Impacts of the Global Information Society on the Banking Industry

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Abstract—**The Human society has lost its borders. It is global and it relies on information. There is almost no delay between the time information is created and the time it is used. There is almost no space between the place of its rise and the place of its processing. Companies beyond our segment are becoming our competitors. Our competitors are becoming our partners. Our clients require new services. This paper describes what it means to banks, the banking industry, and the currency.**

Index Terms—**banking, global information society, monetary policy, new opportunities.**

I. INTRODUCTION

F IRST of all I have to repeat my introduction to the global information society (GISc). It was first published in Czech in [1], which is now available in English via Internet on URL http://www.slapak.cz/ondrej/modlgise.htm.

Information society - a term used so much last years - is not new long ago. Every society is - in a way - an information society. Every interaction inside the society (and with the surroundings) can be understood as an interchange of information. In other words, if at least two people meet, they influence each other and communicate (not only by voice). What, however, could be seen in the history of several years is rising importance of information. Informations tightly affect more and more processes running in the human society. In consequence, informations became commodity.

We can see easily the rise of importance of informations to be enabled by wide use of means of information and communication technology (ICT). The means permit to share the same information (even in the sense of time) all over the world. Nowadays, the society becomes really global.

Characteristics of the global information society can be summarised into the following items:

I) Disappearance of space limits - due to ICT and in view of access to an information, it is not important where the information is stored, and where the searching subject is located (we can abstract the difference between data and information here). Costs associated with the access are not

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dependent on the extent. Charge for an information can be higher because of ownership of the information (e.g. research reports).

II) Disappearance of time limits - before, we had to consider some delay of reactions to events. Nowadays, the delay is, owing to ICT, very often almost inconsiderable. Quick and multiplied reactions (butterfly effect, [2]) to events all over the world require, indeed, a change of management and planning approaches. Rapid reactions are usually welcome but we shouldn't underestimate negative influence - e.g. distribution of an incorrect message. Disappearance of time limits bears on disappearance of space limits mentioned above. Our firm may be contacted by a customer from the other hemisphere out of usual working time. Hence, enterprises must operate 24 hours a day, seven days a week. It doesn't concern just global enterprises - a customer on the road may need a service from his favourite ("local") firm. Another customer may need a service for example at 11:55 p.m.

III) Disappearance of branches - a) Today, enterprises must see a competitor not only in their own branch. A typical example is taking over of deposits by non-banking institutions (this continues to disintermediation, i.e. weakening of power of central banks). b) Branches loose their strict definition - enterprises improve their products and services through ICT. ICT also enable co-operation of enterprises from different branches and so to create a new one. Companies must know which factors may affect their success - extension of products and services beyond branch boarder may reinforce them but it also causes augmentation of negative factors.

What was described here wouldn't be possible if information was expressed with material. Such an information is distributed relatively slowly, occupies too much space, is hardly modifiable, etc. Today, sharing information without ICT is almost unthought. ICT also improves market of informations. As was mentioned above, informations became commodity - first, information was strategic goods, now it is consumer goods or object of other business. *Everything what can be expressed electronically without loss of its primary quality (the case when the material expressing the information is just a medium) will finally be expressed electronically.* Why? For it is easy and cheap to distribute. Consequently, enterprises must newly consider character of their product or service.

They, of course, should newly consider also their attitude to other subjects of the global market. It was already mentioned

that subjects of the global information society have more opportunities and face up stronger competition. Nevertheless, competition is not the only way. The other possible form of co-existence is *co-opetition* (co-operation + competition), This means collaboration of subjects that would normally compete. The objective is the synergetic effect that leads to higher profit which is the final point of view of other objectives, such as decreasing costs (of production, investment…), reaching additional customers, and access to informations, especially about research and development.

Moreover, subjects must adapt themselves to requirements of others in case they are not so strong to define trends. Adaptation means - besides another changes - to change functionality of (information) systems. This is true especially on business-to-business (B2B) markets. As for business-to-consumer (B2C), nothing has changed in fact. One should see it from the new point of view, however.

II. IMPACTS ON BANKING INDUSTRY

You may be interested in why I repeat the introduction. In the other article [1], I used it as a preface for a model of the global information society. Here it can be very easily used to start an article discussing different topics.

As I stated above, everything what can be expressed electronically without loss of its primary quality will finally be expressed electronically. This is valid even for money. Next topic, I will write about, concerns co-opetition in banking sector. Finally, this article shows new possibilities for banks using real 1:1 CRM (Customer Relationship Management).

III. MONEY

When talking about anything, we should know its definition. As for money definition, there are two ways how one can define money. A theoretical money definition says money is anything that is commonly accepted when paying for goods and services. This definition however is not suitable for monetary control. For this reason, an empirical money definition is used. According to it, money is such a monetary variable that forecasts variables used for monetary control. It may seem ridiculous but it is the reality. Following this, we use monetary aggregates. The aggregation is based on liquidity. So, M1 aggregate is composed of cash (present money) + current deposits + travellers' cheques. M2 aggregate adds savings deposits and term deposits etc. Composition of monetary aggregates differs in countries. Besides monetary aggregates, monetary base is used by central banks to control amount of money in economy. Monetary base (also called high-powered money) consists of cash + reserves of banks (be it reserves deposited at central banks or cash in own safes - this all is described in any publication concerning the basics of monetary policy; I use [3]).

What I want to present in this article is my definition of money, its full electronisation and the impacts it has on monetary policy. So, my money definition comes from the very start of commerce. In the times when there was no money on the Earth, people wanting to buy something had to offer something else. This type of exchange is called barter and may be seen even today (not only in primitive communities). People had to know the real value of all goods in order to be able to exchange it without loss. And it is hard. In the course of time, some kind of goods became the most used for the exchange. This special goods had to have proper features. The main idea, however, is that the special goods - in fact *money - expresses a right to draw any value from the society*. It is easy to understand. People go to work and get money (nowadays bank-notes) for their work. They use the money to buy meal, clothes, cars, computers, theatre tickets etc. If there were no material money, some subject would have to assure a vendor that the buyer really has the right to get the required goods. I am sure you already know it is reality - people have opened current accounts with banks and use credit cards to pay. Of course, yes. This primitive example is to show having any material used as money is useless. *Money is information about how much work everyone has done for the society, and so how much he/she may require back from it.* According to how well an employee works, his employer sends relevant amount of money on the employee's current account. The bank during a payment assures the employee - now a buyer - has the right to get what he/she demands. Then the bank transfers the "right to draw" on the account of the vendor.

Eliminating paper bank-notes is a trend that exists independently on what money really means. There are two ways how material money can be electronised. First, bank-notes and coins can be transformed into electronic files that people handle as independently as material money. Such electronic money must meet several requirements. Electronic bank-notes mainly must not be able to be falsified, copied and must be independent on hardware devices. (This device serves as a normal wallet.) Another requirement is that payment with electronic bank-notes must be anonymous. Hardware independence and anonymity are relatively easily reachable properties. The problem is with copying or falsifying the money. Material bank-notes may be falsified by copying or by printing. The result is different from the original. However, falsifying electronic bank-notes in fact means making their copies that are identical with the original. One way how to prevent it is to make electronic money dependent on hardware which does not allow copying. Besides it is a step back in requirements for electronic money, there always will be hackers who will try to change how things work. Another way how to prevent using copied electronic money is total payment control. This requires a payment supervisor.

The other concept of electronic money is having no standalone bank-notes or coins even if they were just data interchanged among economic subjects. This approach is more consistent with my definition of money. In principle, this would be such a situation when all money would have been

deposited at banks. Comparing it with standalone electronic money, there is the only one disadvantage: a bank has to be a part of every payment which is not anonymous. Actually, standalone electronic money requires a supervising subject as well if we want to assure one electronic bank-note is not used more than once by one subject (that is the subject does not make copies which then he uses to pay). Then, it is loss of anonymity during payments what could be considered the main bottleneck. Nevertheless, I think people needn't be afraid of it. Generally, if some banks or vendors misuse the payment information, they would be widely criticised all over the world so nobody will make business with them.

IV. MONETARY POLICY

Now, I would like to make a light revision of monetary policy theory. Let's start with central banks and their right to "print money". By regulating the amount of cash in circulation, central banks control value of money that is tightly pertinent to prices, inflation, and economic progress. If there were no cash, central banks would loose their main instrument. Understanding money as a "right to draw" goods and services from the society, I propose two alternatives:

a) Central banks will say: "Hey, my economic subjects, I declare you all may use just X rights to draw. Do adapt yourselves according to it."

b) Economic subjects will produce goods and services that generate relevant rights to draw, and central banks will have to control (if necessary) the general value of "one right to draw" (right to draw should not loose its value - i.e. our right to demand goods from the society should not decrease in time).

As for me, I prefer the second alternative. The question is if controlling the general value doesn't mean the first way.

Today, central banks watch monetary base which is composed of cash money in circulation and reserves of banks. When all cash money in circulation is deposited at banks, central banks are able to influence only the reserves that represent all people's rights to draw that are deposited at banks and are not allocated (they are ready to draw, available). *From the global view, there are no rights to draw that wouldn't be ready to draw.* You may reply that when someone opens a term deposit, then he can't use the money for some time. It is true, but the bank takes the money (rights to draw) and transforms it to loans, for example. These loans are used by other subjects (they are on their current accounts or are used for payments, i.e. they are transited to vendors' current accounts etc.)

The figure 1 (Fig.1.) shows current situation. Central banks emit cash according to their needs based on their objectives. Central banks have to respect demand for money, of course. As for the economic subjects and their demand for money, there is in fact no change. People and firms need cash for paying. If they don't need it now, they open term deposit accounts with their banks or invest to shares, bonds or so. There are many theories explaining demand for (cash) money.
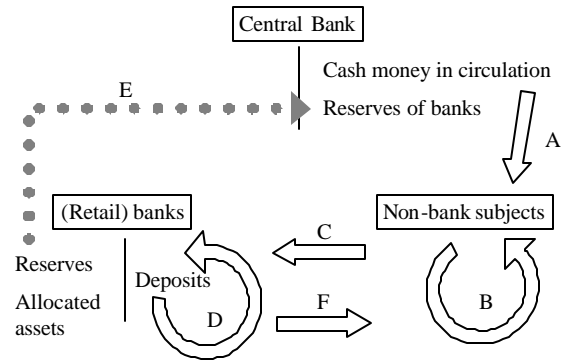

Fig. 1. Money situation with cash money in circulation. A – the central bank lets cash to be used in the economy, B – economic subjects use the cash money for payments, C – or deposit it at banks, D – so they are able to make payment transaction via bank accounts, E – banks have to deposit a part of the accepted money (the deposits of the non-bank subjects) at the central bank, F – the non-bank subjects draw cash money.

It may seem that without cash, these theories are void. They are not. *If we join cash and money on current accounts, the theories stay valid. Of course, only if full liquidity and payment possibilities of current accounts are the same as of cash. This indeed requires wide deployment of safe payment instruments.*

The next figure (Fig. 2.) represents situation without cash money. As I stated before, people and firms are usually indifferent to having cash money or current accounts if they
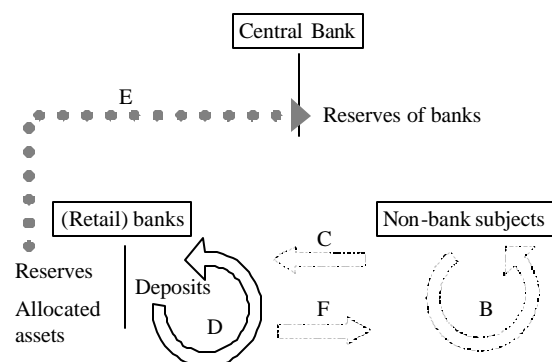

Fig. 2. Money situation without cash money in circulation. B – economic subjects make only money transfers via bank accounts (transfers of rights to draw), C – orders to banks to transfer rights to draw, D – actual transfer of rights to draw, E – banks have to deposit a part of the accepted rights to draw (the deposits of the non-bank

may freely use it for payments. So, how can central banks control monetary policy? It is evident the only way of direct influence on monetary base leads over reserves of banks. It is necessary to review all instruments and relations central banks use for monetary control.

Before, we have to know basic central bank balance – see

Table I.

TABLE I
A BASIC BALANCE SHEET OF A CENTRAL BANK

Assets
Bought securities (shares, bonds, etc.)
Offered loans - home
Offered loans – abroad
Foreign currency reserves
Gold reserves
Other

Liabilities
Cash money in circulation (NOT IN THE CASE OF NO CASH MONEY)
Reserves of banks
Government deposits
Foreign subjects deposits
Own capital
Own emission of securities

The first row of liabilities – cash money in circulation – will not appear if all money (rights to draw) is deposited at banks. The deposits will be a part of reserves of banks. How will it happen? Of course, it can't be an immediate change. The transition of cash to full on-line payment featured current accounts will have to be a long running process. Non-bank subjects will deposit their money, and banks will transport it to the central bank that will shred it. At the same time, when the central bank accepts the money, it has to increase the amount on reserves of banks account (liabilities).

Now, we are ready to make a light revision of the instruments central banks use. Let us start with discount loans which banks may use to increase their reserves. What, however, could a central bank lend to a retail bank if there is no cash money? At present, a central bank increases the amount on the appropriate account that is kept for the retail banks that borrows the money (reserves of banks). If the retail bank needs cash, it asks the central bank for it.

When no cash exists, the retail bank will not be able to receive it. This is no problem because the retail bank will not need it – such as its clients. The central bank just creates new available rights to draw. The retail bank may offer a loan to its client. The client so declares he will work more to be able to return what he has borrowed (plus some interest). The central bank can for a certain period increase amount of rights to draw in the economy. This does not technically differ from borrowing cash money.

The other instrument central banks use to control monetary base are free market operations. This means central banks buy or sell securities (treasury notes, government stock…). What can a central bank buy it for? It is very similar to offering loans to banks. A central bank creates new available rights to draw. It than transfers it to appropriate accounts and adjusts its balance.

The next class of instruments of central banks is making operations with foreign currency. Central banks however do not use this instrument to control the amount of money in the economy. It is used to control foreign exchange rates. Unfortunately, the operations may have an impact to the monetary base. As it is not the main instrument to control the amount of money in the economy, I leave the topic.

What I can't omit here are mandatory reserves requirements. Central banks may constitute that all banks have to deposit a part of current accounts their clients have with them. This instrument is very often criticised and is not used in several economies. Below, we will see if its existence will be necessary without cash money.

Finally – as for the instruments – central banks use liquidity rules, loan limits, mandatory deposits directly at central banks, recommendations, challenges, agreements. All these instruments are rather of administrative character and belong to the most powerful instruments. Some of them are not usual in developed economies, some of them do not have direct impact to the amount of money in the economy. Will the importance of these instruments have to increase?

Now, it is time to see whether the central banks should reserve their right to print money. (Actually, central banks will no more *print* money, indeed.) If something like this endures, another term should be found for it. It may simply be "a right to create rights to draw". Nevertheless, should central banks have the right to create new rights to draw? Is it necessary? Central banks print money since economic subjects demand it because they need it for payments. According to money demand theories, the economic subjects may increase the demand under certain circumstances. The reason why the economic subjects increase the demand is still the same – they need it to pay. When the demand for money increases, central banks let more cash money to circulate (if it is consistent with their objectives). If all money is electronic and it is easy to pay with it, then the *demand for cash material money will be zero. There will only be a demand for money ready to draw that we may call cash money as "cash" means not only the material currency, but also "immediate payment".* Then it is easy to discover central banks should have the right to create new rights to draw because the amount of money on all accounts may sometimes be insufficient.

The attention should now be paid to the way central banks use to determine the amount of money in the economy. As I mentioned above, monetary aggregates are used. M1 aggregate (cash + current accounts + travellers' cheques) is usually used to represent money supply. Looking back at Table I., one can see there are two items concerning money supply in the central bank balance sheet: cash money in circulation and reserves of banks (at the central bank plus in own safes). There is no number representing current accounts. So, central banks have to control M1 aggregate over those two variables. Together they produce monetary base, as was mentioned above.

The relation between M1 aggregate and monetary base was

stated in [3] as is shown in (1).

$$\Delta M1 = \frac{1+k_C}{r_{CD} + r_{TD}k_{TD} + k_C + r_{VR}}\Delta MB \tag{1}$$

$\Delta M1$ is an increment of M1 aggregate that is dependent on the increment of monetary base (ΔMB) through the fraction called monetary multiplier for money supply M1 (let us call it m_m). The multiplier consists of k_C - ratio of cash money on current accounts ($\frac{Cash\_money}{Current\_accounts}$), r_{CD} - ratio of mandatory reserves requirements for current deposits (accounts), r_{TD} - ratio of mandatory reserves requirements for term deposits (accounts), k_{TD} - ratio of term deposits on current accounts, r_{VR} - ratio of voluntary reserves on current accounts.

Considering no material money, the relation will change to (2).

$$\Delta M1 = \frac{1}{r_{CD} + r_{TD}k_{TD} + r_{VR}}\Delta MB \tag{2}$$

Will the new monetary multiplier be smaller number after all material money is deposited on current accounts? The influence of k_C is inverse. Increasing the k_C ratio means decreasing the multiplier as the cash material money is not multiplied over loans from deposits. Then the new multiplier with the same value of the other variables will be higher. Indeed, the actual value of the multiplier depends on r_{CD} (and other parts of the denominator). If the situation forces central banks to increase r_{CD}, then the multiplier will diminish. Should central banks increase or decrease the ratio?

Because M1 aggregate is equal to cash money in circulation plus current deposits (we can abstract travellers' cheques), and monetary base consists of cash money in circulation plus reserves of banks, having no material cash money we can set *current deposits directly dependent on reserves*. At the first time, the value of M1 aggregate does not change: material money decreases to zero while current deposits increases by this decrement. Simultaneously, reserves of banks increases by the same value. If there are mandatory reserves requirements in the economy, banks will convert the appropriate amount of the new deposits to loans. Then traditional multiplication of deposits starts. The loans are used for payments that are automatically deposited on other current accounts. These deposits are converted to another loans, and so on. In order to prevent abnormal growth of money in the economy, central banks will have to increase mandatory reserves requirements for a while, so that the new multiplier should be smaller. Central

banks also could sell own securities. This however obligates central banks to buy them back and so to increase the amount of money in the economy in the future. Another way leads over decreasing market interest rates (empirical studies say increasing the market interest rate means increasing the monetary base and vice versa). Interest rates however relate to other topics of macroeconomics. Central banks also could use administrative instruments, such as loan limits. The exceptional situation could be good consideration for using the administrative instruments.

If central banks required no mandatory reserves, current deposits (*CD*) would be dependent just on the voluntary reserves of banks at central banks or in own safes (*VR*), as is shown in (3).

$$\Delta CD = \frac{1}{r_{VR}}\Delta VR \tag{3}$$

It means, central banks would have no direct control of current deposits creation. The amount of money banks would offer in the form of loans (that would be globally transited to current deposits) would be dependent on other factors, usually on the supply of central banks' securities, and market and discount interest rates. They however are not so powerful. Central banks then might require application of some administrative instruments (see above).

What was written here is not the only impact of non-existence of material money. When looking for other problems, we will find that non-existence of material money will influence also the IS-LM model (just the LM curve exactly). The model shows the equilibrium simultaneously on the market of goods (IS – investment and savings curve) and on the market of money (LM – money demand and money supply curve). Mathematical expression of the LM curve is shown in (4) – according to [3].

$$IR = \frac{m_0 + MB_R \times m_m}{m_{IR}} + \frac{m_Y}{m_{IR}}Y \tag{4}$$

IR is interest rate, Y is total income, m_0 is autonomous demand for money, m_{IR} is sensitivity of money demand on the interest rate, m_Y is sensitivity of money demand on the total income, m_m is the monetary multiplier – see (1), MB_R is real monetary base (i.e. deflated nominal MB).

We should note the monetary multiplier is present in the equation. As I have outlined, it will change if all material money is deposited on current account.

Similarly, the AS-AD model (only the AD curve) will be impacted. The model shows aggregate demand and supply curves. Very simply, when both are equal, the economy is stable. The AD curve may be derived from the IS-LM model, so

that it will be influenced, too.

To complete the list of the main fields that are affected by the conversion of material money to rights to draw, I have to notice inflation. In the easiest way, when banks offer too much money, people take loans, demand goods. Unfortunately, the economy can't saturate the raising demand, so the prices will grow. It is evident central banks must control the amount of money in the economy.

I am not going to continue to describe all this here for this is objective of my PhD thesis. As for the conclusion for the revision of monetary policy, I suppose central banks will have to proceed to administrative instruments or at least not to leave mandatory reserves requirements.

V. CO-OPETITION

As I have stated at the beginning of the text, relations among companies change. In this part I briefly show what it means to tightly co-operate. Co-opetition states for a special relation of business that would normally compete. It is useful to know who is my competitor. Competitors are usually found within the business sector and closely beyond. In the global information society, one should search for competitors not only in his business sector, however. Typically, banks should see GSM providers may very easily become competitors in the field of payment services. For example, in the Czech Republic, one of the providers allows customers to pay for drinks at automatic vendor machines. Car or computer vendors provide their customers with hire-purchase systems. We can find many examples.

The co-opetition starts at the strategic level. Determining real competitors is a part of the SWOT analysis. Choosing them for strict co-operation needs a lot of searching and negotiations. At the very beginning, it must be clear how deep and wide the collaboration will be. *The sense of the partnership should be to outsource activities my company can't do too well, and to provide partners with my services I can supply excellently. Next, my clients are my partners, too. I will profit only if I create such conditions that will allow them to thrive.*

As for the banks, they have to know the trends. I have already mentioned clients expect non-stop services. This requires well integrated information systems that enable bank managers to see all the information concerning one client all over the world with dependencies on other clients. And, it also allows the clients to see consistent information over all distribution channels. Nowadays, the most progressive channels are mainly the Internet and mobile communications. Together they produce mobile Internet that is the idol of business (3rd generation services). Next to this, I see a great potential in cable TV (or Net TV) services. Smart cards (as well as mobile phones with SIM Toolkit cards) will become the key to all electronic services.

Banks have a very good position to become integrators of 3rd parties' services and certification authorities for (remote) payments. Banking industry is about money and information.

These two items together with know-how are the essence of success. An opportunity for banks is to form a strategic partnership with key companies from the following lines:
- Telecommunication, ISP, hosting,
- System integrators (including account aggregators),
- Venture investors,
- Advisory, consulting.

The co-operation should provide the clients with products (and/or services) that are:
- Scalable, customisable,
- Integrated or parallel offers of the partners,
- Designed for all stages of company development,
- Ready for the whole market.

The telecommunication companies, ISPs etc. should assure the infrastructure necessary for the joint business – for target customers and the product. The systems integrators' task is to be responsible for sophisticated development of the appropriate SW&HW background for the product. The venture investors will provide the partnership with venture capital in order to decrease the risks the bank has to run. Finally, the advisory and consulting will bring know-how and facts (experience, clients' needs, competition etc.).

The tight collaboration is impossible without integration of information systems of all the partners [4]. This is a very important topic. New processes must be engineered. During this, the partners may find their internal processes do not correspond with the mutual needs [5], [6]. Vital processes start at customers. Hence, it is highly important to define shared customer relationship management (CRM). Many companies stand before their own CRM innovations [7], [8].

The global information society offers many good opportunities. Businesses may profit from them only if they are ready. All the facts show businesses have got a lot of work to do.

VI. 1:1 CRM AND PROFIT MANAGEMENT

CRM can serve not only as a mean of integration. It may be used to better control profit.

Nowadays, the market is oversaturated. That means, producers offer more goods than consumers demand. It isn't enough to follow only own goals and requirements. One has to respect every customer (or a client for banks). Actually [8] businesses cannot care for all their potential clients in detail. Companies require a certain return of investments. In some cases, the care for some clients would be just too expensive.

Every company should know how much it spends for maintaining every relationship with clients. The equation in (5) says that income from all clients (sum of CI_i; i is up to the number of clients, *NC*) together with other income (*OI*) must be greater than costs of all client relationships (sum of CC_i) plus other costs (*OC*).

$$\sum_{i=1}^{NC} CC_i + OC < \sum_{i=1}^{NC} CI_i + OI \tag{5}$$

The requirement for incomes greater than costs is notorious. The equation however shows *we can divide total costs to fixed and variable not according to the real production, but according to the number of clients.* Companies, of course, may successfully produce even if they don't have a certain client for every product of theirs. Jean Baptiste Say, a French economist who lived in the beginning of the 19th century, said that the supply creates its demand. People don't know what they want. As soon as they can see it, they can't live without it. We can abstract this here because putting a new product to the market is a single activity that is followed by every day care for clients.

So, fixed costs are also all costs of production that was not sold yet. At the first view, it may seem companies offering services have no fixed costs. It is not true. Let us se, for example, banking services (that are called products as well). We can see a stage when people in the bank are creating a product. In that stage, the product cannot be sold to any client. Banking products often are very complex. People in the bank have to spend some time to prepare the product for use. They so can't pay attention to other business. These are the fixed costs of services.

What are the unknown variables in (5)? I suppose companies know the number of their clients. They know what income flows from them. The firms also know other income and other costs. What about the costs of the individual relationships? Also this number can be found in the accounting. Companies know all the numbers only in aggregated representation. The basic equation (5) can't determine the optimal number of clients. As it is expressed, it is valid for every number of clients if the costs are always less than the income. If we omit the costs and income independent on the number of clients (letting the costs be smaller than the income), we have to review the relationships with clients. It is clear companies must know the costs of every relationship, and the income from it. Aggregated numbers are insufficient.

The situation is problematic also from another point of view. Companies create new relationships in the course of time. Hence, it is not suitable to watch just the aggregated indicators, and to look for the optimal number of clients at a certain time.

A proper information system for CRM can allow us to follow costs and income concerning every individual relationship with clients. This enables us to see which client is profitable. Controlling the individual relationships may be automated. It will help us make forecasts, and so to watch return of investment of every client.

If we recast (5) with regard to one client, we get (6). It again shows nothing difficult: costs of a certain relationship together with other costs averaged to one client must be smaller than the relevant income. This must hold true for every relationship.

$$CC_i + \frac{OC}{NC} < CI_i + \frac{OI}{NC} \tag{6}$$

Individuality of every relationship may be emphasised with individual prices. Price paid by a client so can mirror his satisfaction. Clients needn't decide discreetly. They may almost continuously express how much they appreciate the product or service they pay for. This naturally has impact on the income from the relation the company has with him. It is necessary to change price policy. Unified price list should become obsolete. This will be problem mainly for companies that are focused to mass production, such as retail banks. Banks' situation is a little bit more complicated: Banks make business with money. The volume of secondary business (i.e. business not with clients) depends on the primary business (the one with clients). Banks have to make good forecasts of individual incomes in order to know the amount of money they will have available for the secondary business.

For banks, different prices mean also different interest rates offered for deposits and required for loans. Theory of a bank firm explains how banks should determine the optimal amount of deposits. It depends on the interest rates and on costs related to keeping accounts etc. A proper information system enabling 1:1 CRM can help the banks better control their profit.

VII. CONCLUSIONS

The economy and the society are very complex systems. What I presented in this article is just a preview of what is to be done. This is the task I am realising in my PhD thesis which is to be completed this year.

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