

**Actuarial Study for Social Security Foundation –
Single Insurance Fund of Salaried Employees (IKA-ETAM)
Main Conclusions and Recommendations**

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Set of Conclusions and Proposals

I. The long-term viability of the system

The following mathematical formula applies to the pensions paid, on the basis of the system of distribution (as originally conceived but mixed in its subsequent operation):

$P_t = L_{Ct} + E_{Ct} + S_{Ct} + S_{At}$ where:

P = The pensions paid,

L_c = The contributions of the insured workers and pensioners,

E_c = The employers' contributions,

S_c = The state's contributions (participation),

S_a = Return on reserves and investments, and

t = The reference time for pensions, contributions and returns.

It should be noted that the above-mentioned mathematical formula is the simple version of the relations P , L_c , E_c , S_c and S_a and has been chosen for methodological reasons. In reality, this mathematical formula can also take the form of an inequality, in which case the figure P_t may fall short of or exceed the sum of the four terms of the right-hand side of the above-mentioned mathematical formula.

In one case of an inequality we may have:

$$P_t < (L_{Ct} + E_{Ct} + S_{Ct} + S_{At})$$

or

$$P_t > (L_{Ct} + E_{Ct} + S_{Ct} + S_{At})$$

On the basis of this mathematical formula, it is clear that the amount needed to pay pensions for the time t_1 , always on the basis of the distribution system, is made up of the sum of four quantities, and specifically of the sum:

- of the insurance contributions of the active working population and possibly (case of the LAFKA pension deduction) of pensioners during the same time t_1 ,
- of the employers' insurance contributions, also during the same time t_1 ,
- of the state's participation, in the framework of the system of tripartite funding, likewise during the same time t_1 and
- of the return on reserves, investments and the overall holdings of the social insurance system, also during the same time t_1 .

Consequently, a decrease in any of these four figures on the right-hand side of the equation must be offset by an absolutely proportional total increase in one or more of the other three figures on the same side. Otherwise (if the equation is transformed into an inequality where the figure P_1 is less than the sum of the other four terms) it will be impossible for the insurance organisation to pay a proportional part of the pensions that are owed.

In the case of Social Insurance Foundation (IKA) – Unified Fund for Employee Insurance (ETAM) but also of our country's social insurance system in general, the contribution of the fourth term on the right-hand side of the equation, that is, of the returns on IKA-ETAM's reserves and investments, is clearly problematical. Previous analyses by GSEE have adequately explained the manner and process by which the system's reserves have been squandered, on the responsibility of the Greek state, and have highlighted its present-day inability to meet current financing needs for insurance benefits due.

Consequently, the lack of capabilities of the social insurance system as a whole, and of IKA-ETAM in particular, must be met by the other three terms of the righthand side of the equation, i.e. insured workers' insurance contributions and state participation.

The consequences of the bloodletting of the system's reserves that took place in former times, in which the Greek state played a leading part, are still bedeviling the country's social insurance system and preventing it from going forward at the right pace. The system now displays an innate pathogenesis, and there is an immediate need to redefine its needs and priorities from square one.

A picture of the anticipated development of IKA-ETAM's economic viability in particular is given by the IKA-ETAM RESERVE DEVELOPMENT DIAGRAMS, a perusal of which shows the following:

If the provisions of Law 3029/2002, particularly those relating to the annual financing (1% of GDP) for IKA are assiduously applied and enforced, and 100% of workers' and employers' insurance contributions are collected, based on all the assumptions set out in the respective unit of this document, IKA-ETAM will remain viable (according to the most favourable scenario) up to the year 2026.

In more detail, a variety of scenarios were combined when carrying out these actuarial estimates:

- alternative annual growth rates (increases in GDP) of 3% or 4% or 5%,
- alternative financing methods (with or without state participation),
- alternative retirement ages of 61, 62, 63, 64 or 65.

Apart, however, from these scenarios, actuarial estimates have been made on the basis of the following hypothetical scenarios:

- inclusion of 500.000 or 800.000 new insured in the system, due to lower unemployment, higher employment and minimization of uninsured ("undeclared") employment, and
- equalising the number of days insured annually for foreign (immigrant) workers with the number for insured Greek workers.

These hypothetical scenarios attempt to measure, on the basis of the parameters

given for the operation of the IKA-ETAM, the effects of, and in particular the new inflows into the system from lower unemployment or higher employment or less uninsured work.

It should be noted that the conclusions drawn from these hypothetical and investigative estimates are not merely striking but catalytic, since they overturn generally accepted views and fixed positions whose validity is supposedly incontestable. These views, at least to the extent to which they refer to IKAETAM, prove to be easily debunkable myths, and therefore taking their importance into account for any planned changes must give rise to second thoughts.

For example, we could cite the principles generally regarded (in theory as well) as accepted, that lower unemployment, higher employment and less uninsured work would reinforce the economic viability of the social insurance system, since this would improve its inflows from insurance contributions and at the same time improve the ratio of employees to pensioners.

These general principles are absolutely valid in any social insurance system, provided that that system has been properly structured, that its inflow and outflow parameters have been taken into account and logically correlated from the beginning, that its implementation is monitored and carried out within the limits provided for when it was set up and created, and that in the event of any deviations from the system's operational specifications the necessary corrective actions are taken to restore its structural characteristics and parameters.

However, these conditions are not valid for the social insurance system of our country, and for the IKA-ETAM social protection system in particular. That is precisely why our actuarial estimates for IKA-ETAM do not bear out the generally accepted principles whereby less unemployment, more employment and less

uninsured work will improve the system's finances and lengthen its viability.

On the contrary, the respective projections demonstrate the "degree of irrationality" that characterizes the IKA-ETAM system of social protection for (primary) pensions: the more the employment rate increases, and the more unemployment and uninsured work decrease, the worse off the system becomes economically, the bigger its long-term actuarial deficits become and the shorter its term of viability becomes.

Further actuarial estimates add to these incredible findings the following, which are even more striking and absurd: the more labour productivity increases and wages and emoluments in general improve, the more the system's actuarial deficit increases.

To be sure, on a short-term annual basis, less unemployment, more employment, less uninsured work and better pay and emoluments lead to improvements in the system's annual inflows. The problem is created when taking account of and correlating these inflows with the system's corresponding long-term obligations, precisely because these long-term obligations fail to find supplemental support in adequate additional inflows originating from the fourth term on the right-hand side of the insurance equation.

Therefore it becomes clear that the system is suffering from an innate and now strong pathogenesis that was basically created by the squandering of its reserves, for which the state itself was to blame. It must be understood that at the time that a system of social protection through pensions is first created, when it has no reserves or pensioners, the fourth term of the right-hand side of the equation equals zero. But as the operation of the system evolves and pensions begin to be paid out, the creation of reserves and their exploitation through investment becomes necessary and essentially constitutes a factor for ensuring

the macroeconomic stability and viability of the system.

It should also be pointed out that, particularly in systems of a distributive nature where, in any event, the more they mature the more they are transformed into systems of a mixed type, current pensions are paid using the inflows from the current contributions of the active working population rather than on the basis of the returns on the exploitation through investment of the contributions that today's pensioners have already paid throughout the course of their working lives. But the more the number of pensioners increases, entailing a worsening in the relation between insured workers and pensioners, the more necessary becomes the contribution of the return on the system's reserves in order to pay current pensions.

Transferring the aforementioned to the operation of IKA-ETAM translates into an already existing obligation on the part of IKA to pay pensions to 869,137 pensioners, but without having created for such payments a specific level of annual inflows from the exploitation to date of IKA's reserves, since the Greek state saw to it, from as early as the 1950s, that each year IKA was deprived of such a possibility and its reserves were channelled in directions different from the ones for which they had been created. Therefore, whereas today IKA-ETAM must pay (primary) pensions to 869,137 beneficiaries, the fourth term of the righthand side of the mathematical formula is only a tiny fraction of what is required. This is an extremely serious weakness, which was caused by an administrative distortion in the "exploitation" of the reserves and was transformed into a structural pathogenesis of the IKA-ETAM pension system.

Conclusion: any efforts towards final settlement of the system's existing weakness are conditional upon the elimination of the weakness of the fourth term of the right-hand side of the aforementioned mathematical formula.

This negation can be carried out by acting on:

- either the left-hand side of the mathematical formula, which would mean a reduction in the pensions paid,
- or the first term of the right-hand side of the mathematical formula, which would mean an increase in the insurance contributions paid by the insured workers,
- or the second term of the right-hand side of the mathematical formula, which would mean an increase in the insurance contributions paid by the employers,
- or the third term of the right-hand side of the mathematical formula, which would mean an increase in the state's participation,
- or in a combination of simultaneous and parallel action on more than one of the aforementioned points.

Therefore the attempt to investigate the extent to which the attempt to eliminate the nullification of the fourth term of the right-hand side of the mathematical formula is feasible, on the basis of selecting the forms of action on the aforementioned points, becomes extremely interesting.

To be sure, it must be noted that Law 3029/2002 also provides for the possibility of eliminating the weakness, since the state financing of 1% of GDP is not the ceiling for the state's participation: the object remains to ensure the efficient operation of IKA-ETAM and therefore "if the forecasts of all economic indicators influencing the actuarial deficit of IKA-ETAM develop unfavourably, the state shall guarantee the necessary additional sources of financing, for the efficient operation of the insurance system." (Article 4, para. 4, Law 3029/2002). To be sure, this clause of Law 3029/2002 refers to the efficient operation of IKA-ETAM up to 2032. In other words the replacement of the missing resources of the fourth

term of the right-hand side of the mathematical formula provided for in this clause is carried out by proportionally increasing the third term (state financing) on the same side of the mathematical formula.

II. The impact of the decrease in contribution collectability on the system's long-term viability

In all actuarial studies internationally, calculations and estimates are based on the assumption that 100% of the insurance contributions provided for at any given time will be collected. We have also made the same assumption in this study (as we also did in our 2001 study).

But given the high rate of contribution evasion in the IKA-ETAM system, we consider it expedient to seek to make a quantitative (economic and temporal) assessment of the consequences of reduced collectability of insurance contributions. By this quantitative evaluation we mainly measure the reduction of the system's term of viability stemming from the reduced collectability.

As shown in the IKA-ETAM RESERVE DEVELOPMENT DIAGRAMS, the 20% reduction in collectability has a dual effect:

First, it «lowers» the upper limit that IKA's holdings are capable of reaching, and
Second, it substantially reduces the time that the system will remain economically viable.

These effects, depending on the average age of retirement scenario, can be broken down as follows:

For a retirement age of 61 (scenario with 3% average annual growth), the system can last until 2024 (beginning of 2025), provided that insurance contributions are 100% collectable.

If, on the contrary, collectability is reduced to 80%, the system cannot last longer

than 2017 (beginning of 2018), that is, collectability reduced by 20% reduces the term of economic viability by seven whole years (reduction of the total term of economic viability by around 35%).

The same substantial effect can also be seen in the scenarios of the other retirement ages:

For a retirement age of 62, the term of viability is around 7 ½ years shorter.

For a retirement age of 63, it is 7 years shorter.

For a retirement age of 64, it is around 7 years shorter.

For a retirement age of 65, it is around 7 years shorter.

Reduced collectability, apart of course from bringing about a reduction in IKA's annual income, also lowers the upper limits that its holdings can reach.

Indeed, on the basis of the above-mentioned scenario for a retirement age of 61, in 2016 IKA-ETAM's holdings will reach the upper limit of EUR30 billion, provided that 100% of the insurance contributions due are collected.

However, in the case where collectability is reduced by 20%, the upper limit of IKA's reserves cannot exceed the amount of around EUR9 billion by the year 2012.

The respective figures for a retirement age of 62 show the following pattern:

If collectability is 100%, reserves will reach a maximum of EUR33 billion (in 2016).

If collectability is 80%, reserves will reach a maximum of EUR12 billion (in 2012).

In addition, for a retirement age of 63, the respective figures show the following pattern:

If collectability is 100%, reserves will reach a maximum of EUR33 billion (in 2017).

If collectability is 80%, reserves will reach a maximum of EUR13 billion (in 2013).

There are similar deviations for retirement ages of 64 and 65.

Conclusion: contribution evasion and therefore reduced collectability of insurance contributions have already been registered as a serious problem, and the need to deal with it effectively has repeatedly been stressed. However, the extent of the problem's ramifications have never been measured, that is, neither the extent of the reduction in the system's finances nor the degree to which its term of economic viability was shortened have been recorded in quantitative macroeconomic terms. It is precisely these shortcomings that our present study is attempting to compensate for.

From the relevant actuarial projections it is now evident that the dimensions of the problem are much more serious than they have generally (and vaguely) been thought to be, and that a necessary condition for ensuring the viability of IKAETAM until 2024-2026 (depending on the scenario in each case) is the improved functioning of IKA's collection mechanisms, to a degree where these mechanisms will in fact become efficient.

Also related to the need to improve collection mechanisms is the need to clarify the term immediacy. Whenever we refer to needs for changes, it is implied that such changes must be made immediately if they are to have the expected longterm results.

This means that the improvement of the collection mechanisms must be made immediately and in any event without delay, so as to achieve meaningful results for the functioning of the system.

The same observation (need for immediate payment) also applies to cases where the present value of the deficits of the member funds is paid to IKA-ETAM, or the case where IKA-ETAM is assisted with an extra percentage, in accordance with Article 4, paragraph 4 of Law 3029/02, so as to make it viable by the year

2032.

III. The age pyramid of insured workers and pensioners and its effects on the economic viability of the system. The myth regarding immigrants

In specific instances, Greek public opinion has accepted persistent views according to which the “salvation” of the social insurance system (and in particular the “salvation” of IKA-ETAM) can be sought for and ensured by including more immigrants in it.

Our actuarial measurements have not borne out the alleged great importance of these estimations, at least in their economic part.

In more detail:

- The distribution of all active working people insured by IKA-ETAM shows that 81.9% are under 50 years of age and 58.2% are under 40. From the diagram showing the age pyramid of Greek male (and even more of female) insured workers, the “age breather” (which is converted into a proportionate “economic breather”) provided to the system by the substantial age deviation of most insured from the crucial retirement ages can be clearly seen.
- It is, however, obvious that the picture provided by the age pyramid for men and women is significantly improved if foreigners (men and women) are added to it.
- Further investigation, however, of the matter reveals that the improvement in the age pyramid resulting from the addition of insured immigrants by age, fails to bring about similar results in the economic area. The reason for this must be sought
 - _ first, in the fewer days worked by immigrants compared to Greeks in all age groups (averaging 14.17, compared to 17.64 for

Greeks) as well as

_ second, in the lower average wages earned by immigrants compared to Greeks (it is worth noting that foreigners earn higher average wages than Greeks, only up to the age of 25 – see

GRAPH “DISTRIBUTION OF AVERAGE MONTHLY WAGE BY AGE AND GENDER”).

Based on the results of these measurements, we may conclude that one Greek insured person is not equivalent, from the viewpoint of amount of contributions paid to IKA-ETAM, to one insured economic migrant, and that consequently the argument that the financial participation of insured immigrants in the income of IKA-ETAM is proportionate to their number does not correspond to the socioinsurance reality of IKA-ETAM.

IV. The extent of poverty in the population stratum of pensioners

As has already been pointed out (see chap. 4.I), a question that may arise is to what degree the system’s weaknesses may be eliminated by acting on the lefthand side of the insurance equation, i.e. on reducing pensions paid.

To answer this question, we must break down the pensions paid, in relation to the monthly level of such amounts. Such a breakdown leads to the following conclusions:

- 68% of the total amount of pensions paid, corresponding to 522,400 pensioners, consists of old-age pensions; 13%, corresponding to 124,541 pensioners, consists of disability pensions; and 19%, corresponding to 222,221 pensioners, consists of pensions due to death (survivors’ pensions).
- If we match the amounts of pensions paid for each category to the number

of pensioners in each category, we see that old-age pensioners constitute 60% of all pensioners (but receive 68% of the respective total amounts), that disability pensioners constitute 14% of all pensioners (but receive 13% of the total amounts) and pensioners by cause of death constitute 26% of all pensioners but receive only 19% of total amounts. In other words, old-age pensioners receive increased amounts, at the expense mainly of pensioners by cause of death. This larger amount, however, is probably reasonable, since retirees due to old age have higher pension characteristics (later retirement, higher pay, etc.) than pensioners by cause of death.

- In the category of old-age pensions, 64,8% of beneficiaries, i.e. 336,319 pensioners, receive monthly pensions of less than EUR500; another 20%, i.e. 102,312, pensioners receive pensions of between EUR500 and EUR799; and only 9% (46,016 pensioners) receive pensions of over EUR1,000.
- In the category of pensions by cause of death (survivor pensions), 84%, i.e. 185,686 pensioners receive monthly pensions of less than EUR400, and only 0.128% (285 pensioners) receive pensions of over EUR1,000.
- In the category of disability pensions, 79%, i.e. 98,098 pensioners, receive monthly pensions of less than EUR500, and only 0.97% (1,207 pensioners) receive pensions of over EUR1,000.
- Of all pensioners in all three categories (old-age, disability and survivor), 73% (634,292 pensioners) receive pensions of less than EUR500, and only 5.5% (47,578 pensioners) receive pensions of over EUR1,000.

Given the above-mentioned amounts of pensions paid, any efforts at further reductions would be inconceivable, at least in the vast majority of cases. On the

contrary, the amounts of the pensions paid are considered to be totally inadequate to meet the pensioners' needs for a decent living standard, and it is common knowledge that Greek pensioners, according to relevant EUROSTAT measurements, are at high risk of falling below the poverty line.

Conclusion: any thoughts of addressing the weakness of the insurance (pensions) equation by reducing the amount of its left-hand side, that is by reducing the pensions provided, will lead to a further reduction in the already severely reduced pension protection, and consequently effectively eliminate such protection for the vast majority of IKA-ETAM pensioners.

V. The effects of an increase in the average real retirement age

To be sure, it may be argued that a slowdown in the rate of retirement may also bring about the same result, i.e. the reduction of the left-hand side of the insurance equation, by cutting back on early retirement and raising the legal retirement ages. What is more, the relevant decisions of the EU summits in Stockholm (2001) and Barcelona (2002) sought to address related questions. With the objective of an actuarial assessment of these consequences, we have attempted to measure the quantitative effects on the system's term of economic viability (always with reference to IKA-ETAM), by hypothetically "moving up" the average real retirement age from 61 to 65 (five basic scenarios).

As can clearly be seen from the respective IKA-ETAM RESERVE DEVELOPMENT DIAGRAMS, these effects are quite small: for every increase in the average real retirement age by one calendar day, the long-term viability of the system is lengthened by a few months.

On no account, therefore, do the changes and increases in retirement ages prove to be a sufficiently important and reliable basis for reaching the goals of

ensuring the system's long-term viability.

VI. The inability to increase insured workers' and employers' insurance contributions

We will not dwell at any length on the realization that it is unfeasible to act upon the first and second terms of the right-hand side of the insurance equation (i.e. on increasing the amount of insurance contributions due from insured workers and employers), in the framework of striving to eliminate the effects of minimization of the fourth term on the same side of the equation.

The issue is well enough known (insurance contributions to the IKA-ETAM pensions system are among the highest in the EU) and it has already been argued convincingly that any further increase in contributions will prove to be counter-productive, prevent growth and at any rate lead to adverse effects on the social insurance system itself.

Please note that already in our 2001 study we recorded in a special Table the percentages of insurance contributions of insured workers and employers in the other member countries of EU-15.

VII. The implementation of Law 3029/2002

From an overall consideration of its provisions, Law 3029/2002 may be seen to be permeated by a vision: after 1.1.2008 paid employees under private law will be covered, as regards primary pensions, by a single social insurance organisation whose economic viability will be ensured: IKA-ETAM.

To be sure, Law 3029/2002 refers to a period of 30 years from the time it was passed, in other words, until the year 2032. That is why provision has been made (in Article 4, para. 4):

- for the state budget to provide supplementary amounts (“the state shall secure the required extra financial resources”), above and beyond the annual 1% of GDP, for ensuring the efficient operation of IKA-ETAM and
- for the actuarial estimates to be updated every five years “with a full actuarial study on the remaining period until the year 2032,” so as to calculate at an early date the supplementary amount necessary at any given time for the efficient operation of IKA, which must be entered in the state budget and paid to IKA-ETAM before the year 2032.

Therefore, given the high rates of contribution evasion, it has become necessary to readjust the state’s contribution of 1% of GDP, always within the scope of Law 3029/2002, in order to meet the needs of ensuring the efficient operation of IKA until the year 2032.

What is more, we must point out that in accordance with the conclusions of our actuarial estimates, and given the ability to ensure the efficient operation of IKA-ETAM based on the annual level of state participation of 1% of GDP, up to the time limits set out in unit 4.I above, in order to further ensure the efficient operation of IKA until the year 2032 the state must pay an additional 1.40% of GDP, beginning in 2005.

Conclusion: the provisions of Law 3029/2002 cover the efficient operation of the system up to the year 2032. It must, however, be made clear that if state participation is kept down to 1% of GDP, the financing needs of the IKA-ETAM system will be met, not up to the year 2032 but up to the shorter time limits set out in para. 4.I above (depending on the respective scenario).

In any event, the implementation of the provisions of Law 3029/2002 is of major importance for the general smooth operation of the IKA-ETAM system.

VIII. With particular regard to the inclusion of the eight special funds

A more particular case of implementation of the provisions of Law 3029/2002 is the anticipated inclusion of the eight special primary pension funds and branches in IKA-ETAM by 1.1.2008 at the latest.

Law 3029/2002 clearly specifies the conditions and procedures for including the eight special funds. The Law's predominant concern is that the inclusion of any of those funds will not upset the actuarial balance of IKA-ETAM.

However, we are under the impression that the provision of the clause contained in para. 11 of Article 5 of Law 3029/2002 has not been understood: coverage of the actuarial deficits of the eight special funds and immediate payment of their present value to IKA-ETAM is not exclusively the responsibility of the state; the respective public corporations and banks also have a responsibility and obligation in this regard.

To be sure, any exemption of a public corporation or bank from this obligation is a political option for the state, but in such a case the state must compensate for this exemption from the available funds in its budget and at any rate not at the expense of IKA-ETAM or the workers or pensioners it insures.