOs. An ICO or ITO (Initial Coin Offering or Initial Token Offering) is a type of fundraising where in exchange for money (Bitcoin, Ethereum or fiat money) investors receive tokens (coins). The investors are often retail investors. Usually start-up businesses use ICOs/ITOs to raise capital. Anyone with internet access can create or invest in an ICO/ITO; in many cases, they can do so anonymously. ICO is typically open for a set period, during which investors can visit a website to purchase coins/tokens in exchange for fiat currency or a cryptocurrency such as Bitcoin or Ethereum. Projects that an ICO launch promise the investor that tokens will have value and can be used after the ICO. (https://icodrops.com/about/) These projects can be development of a new cryptocurrency, distributed ledger technology, service or platform.

In many ways, an ICO/ITO can be very similar to an initial public offering (IPO). The coins/tokens are like traditional shares of a company as their value may increase or decrease depending on how successfully the business executes its business plan using the capital raised. (https://www.osc.ca/sites/default/files/pdfs/irps/csa_20170824_cryptocurrency-offerings.pdf)

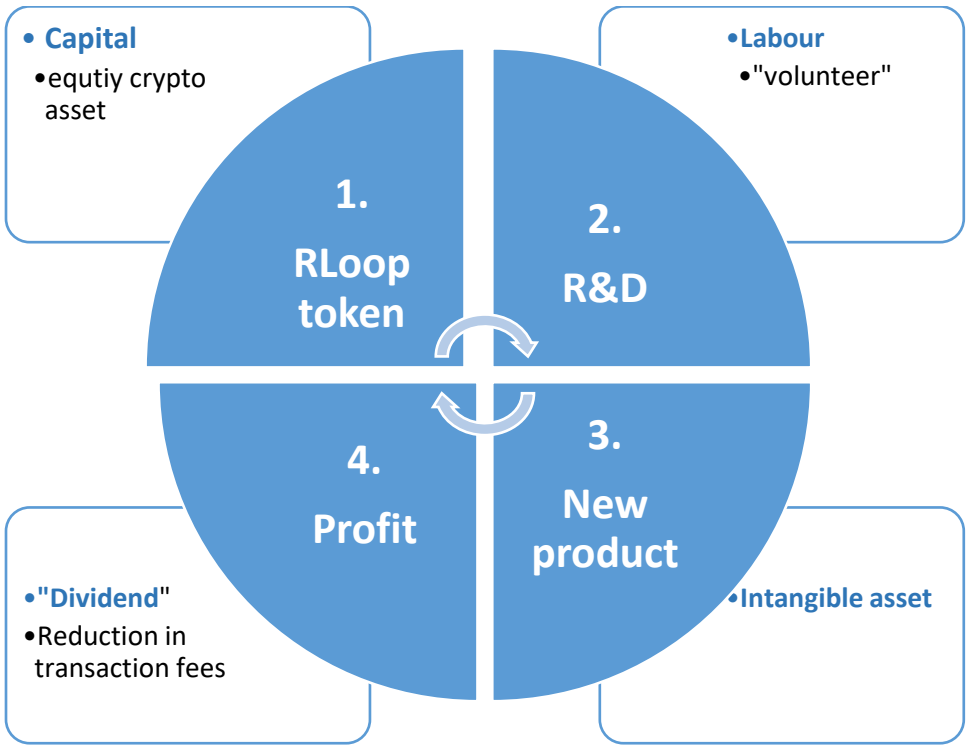
The organization declares itself that it is not a broker-dealer or financial adviser and is not affiliated with an investment advisory firm. It does not engage in activities that would require such registration. ICO Drops may get a fee for advertising certain token sales.

It also declares that nothing on the icodrops.com website is a solicitation to buy, sell or hold coins (tokens). All information, data, white papers and other materials concerning a particular token sale is prepared solely by its organizer, and such person is solely responsible for the accuracy of all statements made. There is no guarantee that information on these matters is true, correct, or precise. The token sales discussed on the icodrops.com website have not been reviewed by any regulatory authority. (https://icodrops.com/disclaimer/)

2. Problem

As it has been stated before we chose rLoop registered in USA as an example because it offers innovative solutions in many areas. The main problem of accounting of assets and transactions of rLoop is arisen from the process of working mechanism.

Figure 4: Working process and connected measurement issues of rLoop



Source: own editing based on https://www.rloop.org/whitepaper

RLoop is a global crowdsourced engineering company that uses cloud platform, with no personal contact between members. Anybody can join to the company as member by purchasing a token of rLoop or/and cooperating in R&D working process as developer. A globally

distributed team of volunteers is able to work 24 hours a day, which can accelerate the innovation process. Participants take part in the work of decentralized groups whose progress is monitored using blockchain technology. (Ritzlné Kazimir, 2020) In the following, problems connecting to correct measurement in National Accounts of such organization are discussed. The figure 4 shows the main four issues. Hereby we go through these issues step by step.

2.1.Capital formation

RLoop is an organization whose "shares" are a form of equity crypto asset, namely rLoop (RLP) Token. All rLoop members should buy rLoop Tokens (RLPs) to join the organization. According to rLoop' definiation, rLoop Token is the internal utility token of the rLoop network which authenticates the completion of project tasks.

We think, it is a special form of derivative crypto asset also, because the holders have right to transfer their tokens into the funding of portfolio company which will sell the final, successfully developed product.

In the summer of 2018, rLoop became a corporation, and raised the required capital. For the daily operation, it uses its own token system to reward members, based on a 'reputation value' that recognises active contributions and can decay through inactivity. (https://www.mewburn.com/news-insights/the-journey-of-rloop)

The Initial Token Offering (ICO) started on the 8th June 2018 and lasted for 92 days. 250 thousand tokens, i.e. 25% of total tokens, were offered for sale in this period. Tokens could be bought for the cryptocurrency, Ethereum, ICO Token Price was 1250 RLP = 1 ETH. (https://icodrops.com/rloop/)

The organization is interesting in the sense that the total raised capital is founded at cryptocurrency Ethereum.

2.2.Boundary of production and volunteer labour

RLoop is a decentralized exponential organization (DEO) that relies on blockchain technology to lock down the work of every cognitive contributor ("investor") on every pixel of every project. (https://www.mewburn.com/news-insights/the-journey-of-rloop)

RLoop does not have legally employees therefore does not pay wages or salaries, but more than 1000 members from 59 countries and from several time zones work remote on its different projects.

Can the members of RLoop be considered "venture labours" according to Neff's (Neff, 2012) concept? We argue, that partly yes, because workers/members can benefit from the success of the product development, but member do not get wages or salaries for their work, however they get utility tokens.

According to RLoop, everyone works as "volunteers". The most participants have a daily job and work outside of the rLoop project(s) also.

An important question arises: should this activity be considered as voluntary work? According to ESA 2010. Paragraph 1.30 (Official Journal of the European Union, 2013, pp. 39), volunteer service that do not lead to the production of goods, fall outside the production boundary and shall not be recorded. We argue that the goal of members of RLoop is to create new successful products, which can be later commercialized.

RLoop itself explains the operation of blockchain technology: "Using distributed ledger technology, we can leverage the immutability of the blockchain to establish proof of authorship, as well as to manage the licence, transfer and acquisition of intellectual property on -chain. Once it becomes possible to account for every piece along the chain of creation, *we can measure the performance outcome of work contributed, as well as the economic use and impact*, and potential future rewards can be based on participation on a particular element." (https://www.mewburn.com/news-insights/the-journey-of-rloop)

According to the SNA 2008 Paragraph 19.39: "if staff are purely voluntary, with no remuneration at all, not even in kind, but working within a recognized institutional unit, then these individuals are still regarded as being employed in SNA terms but there is no entry for compensation of employees for them." (United Nations, 2009) In this sense, all members of rLoop should be considered as employees without compensation of employees. ***This raises another question: Can labour statistics measure the number of employees and hours worked of this type?***

If this type of employment will be spread, than the national statistical offices need to take this into account. This phenome cannot be measured using administrative data, the labour force survey should incorporate questions regarding to such activities to able to measure objectively the labour productivity as well.

2.3 Settlement of intellectual property product

Research and development (AN.1171) is classified in ESA 2010 under the Intellectual property products (AN.117). ESA 2010 states that research and development "consists of the value of expenditure on creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society, and use of this stock of knowledge to devise new applications. " (Official Journal of the European Union, 2013, pp. 215)

RLoop develops new technologies, products by "volunteer" work, i.e. a new products will be created by R&D activities by employment over the world. If a new product is created by R&D, than this will be an intellectual property product, a produced assets, which affects the gross fixed capital formation on the expenditure side of the GDP.

According to ESA 2010: "the value of R&D is determined in terms of the economic benefits expected in the future. Unless value can be reasonably estimated it is, by convention, valued as the sum of the costs, including those of unsuccessful research and development." (Official Journal of the European Union, 2013, pp. 2015)

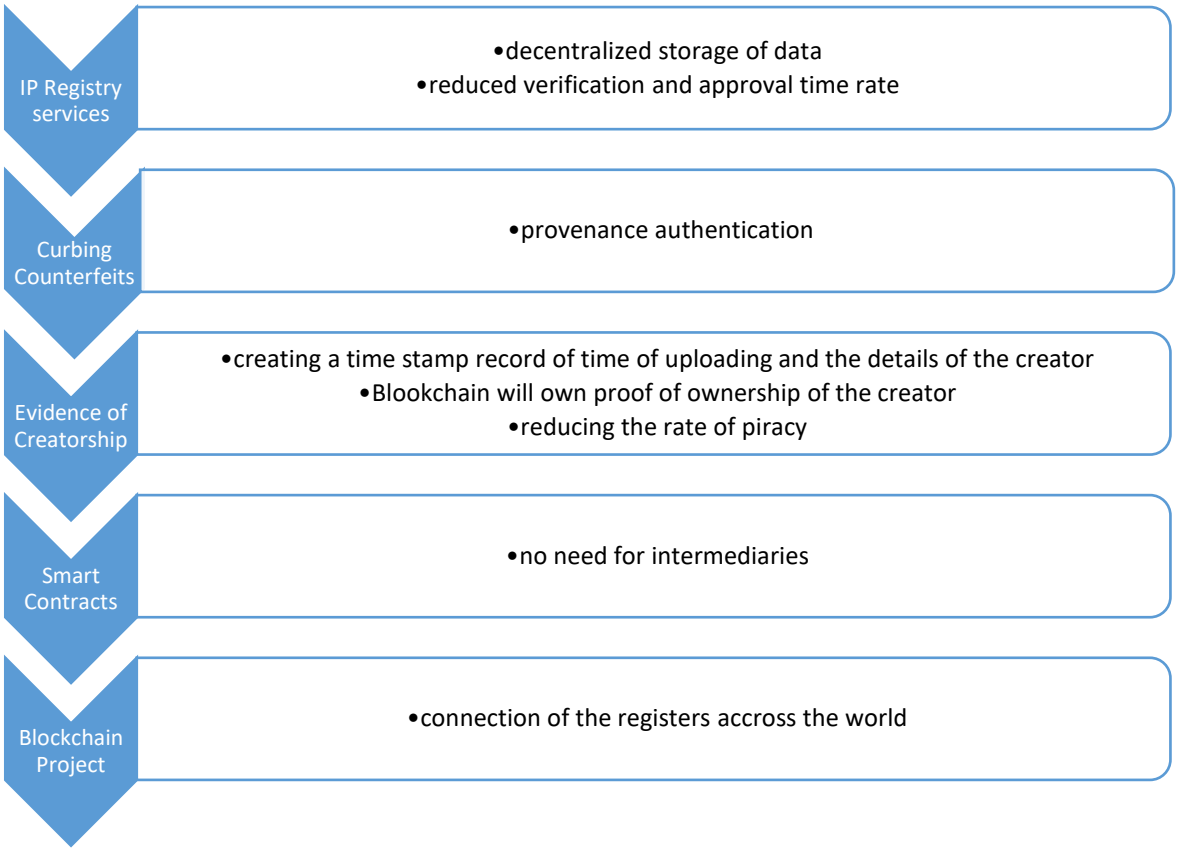
The measurement of R&D here is problematic, because volunteers in rLoop do not have wage and salaries. According to ESA 2010, in this case, the value of R&D cannot be estimated as the sum of costs.

The second problematic issue arises if R&D do not provide a benefit to the owner. In this case, ESA 2010 states that R&D is not classified as an asset and it is instead recoded as intermediate consumption (IC). The measure of IC in this case cannot be estimated based on wages and salaries.

RLoop and similar entities are not under the scope of official statistics because they have no employment nor turnover which are the main factors to be selected in the sampling process.

'International register' based on the new blockchain technologies could be a solution in order to follow the development of intellectual property products. According to the article of (https://medium.com/coinmonks/how-blockchain-will-disrupt-intellectual-property-dfde59588ba7), there are at least 5 reasons why intellectual property products would be changed in the near future. The main reasons are summarized in the figure 5.

Figure 5: Effect of blockchain technology on intellectual property



Source: own editing based on https://medium.com/coinmonks/how-blockchain-will-disrupt-intellectual-property-dfde59588ba7

Why is it worth for someone to invest money and work there? For two main reasons: first, to participate in large-scale (moonshot) projects and to increase its own human capital, second, to gain revenue if the result of the project will be commercialized. The workers invest their financial capital (Ethereum) and their hours worked in research and development.

2.4 Settlement of profit

The holder of RLPs, have the right to influence the focus and process of research and development. Imagine, by analogy, a stock company where every member buys a stock that gives him or her voting rights in deciding what project the company should support. With the launch of the new project, a new stock will be issued to establish a portfolio company that is still in doubt. Each shareholder can decide whether to join and buy such a project-specific share, and invest his time and work (human capital) to implement a successful project to develop a new product or service. The new product will only be sold by the newly created company and the members may receive dividends.

The holders of RLPs can reach capital income which is quite similar to dividends. But will the "dividend" distributed in any cryptocurrency appears in personal tax income returns? If the RLP

is considered as an equity crypto asset and the payment of ‘dividend’ is in Ethereum, the capital income should be placed in the category ‘Distributed income of corporations’. It seems that some part of information will be unavailable for statistics, which causes asymmetry in the national accounts data.

Dividends of corporations can be available from the accounting systems, but the token holders are speeded over the world, therefore the dividends will be imbalanced between sources and uses sides.

In macroeconomic level, cryptocurrencies may have any impact on financial transaction fees. If some cryptocurrencies are considered official currencies, than non-financial companies can reduce their financial costs, otherwise financial companies can be effected adversely.

3. Conclusion

The accounting of a platform economy still indicates a lot of unanswered question, the legal acting as well as the accounting of transactions are not obvious. As transactions affects a lot of countries’ national accounts data, due to the fact that the employment of such a company is international and could be in connection with several other organizations all over the world. Therefore, a centralised accounting system could be a solution where the linkages among the rLoop (or other platform economy) and the employment and other parties of different organizations which are contacted could be seen.

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