Foreign Investment and Country Exposure

Anna A. Medved'

Associate Professor at St. Petersburg
University of Management and Economics,
Candidate of Economics
Lermontovskiy Ave 44/A, St. Petersburg,
190103, Russian Federation

In the article the questions connected with a role of a
state policy in the sphere of capital movement, in particular are considered by the international investments.
The main method of an assessment of risk of investment
to the country – the rating companies and distinctions
their criterion and the techniques based on definition of
country risk is considered.

Keywords: investments, investment activity, country
risk, capital, sovereign risk

"It is essential that the state co-invests and,
by doing so, all concerns about property rights
fall by the wayside".

Vikram Pandit, CEO, Citigroup, SPIEF-2011

Post-crisis recovery of the international investment process once again has drawn attention to the problem of state policy in the sphere of migration of capital and new forms of stimulation and control in international investments. According to Federal State Statistics Service (RosStat), in 2010 the Russian economy received 114.746 billion USD in foreign investment, which is more than 40% higher than that of 2009. The largest foreign investors in Russia were Cyprus, the Netherlands, Luxembourg, China, Germany, Great Britain, Ireland, France, Japan and the Virgin Islands [1].

Growth in investment mainly came from portfolio investments, while direct investments declined. Direct investments are preferred for modernization of domestic production that usually involves technology transfer and management structure. Of note is the large percentage of "return" capital — beneficial to partnerships with representatives of high-tech or "new" economy.

Despite the fixed growth of investment activity in Russia, compared to other major economies, Russia still occupies a moderate place on the international capital market. Complaints of foreign investors in Russia are still the same, i. e. high country exposure.

It shall be noted that, despite the active use of the "country exposure" concept in business and academic circles, a clear definition of this term still does not exist. There are many approaches to define "country exposure". Several terms have been formed in business and academic circles, somehow reflecting the risk of crediting and investing in a sovereign country, and the socioeconomic situation, which is not possible to control. Among these terms there are concepts of "sovereign risk" (emphasis is made on the inability to control internal processes), "political risk" as well as much more aggregative: "country exposure". By "political risk" we mean only risks associated with activities of the authorities, therefore, this term is incomplete, since even the legal space of a country is taken into account only partially,

i. e. to the extent that it is subject to changes of existing laws. Therefore, the author considers it expedient to focus attention on the most aggregative category — thus *country exposure*.

Country exposure can be defined for the subject of international activity not as the arithmetic sum of external risks, but as the integrated result of the correlation of events and circumstances not dependent on this subject.

A good number of foreign and domestic researchers focuses on political risk, considering it to be decisive. V. Veston and B. Sorzh define political risk as actions of a national government that disrupt business, change the terms of agreements, or result in confiscation of foreign companies' property. D. Dzhodis considers this risk similarly: changes in the operations of foreign companies that emerge during the ongoing political process. G. Rays and I. Mahmaud insist on the necessity to take into account not only internal political developments in the country, but the international political situation as well. According to these authors, political risk can be defined as in-country and international conflict and integration events and processes that may (or may not) lead to changes in government policy in the country or in foreign countries, which will result in adverse conditions or additional possibilities for a company (e. g., profits, markets, personnel). According to the definition given by S. Kobrin, risk can be defined as unforeseen circumstances that arise in the political environment that take the form of restrictions in conducting business.

According to a few experts, a political event does not necessarily propose a risk for business, but may also introduce new opportunities. They suggest the term "country exposure" to be understood as uncertainty of the environment in which all non-market forces operate. This means that, when predicting risk, it is necessary to consider not only negative changes, but also positive ones, which present additional business opportunities. With that in mind the basis risk is neutral when performing financial analysis, implying both positive and negative deviations. It should be kept in mind that any adverse event for someone can mean additional benefits for somebody else.

Some researchers (S. Robok, J. Saymon, K. Miller, S. Heffernan, S. Kobrin) identify macro and micro risks, each depending on the level of economic entities to which they apply. Macro risk is associated with the probability of political events that affects all foreign entities in the host nation. Micro risks are specific to an industry, company or even an individual project [2].

Ratings are considered the main tool for assessing risks of investing in a country. The country exposure rating is a form of subjective assessment of overall confidence in the country.

Each year international organizations and world renowned rating companies determine the ratings for individual countries. In addition, each expert organization decides which of the spheres — political, economic, social, legal, religious, etc. shall be investigated more thoroughly; this leads to a difference between criteria and methodologies underlying the determination of country exposure —not to mention that the technique of assessing and rating has "national characteristics".

Volume of accumulated foreign investments in the Russian economy in connection with anchor investor countries (millions USD) [1]

Country	Accumulated by the end of September 2011		Including			Received in January–September 2011
	Total	As % of total	Direct	Portfolio	Others	
Total investments in connection with anchor in-vestor countries including:	323 178	100.0	126 415	8406	188 357	133 784
	271 670	84.0	99 038	7323	165 309	49 733
Cyprus	69 057	21.4	47 290	1508	20 259	12 972
The Netherlands	46 295	14.3	23 328	29	22 938	13 218
Luxembourg	35 051	10.8	643	159	34 249	1951
Germany	29 779	9.2	11 386	10	18 383	8169
China	27 346	8.5	1238	12	26 096	1388
United Kingdom (UK)	22 151	6.9	3614	4525	14 012	6336
Ireland	12 745	3.9	557	1	12 187	1847
The Virgin Islands (British)	10 765	3.3	7296	1062	2407	605
Japan	9807	3.0	945	3	8859	876
France	8674	2.7	2741	14	5919	2371

In practice the value of country exposure has a specific value.

The classical theory of risk implies compensation paid to a subject exposed to risk. The value of such a compensation may serve as a "market" value of the risk.

By the term "country exposure premium" what is usually meant is the size of the margin added to the base rate of interest on government loans. But the concept of "premium for risk" is, in the opinion of the authors, quite comprehensive and applies to all economic indicators of the country. In particular, this applies to the market value of banks and corporations, the choice of discount rates for investment projects, quotations for public and private debts, etc.

With the current uncertainty in economics, asymmetrically distributed and mobile areas of pressure from various interest groups distort the structure of relative "purchasing power" for investments and enterprise values. The fact is that market interest rates are not so much just the profitability of real investment as they are the moral hazard and method for selecting investment projects. Investments in financial assets are not only quite different from real investments, but can also drive them out.

At most this relates to financial markets, which perform an essential function in the economy by moving capital into more efficient industries. In particular, banks tend to lend money to old customers, largely guided by subjective "soft" criteria. Although this complicating factor is inherent to the economies of all countries, its effect is hypertrophied in the Russian context, where the market operates in a very specific form, making it difficult, when valuing companies, to study the discount rate objectively based on normally applicable procedures in other countries. Adjustments of the discount rate, taking into account regional and industry-specific differences in the functioning of various companies, can be carried out in two ways. First, they are determined through statistical analysis of a representative sample of firms of the same industry with a regional reference in order to substantiate the current and projected rates of return, or, secondly, by using one of the analytical methods for calculating the discount rate. The first way is hampered in the Russian context due to a shortage of statistical data on investments made and returns received, a lack of reliability in this data and, in most cases, simply due to their absence. Perhaps this approach will be used later when there is sufficient statistical material available.

Regarding analytical methods, the basic and most commonly used international practice are the following: a model based on the evaluation of capital assets (Capital Asset Pricing Model — CAPM) or a method of cumulative construction. With this assistance one can calculate shares or equity as follows.

Capital Asset Pricing Model (CAPM)

To calculate the discount rate this model divides it into two components: risk-free rate of return on investment and the additional rate of return to compensate for the uncertainty associated with the investment in the enterprise. The calculations are performed using (1).

$$R = R_f + \beta\ (R_m - R_f), \qquad (1)$$

where R is the discount factor or the expected rate of return on invested capital; R_f is the risk-free rate of return. It is common to use this yield on long-term government bonds; β — is the coefficient that measures market or non-diversifiable risk and reflects the amplitude of the oscillations of the yield of the asset relative to the market as a whole; R_m is the average market rate of return, which is determined on the basis of long-term total return of the market.

Therefore, $(R_m - R_f)$ is the risk premium of investment in the asset.

For current Russian conditions the justification of a discount rate is still difficult when evaluating a particular firm. It is equally difficult to justify both the risk-free and the average market rate of return. One would assume that in order to eliminate macroeconomic risks from the calculations the latter should be carried out in the dollar equivalent; the yield on foreign currency bonds shall be used as the basic risk-free rate. But the experience has shown that currency government securities (Exchange Rate Linked Securities) in Russia are not perceived by the investment community as risk-free and stable.

Equally unrecognized as risk-free are the rates on investment, usually characterized by the lowest risk, e. g., currency deposits in the Savings Bank (Sberbank) or certificates of indebtedness bonds of any large and stable oil and/or gas company.
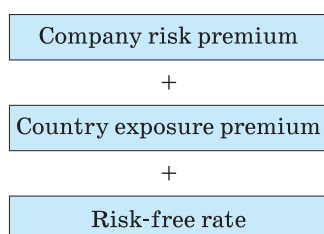
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┌─────────────────────────────┐
│   Company risk premium      │
└─────────────────────────────┘
              +
┌─────────────────────────────┐
│  Country exposure premium   │
└─────────────────────────────┘
              +
┌─────────────────────────────┐
│       Risk-free rate        │
└─────────────────────────────┘
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Fig. 1. CCM's approach to justification of the risk premium when appraising an enterprise value

S o u r c e : [2].

Despite the problems that the U. S. stock market is currently having, the rate on Treasury securities of the issuing country could be comparable (for the U. S. — USD), increased by transaction costs of the money transfer. The indicator of cumulative earning yields of the market represents the average market rate of return of the market and is calculated on the basis of long-term analysis of share prices.

This represents another problem when using the CAPM model to calculate the discount rate. The fact is that this way recognized is the predominant influence of the required fundamental value of a company on the price of its shares. Although this assumption may well be true in the long term, stock prices are often under the long-lasting ascendency of extraneous factors. Traders of Russian stocks pay great attention to the price movements of U. S. stocks — basically the market which is very weakly connected to the real Russian economy. Technical analysis shows a significant correlation of Russian and U. S. stock indices. At the same time it is clear that the ability of Russian companies to generate income is not determined by such factors. Changes in the U. S. interest rates, unemployment in the U. S. or relation of the U. S. investors to American Internet companies are factors that significantly affect stock price movements on the U. S. market. The coefficients, according to world practice, are usually calculated utilizing statistical analysis of the stock market. This task is performed by specialized firms. Data for the coefficients are published in a number of financial manuals and in some periodicals dedicated to the analysis of stock markets, such as Datastream, Bloomberg, Barra and others. The first firm that began to publish information on coefficients in Russia is the consulting company AK&M. The limited number of Russian corporate securities traded on the stock market reduces the possibility of using this factor in the appraisal of a wide range of enterprises.

Cumulative Construction method (CCM)

Unlike the CAPM method, the cumulative construction approach calculates the discount rate by adding up several terms.

The basis for CCM calculations is assumed to be the rate of return on risk-free securities. Next added are extra premiums associated with the risk of investing in a particular company, these are amendments on quantitative and qualitative risk factors associated with its specificity (Fig. 1).

Calculation of equity capital, according to the cumulative approach, is carried out in two steps:
• determination of the appropriate risk-free rate of return;
• estimation of the appropriate risk premium of investing in a company.

The risk-free rate is defined as similar to the method described for the CAPM model. The amount of other premiums is derived from empirical data. These premiums are usually classified by country, type of business, its size, industry, region, activity, etc. (e. g. starting with a major firm, whose shares are included in the stock index, and ending with a venture company engaged in the development of innovative products). If statistical analysis of the detailed qualitative and empirical data is sorted by industry, region, size and other characteristics of the enterprise and performed in advance, then the method of Cumulative Construction may be a good starting point for predicting the discount rate in the Russian context.

Investment bank Goldman Sachs (GS) uses a combination of analytical methods. In GS's model the position of investors from the U. S. investing dollar assets in equities of emerging markets is used for the present point of view. The CAPM formula is modified by adding to it the spread of the sovereign bonds of the test market to the risk-free rate in the U. S., and by actually dividing the coefficient into two terms. The first one is dependence on the local market (1), the second is correlation with the U. S. market (S_b/S_u):

$$R = (R_u + R_s) + \beta \frac{S_b}{S_u} E_u , \qquad (2)$$

where R_u is the risk-free rate; R_s is the spread of sovereign bonds to the risk-free rate; β is the leveraged beta of the company with respect to the local market; S_b is the daily volatility of the stock index of a country within emerging markets, e. g., RTS; S_u is the volatility index of the U. S. market; E_u is the historical premium of the U. S. market share.

For Russia this model has demonstrated a rate of more than thirty percent in currency trade as an adequate investment risk. Such a figure is prohibitive per se for direct investments, a high discount rate may be introduced for long-term profitability of a project, which is pretty doubtful taking into account such a risk.

However, because long-term and proven empirical data are scarce and there is no consensus on risk-free rates and risk premiums in the domestic valuation practice, only heuristic methods for justification of the discount rate can be used. These methods are mainly based on common sense.

The calculated or estimated discount rate — using one or another method — may, in the authors' opinion, represent the market-based measure of country exposure, in comparison with foreign interest rates on similar investments. This applies both to purchasing existing companies and to developing new investment projects.

The rate of high risk investments in Russian assets negatively affects the development of an accurate investment process, because, in addition to a sluggish foreign investment, it leads to an outflow of domestic capital.

In this connection there is another possibility to estimate the country exposure, meaning the volume of capital leaving the country. The most interesting case is a so-called "unofficial outflow" or "capital flight".

Currently Russia faces a difficult task of creating conditions for attracting capital to the country: said capital has its own incentives, and directing capital for economic regulatory measures to achieve national goals. This task requires a coherent set of legislative and administrative efforts. Attracting capital is aimed at maximizing the full development and use of investment po-

tential of the economy and at increasing its attractiveness to investors. According to the authors, a favorable investment climate is essential to reducing the country exposure, which, in turn, will lead to new capital investments. Unlike most countries in Central and Eastern Europe, Russia has not succeeded thus far in creating a favorable investment climate by ensuring a stable political and macroeconomic environment and the protection of property rights.

As practice shows, stimulation measures are a must for a substantial increase in investments, while political stability and adequate legislation are not enough. The most important types of specific incentives for investors in a modern investment climate are:

- fiscal incentives: tax holidays, profit tax relief, privileges in respect to the funds used for investment and reinvestment, the Fast Track amortization, income tax relief for employees, benefits for activities related to R&D, benefits for foreign trade operations, and others;
- financial incentives: subsidy government payments to cover a part of the starting costs, preferential loans or loan guarantees, provision of favorable conditions for public insurance, government participation in equity capital;
- other incentives — government spending to create investment infrastructure, zones with preferential economic status, and others.

Despite the rather critical attitude of international organizations towards using these incentives, they are being actively used by most countries in competition for attracting investments. Moreover, the use of incentives in the world has significantly increased.

Serious preparatory work to change the tax, investment banking and corporate laws is necessary to attract foreign investment. This work could contribute significantly to intensification of the investment process. The existing national treatment of economic activity in Russia is extremely unattractive to foreign companies. Given the increased competition for foreign investment in the world, accompanied by numerous privilege-granting to foreign investors and, most importantly, unfavorable investment climate in Russia, principles of national treatment in Russia has to be supplemented by a system of benefits and guarantees for foreign investors that could, to some extent, compensate for the high risk investments.

Indicators of government loans can be considered as another important measure of country exposure.

Obligations that circulate on the debt market are of varying quality and, therefore, there is a problem of determining their "fair" return. In practice, this is achieved through the market determination of debt-gain of prime borrowers, such as the U.S. Treasury, and other ranking borrowers, based on their ability and willingness to pay off these debts. The rate of return on obligations with a higher rating is almost always less than the rate of return on obligations of a lower rating. The difference in returns (spread) on obligations with different ratings but the same maturity is usually expressed in basis points (bp) and hundredths percentiles.

Two parameters can be considered as indicators of the country exposure. The first one is the initial interest rate, which is obligatory. The second one is the market price of loans. It is possible to speak of the market value of a debt, because a great deal of it is framed in bonds that are publicly traded on the market. These are Eurobonds and PRIN and IAN bonds that emerged from the restructuring of the external debt of the former USSR. There is another kind of debt in Russia, which takes an intermediate position as sovereign bonds, or so-called "MinFin bonds". They can be classified as domestic debt, but generally they are considered together with foreign debt. These are old Russian bonds previously issued as repayment of the Bank for Development and Foreign Economic Affairs (Vnesheconombank) in the USSR to resident entities. Simplifying the situation we can say that Russia's foreign debt consists of two types of securities of differing quality. The first type of security having higher quality are Eurobonds in which the bearer of responsibility is the Ministry of Finance (MinFin) and they always, even in the most stressful times, have been serviced on schedule. The second type of security is bonds issued by Vnesheconombank. The status of PRIN, IAN bonds and "MinFin bonds" has always been ranked to the status of state debt and government regulations.

Apart from what has been discussed above, there are many indicators that suggest an increase in country exposure (as virtually all indicators of national economy and international economic relations are sensitive to the overall political and legal situations in the country) and may be indicative of the degree of risk. Market reaction is often instantaneous.

One way to overcome the fiduciary barrier for foreign investors may be the development of public-private investment partnerships (PPIP), which would allow foreign investors to guarantee safety of the invested funds.

Private partnership projects (PPP) were first implemented in England, where a special law was adopted, which allowed investors to build on equal footing within the state infrastructure. Since then similar laws have taken effect in many countries. Not only roads, bridges, tunnels and power generation facilities are built on the basis of PPPs, but also hospitals, schools and even prisons, the construction of which managed exclusively by state or municipalities would have otherwise exceeded their abilities. The concept and mechanisms of PPPs are used in the world to attract large companies for long-term financing and management of public infrastructure.

Abroad the term "public-private partnership" stands for a very wide range of business models and relationships. In the most general sense PPP stands for any use of private sector resources to meet the needs of a society. The scope of PPP in foreign countries is very diverse. Collaboration between partners can be held in various legislative frameworks, with a diverse range of tasks and expertise.

The forms in which PPPs are implemented, differ in levels of responsibility, which the state or the private sector undertake for operations and maintenance costs, capital expenditures and current financing, commercial risk, as well as asset ownership and long-term cooperation. The main forms of partnerships are:

- service contracts;
- management contracts;
- lease agreements;
- construction, operation contracts;
- concession.

In practice, a combination of these forms is often used in foreign countries [3].

The U.S. and UK, France and Germany are recognized as the world leaders in the field of the PPP. Such projects in foreign countries are carried out within the framework of public-private partnership and can easily be found in a variety of industries. Nowadays foreign countries encourage private capital to implement supposedly unat-

tractive projects for the private sector. The state along with their material contribution provides money for public projects (budget investments) or quasi-money (tax breaks, subsidies). However, the most valuable contribution of the state to the project is a right for implementing the project by itself. Monopolistic use of a dedicated resource only by an enterprise that implements the approved project of public-private partnerships is guaranteed by the state.

Russia has also accumulated a good number of problems that can not be resolved through budgets at all respective levels. In addition, technological backwardness in many industries, particularly with regard to public services (medicine, education, transport infrastructure, housing and utilities infrastructure, utility lines) calls for a greater use of opportunities for international cooperation in this field. In this regard, PPP has a number of advantages for foreign investors, because it provides a levelling-off the political and administrative risks, which are key obstacles for project financing in the Russian Federation. The program on Social and Economic Development of the Russian Federation for the medium term (2006–2008) has a section devoted to "development of mechanisms for public-private partnership" that defines areas of priority for the tools of interaction between government and business [Ibid.].

A unified and systematic understanding of the phenomenon of private-state partnership does not exist in Russia today; the scientific community has not properly studied this phenomenon as well. The most general definition for this phenomenon is given by V. G. Varnavsky, who defined the PPP as an institutional and organizational alliance between government and business, in order to implement socially significant projects and programs in a broad range of industries, services and R&D. Currently it is possible to talk about two main meanings of the term "public-private partnerships":
1. Public-private partnership as a principle of interaction between government and business (requires some mandatory rule of communication between government and business in certain areas);
2. Public-private partnership as a legal form of communication that requires specific forms of communication between government and business, primarily legal [4].

In Russia, a public-private partnership is controlled by the Law on Concessions, which was adopted in 2005 [Ibid.].

Functionally, the following characteristics of public-private partnerships are:
1. PPP meets the needs of the public sector, using or borrowing resources from the private sector.
2. PPP supports state authorities and functions, while providing services in conjunction with the private sector.
3. PPP is made up of two or more parties working to achieve common goals.
    PPP partners are:
    ♦ local and national authorities;
    ♦ commercial enterprises (including those with foreign capital);
    ♦ non-profit organizations (communities, service clubs, community organizations).
4. Partners in the partnership share authority and responsibility, operate on an equal footing, jointly spend time and resources, share the investment risks and rewards of maintaining relationships within a certain time, have a clear agreement, contract or other legal documents.

One form of the public-municipal partnership (PMP) is a concession. It may be beneficial to the executive authorities for the following reasons:
1. Concession (translated from Latin means compromise, admittance) can be used as a specific agreement on a long-term property lease for municipal enterprises, that is, a part of municipal property (equipment and facilities) is made available to the investor for temporary use. This scheme involves credit grantors, banks and investors.
2. The investor not only gets the property in compensated use, but can also arrange financing for the construction or reconstruction of the object. This is especially good prospect for municipal enterprises, which, according to the majority of economists, are not so hopeless.
3. The municipality receives royalties (payments) for equipment being used, plus all taxes paid in accordance with the law.
4. Municipal unitary enterprises increase the production of services (works) without employing budget funds.
    Since the law on concessions in Russia has not yet passed, the objectives of the municipality are:
1. Formulating an agreement.
2. Spreading liability risks.
3. Enforcing sanctions for breach of contract.
4. Formulating conditions of the concession auction.
5. Delineating responsibilities and powers between investors and the municipality.
    Economists distinguish several types of concessions: "return", "compensation" and "ownership" concessions.
1. According to the "return" concession scheme the infrastructure built and equipment purchased goes to the state.
2. According to the "compensation" scheme the concessionaire has all rights to the equipment and infrastructure for the duration of the concession agreement, but then the municipality may require them back as their interest or compensation for the damages done to the country.
3. According to the "ownership" scheme the concessionaire has all rights to the equipment and infrastructure not only for the duration of the concession agreement, but also after its termination. Municipality in this case can not make a claim regarding the disposition of property.

Thus, the model of financial management at municipal public-municipal partnership level looks like the following chart:

From Fig. 2 it follows that the local authorities engage in commercial activities through their municipal unitary enterprises (MUE) and private business organizations. It should be stressed that the municipal unitary enterprises can also interact with the private business organizations through concessions and participate in the capitalization of public companies through purchasing their securities.

PPP are a special kind of collaboration of public sector and private sector to implement long-term investment projects that do not bring immediate profits, so it is very important to provide some guarantees for investors.

As a rule, the private sector in PPP projects is committed to the development, construction, financing of objects, and management in accordance with the parameters and standards set by the state, in return for which the private sector receives funding from the state, wherein the size of that funding depends on the results achieved. In a number of projects the investor will receive compensation from the profits of commercial operation.
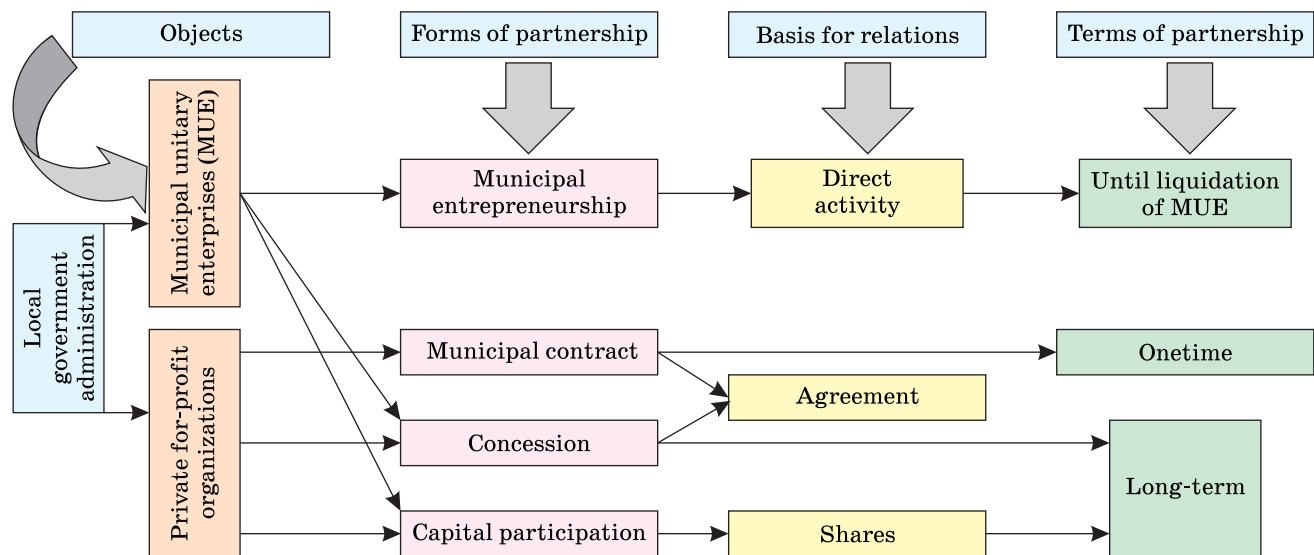
Objects	Forms of partnership	Basis for relations	Terms of partnership

Local government administration

Municipal unitary enterprises (MUE)

Private for-profit organizations

Municipal entrepreneurship	Direct activity	Until liquidation of MUE

Municipal contract		Onetime
Concession	Agreement	Long-term
Capital participation	Shares	

Fig. 2. Model of private-municipal partnership (PMP)

The main problem that investors face within PPP is documentary completion of such relationships. Based on the analysis of the current international experience on public-private partnerships, all attempts to take into account every aspect and option of the course of events for the government and business alliance have led to cumbersome, complex and overwrought legal schemes of public-private partnerships. Even in liberal Europe there is a trend to simplicity contracts, some tenders seeking control of state assets fail to attract any bids from the private sector, just because it is impossible to calculate the rate of return and make a reasonable business plan within all the limitations imposed by the state. In this regard we may suppose that the main obstacle to the development of PPPs in Russia will be the bureaucracy associated with the direct implementation of such activities. As for private companies, the risks are associated with possible changes in government policy, poor or unstable market conditions, the inability or failure of the public sector to meet the conditions of the contract.

The public sector risks a complete share of the commercial risks, dishonest intentions of the private partner, etc.

However, Russia has also a positive experience of PPPs. Typical examples of PPPs implemented in Russia are:
- housing and community amenities — transfer to a commercial firm the rights to service of municipal residential stock, establishment of management companies in the management and maintenance of housing, provision of residential heat and hot water;
- social services — creation of a social rehabilitation center for minors, cooperation in the field of education;
- transportation — construction of highways; passenger transportation;
- real estate — construction of hotels, "housing for young families" program;
- ecology and landscaping — restoration of public gardens, waterfront construction, reconstruction of town squares.

Projects leaders are among the spheres of housing and community amenities, utilities and transport infrastructure.

According to this principle the first concession project in Russia involved a tender for construction, which was held in St. Petersburg: Western High-Speed Diameter around St. Petersburg — "Nevsky Meridian" consortium. This consortium includes six companies: Bouygues Travaux Publics, Hochtief, Egis, Strabag, and "Basovy Element" and "MostoOtryad 19". It seems likely that the majority of concession projects in Russia for the next few years will be associated with the development of a transportation infrastructure.

Summarizing, the main problems of implementation of private-state partnerships in Russia are the following:
1. Mechanisms of Russian PPPs have not been addressed properly at the legislative level. Legislation has certain gaps in regard to private-state partnerships. In particular, there is a need in a clear legal position on property, tax structure and the regulation of conflicts of interest. It should also establish a suitable framework for the public sector to accept risk related obligations.
2. For effective functioning of the PPP it is important today to provide advanced training for state and municipal employees. Great attention should be given to raising the professional level of local managers and to implementing consulting support for projects at regional and municipal levels.
3. It is necessary to provide transparent bidding procedures for market participants to access the mechanisms of PPPs.

Implementation of the mechanisms of PPP can, first of all, provide the possibility of fulfilling socially significant projects in the shortest possible time, otherwise unattractive for traditional forms of private financing; as well as improving the efficiency of projects through the participation of private business; to ensure a reduction of the budget load by raising private funds and transferring a part of the cost to users (commercialization of services), the ability to attract the best managerial, engineering and technology, improving the quality of end-user services.

PPP enables government to focus more on their obligatory functions and to reduce public risks through distribution between the private partner and the government.

The function of the Russian Direct Investment Fund (RDIF), an investment fund set up by the Russian government, is to promote the development of PPPs in Russia and to invest in leading companies in the fastest growing sectors of the economy. RDIF serves as a co-investor in

all transactions with the world's largest institutional investors — private equity funds, sovereign wealth funds, as well as industry-leading companies. RDIF is thus playing an important role in attracting direct foreign investment to Russia. The Fund was established in June 2011 under the leadership of the President of the Russian Federation Dmitry Medvedev and Prime Minister Vladimir Putin. RDIF aims at maximizing returns. The Fund invests in leading companies of the growing sectors of the Russian and world economy.

The investment process of RDIF is based on international practices of the direct investment industry. Each transaction of the Fund involves at least one co-investor from the leading institutional and strategic investors in the world, ensuring the flow of foreign direct investment, technology and personnel to Russia. The co-investors of the Fund are granted an access to a unique opportunity to invest in key projects of the Russian economy, in conjunction with an agent of the state. RDIF invests together with the largest private equity funds, sovereign funds, strategic and industry investors. The initiator of the transaction may be RDIF as well as co-investor. In all projects RDIF and co-investor conclude an agreement on joint investment. The agreement defines the principles of project management. RDIF is ready to meet co-investors' demands in matters of company ownership structure, as well as jurisdictive and legal matters governing the shareholder agreement. The main purpose of RDIF in joint projects with co-investors is to provide a high return on investment. The investment process of RDIF meets international standards of the direct investment industry. RDIF together with co-investors invests in the equity of the fast-growing sectors of the economy.

The Fund plans to exit from the investment in five to seven years. The main criteria influencing the investment decisions of the Fund are:
- Professional level of management;
- The quality mechanisms of planning, accounting and control;
- High degree of transparency of financial and operating information of the applicant company.

There are the following terms of the Fund's participation in projects:
1. The target volume of one investment by RDIF is from 50 to 500 million USD and includes the average size of equity financing of the project from 100 million to 1 billion USD in view of co-investor mechanisms;
2. The share of RDIF in the project shall not exceed 50%, there is no limit to the share of a co-investor [5].

The exit from projects is carried out by public offering (IPO) or by selling the company to a specialized institution or branch investor. Taking into account the substantial size of the fund, RDIF does not limit possible investments by any particular sector of the economy. The Fund is ready to invest in any sectors that are attractive for co-investors and meeting the criteria of profitability. At the stage of initial consultations President Medvedev had identified five basic sectors of modernization and the five sectors of innovation, all of which are of special interest:
- Advanced processing of natural resources;
- Technological development of important fields;
- Agriculture and food retailing;
- Housing and construction materials;
- Transport and logistics.
  The priorities for innovation development include:
- Innovative Energy;
- Atomic Energy;
- Aerospace industry;
- Pharmacy and Pharmacology;
- Telecommunications and Information Technology.

Large banks and foreign companies, such as Blackstone Group LP, Goldman Sachs, Abu Dabi Investment Authority have expressed their interest in collaboration with the Fund. It is assumed that RDIF will not compete with small players and will focus on infrastructure projects in various areas of the economy that require large amounts of investment. Thus, the objective of the fund is to mobilize long-term investment of foreign companies in the Russian economy on an industry basis. It is planned that in the nearest future RDIF will take the form of the closed co-op share fund. Based on RDIF's example it is planned to create regional funds to raise capital for regional development [Ibid.].

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Investment Approach to Pension Funding: Conception and Toolkit

Maksim I. Lisitsa

Professor at St. Petersburg University
of Management and Economics,
Doctor of Economics
Lermontovskiy Ave 44/A, St. Petersburg,
190103, Russian Federation

The Russian pension system is in crisis, and its development is hampered by financing from the national budget. The author of the study promotes a model of the national pension system which would in theory enable professional economists and custody banks to manage pension savings and potential clients of customized pension funds to take personal feasible participation in their funding.

Keywords: investment approach to pension funding, investment model employing perpetual pension plan with fixed pension, investment model employing perpetual pension plan with fixed deposit and fixed pension, conversion of perpetual pension plan with fixed pension to perpetual pension plan with fixed deposit and fixed pension

A reform of the Russian national pension system has been unsuccessfully carried out since 2002. The lack of success results from borrowing (from Sweden — see detailed analysis in [1]) a misleading development paradigm, and manifests itself through continued growth of the budget deficit of the Russian Pension Fund which is vested with retirement pension payment functions. Furthermore, most of socially oriented economically developed countries themselves are transforming the distributional methods of pension provision they have been practicing hitherto to accumulative ones, and thus set rather poor examples for Russia in this respect, being unable to offer an adequate paradigm of structuring and developing a pension system because of themselves having no less retarded pension systems.

For this reason we would like to present our own vision of how the Russian national pension system should be structured with reference to its accumulative component. We offer an investment approach to pension provision, which is based on the following ideas:

1. Within the time remaining until receiving a retirement pension, each income-earning employee should set up, through personal investment, twelve personal fixed monthly pension funds to be placed in a bank[1].
2. Investments whose purpose is to fill the fixed pension funds will be made to twelve personal deposit accounts to be opened with a bank during a year, one account each month.
3. Each of the twelve personal deposit accounts will be replenished at twelve months' intervals by deposits which will capitalise up to the retirement time.

4. Upon retirement, each of the twelve personal deposit accounts will be transformed into twelve fixed monthly pension funds and, at the expense of the annual interest accrued by the bank, start providing the retiree with allowances, which will be done on a perpetual basis, with one month's intervals.
5. The employee will know the projected size of the monthly pension to be received upon retirement at the time of opening the first personal deposit account, and this size will be fixed on the basis of a replacement rate that is acceptable for the employee and an annual income adjustment index recommended by the bank[2].
6. On the basis of the fixed size of the projected monthly pension and the annual interest deposit interest rate, the size of the fixed monthly pension fund will be determined.
7. To make sure that the sizes of all of the twelve monthly pension funds are equal, the annual interest rate on the first personal deposit account should be fixed when it is opened, which will inevitably result in of all the twelve projected monthly pensions having equal sizes.
8. The size of the monthly payments to be made to a deposit account will be determined on the basis of the number of years of employment left until requirement, the fixed size of the monthly pension fund and the annual interest deposit interest rate.
9. The size of the monthly payment to be made to a deposit account may increase each year, and then the employee chooses an investment model employing a perpetual pension plan with a fixed pension.
10. The size of the monthly payment to be made to a deposit account amount may be fixed, and then the employee chooses an investment model employing a perpetual pension plan with a fixed payment and a fixed pension.
11. In any year before filling the first personal deposit account, the employee may move from a perpetual pension plan with a fixed pension to a perpetual pension plan with a fixed payment and a fixed pension. Accordingly, the remaining personal deposit accounts are automatically adjusted to the new conditions, but only once filled.
12. The fixed size of the monthly pension fund and the projected fixed size of the monthly pension should not depend on the type of investment model (employing a perpetual pension plan) selected by the employee.
13. To make the selected perpetual pension plan more flexible and convenient, the employee may once a year (before filling the first personal deposit account) initiate a review of the declared size of the fixed monthly income, the replacement rate and the annual income adjustment index recommended by the bank, excepting the annual deposit interest rate which in this case is set by the bank. Accordingly, the remaining

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personal deposit accounts are automatically adjusted to the new conditions, but only once filled.

14. To ensure safety of the funds placed on the deposit accounts to form fixed monthly pension funds, state guarantees are required, or otherwise those funds must be insured in full.

15. The personal deposit accounts must be managed by a specialist bank.

16. The bank should be allowed to invest the funds kept at the personal deposit accounts without rigid state regulation of the investment portfolio.

17. Depositors establishing monthly pension funds should be allowed to go into a social partnership with the state, whereby they should be granted tax incentives with determining the inheritance structure for the monthly pension funds.

18. If personal payments to the deposit account are made from tax benefits, the total amount of deposited tax benefits should be considered as state co-financing of the monthly pension funds. Accordingly, if monthly pension funds are inherited, the capitalised amount of tax benefits is taken back to the budget, after which the rest of the monthly pension funds is distributed among their legal heirs.

19. If a depositor does not use tax benefits, the monthly pension funds should be divided between their rightful heirs without state participation.

20. If, by the time of retirement, an employee has not taken part in the funding of their own fixed monthly pension funds or if the total amount of such funds is inadequate, a pension will be paid from a pension fund that distributes employers' premiums.

The proposed investment approach to pensions directly links the size of the future pension with the employee's declared labour income and increases the employee's commitment to and involvement in the generation of their own future income. Of course, we understand that our ideas have flaws, and perhaps they are too orthodox, however, the state itself (in the broad sense) has not succeeded in creating a balanced and flexible system of economic relations in the social sphere.

In our concept, we propose two ways of forming personal pension funds: 1) an investment model employing a perpetual pension plan with a fixed pension, and 2) an investment model employing a perpetual pension plan with a fixed payment and a fixed pension. The difference between these two plans is that the first plan involves increasing payments to the pension fund, while the second plan involves equal payments to the pension fund. All the other parameters of the two perpetual pension plans are identical, i.e. both are based on the same declared variables and result in a single fixed size of the monthly pension fund. We will show this by presenting in generalised form the relevant tools whose detailed mathematical justification is provided in publication [Ibid.].

Suppose an employee declares a fixed amount of monthly income and an acceptable income replacement rate, then expression (1) is applied to assess the real fixed size of the monthly pension in case of immediate retirement:

$$PV_{PB,m} = C_{GS}DG_m, \qquad (1)$$

where $PV_{PB,m}$ represents the real fixed monthly pension; C_{GS} represents the income replacement rate; DG_m represents the declared fixed monthly income; $m = 1, ..., 12$ represents the months in a year.

If there is a period of time left before retirement and if the stated size of the fixed monthly income may increase, then its estimate is revised in keeping with the annual income adjustment index, and the projected fixed monthly pension is determined by expression (2):

$$FV_{PB,\ m} = PV_{PB,\ m}(I_{GC})^n, \qquad (2)$$

where $FV_{PB,m}$ represents the projected fixed monthly pension; I_{GC} represents the annual income adjustment index; n represents the years until retirement.

The target fixed size of the monthly pension fund is calculated with the use of the following expression (3):

$$FV_{PF,m} = \frac{FV_{PB,m}}{R_D}, \qquad (3)$$

where $FV_{PF,m}$ represents the target fixed size of the monthly pension fund; R_D represents the annual interest on the deposit.

Upon retirement, the projected fixed monthly pension will be calculated with the use of the following expression (4):

$$FV_{PB,\ m} = FV_{PF,\ m}R_D. \qquad (4)$$

It should be reminded that we design perpetual pension plans where the target fixed size of the monthly pension fund and the projected size of the fixed monthly pension do not change, and the pensioner is provided with permanent maintenance. This is where our perpetual investment models of pension provision differ from the mathematical models presented in publication [2] and involving fixed period (exhaustible) pension plans.

Perpetual pension plans will change as a result of adjustment of the variables, for which purpose we will repeat entries (1) to (4) with the parameters given different values:

$$PV_{PB,m,\phi} = C_{GS,\phi}DG_{m,\phi}, \qquad (5)$$

$$FV_{PB,m,\phi} = PV_{PB,m,\phi}I_{GC,\phi}^{n-\phi}, \qquad (6)$$

$$FV_{PB,m,\phi} = \frac{FV_{PB,m,\phi}}{R_{D,\phi}}, \qquad (7)$$

$$FV_{PB,m,\phi} = FV_{PF,m,\phi}R_{D,\phi}, \qquad (8)$$

where $PV_{PB,m,\phi}$ represents the is the real fixed monthly pension; $C_{GS,\phi}$ represents the income replacement rate; $DG_{m,\phi}$ represents the declared fixed monthly income; $FV_{PB,m,\phi}$ represents the projected fixed monthly pension; $I_{GC,\phi}$ represents the annual income adjustment index; $(n - \phi)$ represents the years until retirement; $FV_{PF,m,\phi}$ represents the target fixed size of the monthly pension fund; $R_{D,\phi}$ represents the annual interest on the deposit.

The payments made to the deposit account are invested to capitalise on, and then expression (9) will be used to calculate the monthly amount deposited to the deposit account each year:

$$D_{m,t} = \frac{1}{n}FV_{PF,m}\left(1+R_D\right)^{t-n-1}, \qquad (9)$$

where $D_{m,t}$ represents the monthly amount deposited to the deposit account in the year t.

Now we will show the adjustments made to the perpetual pension plan with a fixed pension when reviewing the variables but while taking account of the savings that have been made to that point. First of all, the transient size of the monthly pension fund with a fixed pension should be determined provided that the variables will be reviewed at the end of the year ϕ. For this, model (10) is used:

$$FV_{PF^*,\,m,\,\phi} = \phi D_{m,t}\left(1+R_D\right)^{\phi-t+1}, \qquad (10)$$

where $FV_{PF^*,m,\phi}$ represents the transient size of the monthly pension fund with a fixed pension at the time of adjustment of the parameters of the pension plan; $t = 1, \ldots, \phi$ represents the years before adjustment of the parameters of the pension plan.

By the time of adjustment of the variables, the first transient pension fund out of the twelve equal-sized funds ($FV_{PF^*,m,\phi}$) will form, and the rest of the funds will form one after another within a year's time at monthly intervals. All the twelve transient pension funds should be, one at a time at monthly intervals, re-invested in deposits with new parameters for the period remaining until retirement ($n - \phi$). Upon expiration of that period, the projected capitalised size of the transient pension fund will amount to $FV_{PF^*,m,\phi}\cdot(1 + R_{D,\phi})^{n-\phi}$, having made part of the target monthly pension fund ($FV_{PF,m,\phi}$). The relationship between their sizes can be expressed by entry (11):

$$\Delta FV_{PF^*,\,m,\,\phi} = FV_{PF,\,m,\,\phi} - FV_{PF^*,\,m,\,\phi}\left(1+R_{D,\phi}\right)^{n-\phi}, \quad (11)$$

where $\Delta FV_{PF^*,m,\phi}$ represents the remaining amount of the target fixed monthly pension fund, formed by payments to the deposit account.

$\Delta FV_{PF^*,m,\phi}$ represents the remaining amount of the target fixed monthly pension fund, formed by deposits made to the deposit account.

Model (11) shows how big a part (in monetary terms) of the target fixed monthly pension fund ($FV_{PF,m,\phi}$) can be replaced through capitalisation of the initial payment to the deposit account, i.e. through $FV_{PF^*,m,\phi}(1 + R_{D,\phi})^{n-\phi}$.

Finally, the monthly amount deposited to the deposit account for each year will be calculated with the use of expression (12):

$$D_{m,\phi,t} = \frac{1}{n}\Delta FV_{PF^*,\,m,\,\phi}\left(1+R_{D,\phi}\right), \qquad (12)$$

where $D_{m,\phi,t}$ represents the monthly amount deposited to the deposit account in year t.

Thus, we can sum up the results of constructing an investment model involving a perpetual pension plan with a fixed pension. To formalise the results, entries (1)–(4), (9) are used, or entries (5)–(8), (10)–(12) in the case of adjustment of parameters. The distinguishing feature here is that the annual payments to the deposit account increase.

Suppose an employee declares a fixed amount of monthly income and an acceptable income replacement rate, and the bank, when opening a deposit account, advises to adopt the annual income adjustment index and the annual deposit interest rate as reflected in formulae (1)–(4). Furthermore, the employee wishes to fix the size of annually capitalised monthly payments to the deposit account. Then the fixed monthly amount deposited to the deposit account will be calculated with the use of model (13):

$$D_m = FV_{PF,\,m}\frac{1-\left(1+R_D\right)^{-1}}{\left(1+R_D\right)^{n}-1}, \qquad (13)$$

where D_m represents the fixed monthly amount deposited to the deposit account.

Now we will show the adjustments made to a perpetual pension plan with a fixed payment and a fixed pension when adjusting the variables while taking account of the savings that have been accumulated to that point. First of all, the transient size of the monthly pension fund with a

fixed payment and a fixed pension should be determined provided that the variables will be adjusted at the end of the year ϕ. To do this, expression (14) is used:

$$FV_{PF^{**},\,m,\,\phi} = D_m\frac{\left(1+R_D\right)^{\phi}-1}{1-\left(1+R_D\right)^{-1}}, \qquad (14)$$

where $FV_{PF^{**},m,\phi}$ represents the transient size of the monthly pension fund with a fixed payment and a fixed pension at the time of adjustment of the parameters of the pension plan.

By the time of adjustment of the variables, the first transient pension fund out of the twelve equal-sized funds ($FV_{PF^{**},m,\phi}$) will form, and the rest of the funds will form one after another within a year's time at monthly intervals. All the twelve transient pension funds should be, one at a time at monthly intervals, re-invested in deposits with new parameters for the period remaining until retirement ($n - \phi$). Upon expiration of that period, the projected capitalised size of the transient pension fund will amount to $FV_{PF^{**},m,\phi}\left(1 + R_{D,\phi}\right)^{n-\phi}$, having made part of the target monthly pension fund ($FV_{PF,m,\phi}$). The relationship between their sizes can be expressed by entry (15):

$$FV_{PF^{**},\,m,\,\phi} = FV_{PF,\,m,\,\phi} - FV_{PF^{**},\,m,\,\phi}\left(1+R_{D,\phi}\right), \qquad (15)$$

where $\Delta FV_{PF^{**},m,\phi}$ represents the remaining amount of the target fixed monthly pension fund, formed by fixed payments to the deposit accounts.

Model (15) shows how big a part (in monetary terms) of the target fixed monthly pension fund ($FV_{PF,m,\phi}$) can be replaced through capitalisation of the initial payment to the deposit account, i.e. through $FV_{PF^{**},m,\phi}\left(1 + R_{D,\phi}\right)^{n-\phi}$.

Finally, we will determine the fixed monthly size of payments to be made to the deposit account with the help of (16):

$$D_{m,\phi} = FV_{PF^{**},\,m,\,\phi}\frac{1-\left(1+R_D\right)^{-1}}{\left(1+R_D\right)^{n-\phi}-1}, \qquad (16)$$

where $D_{m,\phi}$ represents the fixed monthly amount deposited to the deposit account.

Thus, we can sum up the results of constructing an investment model involving a perpetual pension plan with a fixed payment and a fixed pension. To formalise the results, entries (1)–(4), (13) are used, or entries (5)–(8), (14)–(16) in the case of adjustment of parameters. The distinguishing feature here is that the annual payments to the deposit account stay invariable.

Both pension plans have tense spots, which are described in detail in article [1]. We will point out the most important ones here. In particular, it can be seen at Fig. 1 that a perpetual pension plan with a fixed pension would be preferable to an employee before the intersection of the graphs, as it requires less deductions to the deposit account than a perpetual pension plan with a fixed payment and a fixed pension does. However, a perpetual pension plan with a fixed pension requires a bigger total of payments to the deposit account. This means that a perpetual pension plan with a fixed payment and a fixed pension makes it possible to increase the income replacement rate and therefore the projected fixed size of the monthly pension. Hence it is quite possible to switch between pension plans. Accordingly, to prevent maximisation of the size of fixed monthly payments to the deposit account, the point in time when transition is made from a perpetual pension plan with a fixed pension to a perpetual pension plan with a fixed payment and a
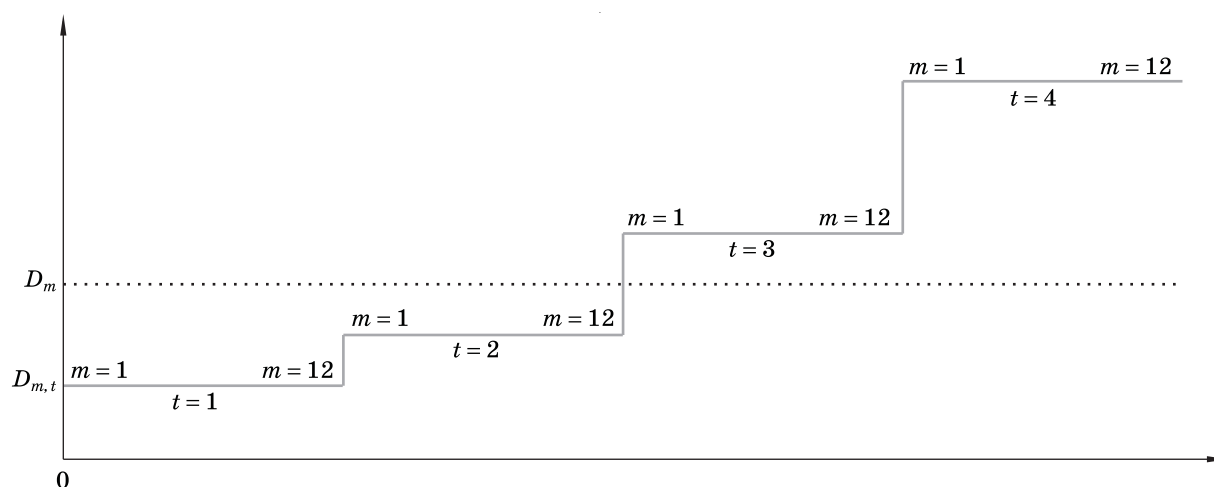
Fig. 1. Transformation of the monthly payments to the deposit account (*Y-axis*) with the growth of the length of employment (*X-axis, years*).

fixed pension should not be in the year when a crunch in payments to the deposit account takes place, which in Fig. 1 is determined by the intersection of the linear and step graphs.

Finally, we will show the adjustments required to be made to a perpetual pension plan with a fixed pension if changing it for a perpetual pension plan with a fixed payment and a fixed pension while taking account of the accumulated savings and provided that the parameters of both plans are initially assessed on the basis of formulae (1)–(3), (9). To do this, the transient size of the monthly pension fund with a fixed pension at the time of changing plans should be determined first of all, given that the transition will take place at the end of the year τ. Model (17) is used:

$$FV_{PF^*,m,\phi} = \tau D_{m,t}\left(1+R_D\right)^{\tau-t+1}, \qquad (17)$$

where $FV_{PF^*,m,\phi}$ represents the transient size of the monthly pension fund with a fixed pension at the time of changing pension plans; $t = 1, \dots, \tau$ represents the number of years before moving from a perpetual pension plan with a fixed pension to a perpetual pension plan with a fixed payment and a fixed pension.

By the time of changing perpetual pension plans, the first transient pension fund out of the twelve equal-sized funds ($FV_{PF^*,m,\tau}$) will form, and the rest of the funds will form one after another within a year's time at monthly intervals. All the twelve transient pension funds should be, one at a time at monthly intervals, re-invested in deposits with new terms (fixed monthly payments to the deposit account) for the period remaining until retirement ($n - \tau$). Upon expiration of that period, the projected capitalised size of the transient pension fund will amount to $FV_{PF^*,m,\tau}\left(1 + R_D\right)^{n-\tau}$, having made part of the target monthly pension fund ($FV_{PF,m}$). The relationship between their sizes can be expressed by entry (18):

$$\Delta FV_{PF^{**},m,\tau} = FV_{PF,m} - FV_{PF^*,m,\tau}\left(1+R_{D,\phi}\right)^{n-\tau}, \quad (18)$$

where $\Delta FV_{PF^*,m,\tau}$ represents the remaining amount of the target fixed monthly pension fund, formed by fixed payments to the deposit accounts.

Model (18) shows how big a part (in monetary terms) of the target fixed monthly pension fund ($FV_{PF,m}$) can be replaced through capitalisation of the initial payment to the deposit account, i.e. through $FV_{PF^*,m,\tau}\left(1 + R_{D,\phi}\right)^{n-\tau}$.

Finally, we will determine the size of fixed monthly payments to the deposit account with the help of (19):

$$D_{m,\tau} = \Delta FV_{PF^*,m,\phi} \frac{1-\left(1+R_D\right)}{\left(1+R_\text{в}\right)^{n-\tau}-1}, \qquad (19)$$

where $D_{m,\tau}$ represents the fixed monthly amount deposited to the deposit account after adjustment of the pension plan.

Thus, we can sum up the results of constructing an investment model involving a move from a perpetual pension plan with a fixed pension to a perpetual pension plan with a fixed payment and a fixed pension. To formalise the results, entries (1) (4), (17) (19) are used. As a result, the size of payments to the deposit account will annually increase of at first and then stay invariable after changing plans.

Thus, completing our study at this stage, we note that our proposals are aimed at creating a pension system which would be adequate to the financial needs of maintaining seniors. The problem could be solved by implementing an investment approach to pension funding; in essence, this approach would imply employees' strengthened financial and management involvement in the advancement of the strategy for their maintenance upon retirement. In our concept, we did not formalise the use of tax benefits, but we are ready to present appropriate tools for this purpose as well if needed.

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