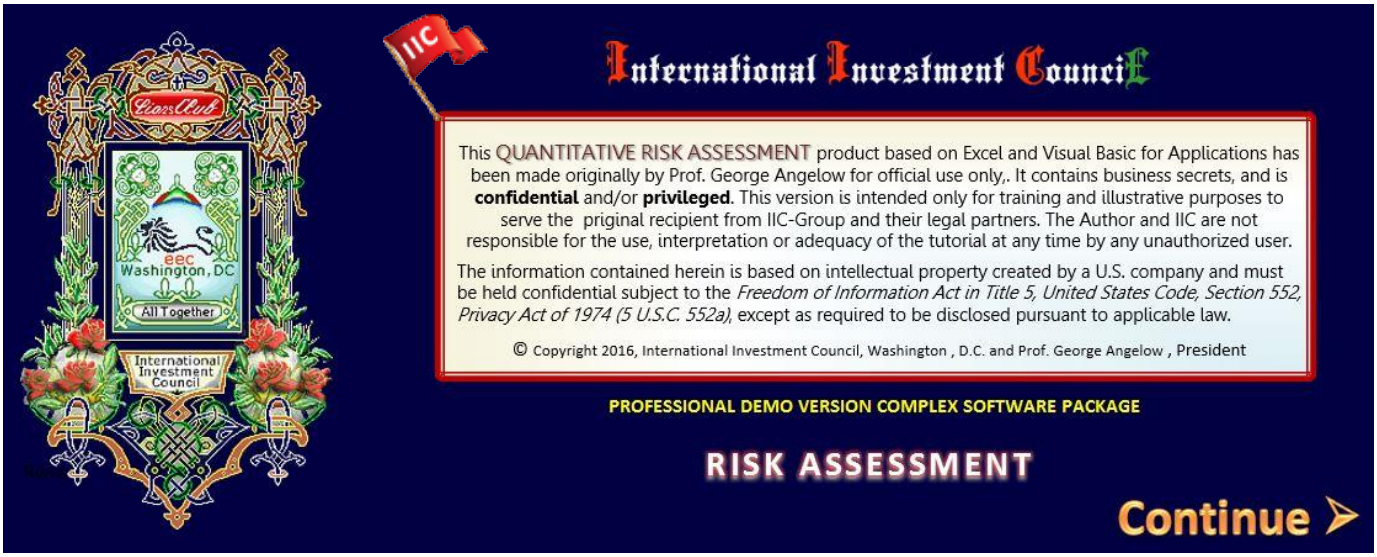

RISK ASSESSMENT AND MANAGEMENT

QUANTITATIVE RISK ASSESSMENT
Section 1

RISK MANAGEMENT
Section 2

Summary of the **EIGHTER-PF Program*** for project finance application (**PF**) can help you to enter in the problem fast and easier to understand the nature of this more detailed description (click here).

The models that some scientists use to represent the way the economy works are sometimes found inadequate. The Depression of the 1930s and the "stagflation" of the 1970s both forced rethinking. The recent financial crisis has sparked another. The crisis showed that the standard macroeconomic and risk assessment models used by major bankers and the investment companies neither represent the financial system accurately nor allow for the booms and busts observed in the real world *(as discussed in Economist, Jan. 2013)*.

Small businesses are building momentum as a post-recession job engine and a contributor of an estimated $5.8 trillion to GDP in 2013. Our clients, a growing number in this market segment, are benefiting today from our expertise and services.

QUANTITATIVE RISK ASSESSMENT is the first step to the **RISK MANAGEMENT** and further repeated on each level of business development. This program is an "industry-standard" model for sophisticated "agent-based modeling". It is not solely designed for Risk Management, but parts of the functionality walk the developer through quality assessment of posterior probabilities for some events to occur and to suggest a management approaches to controlling the financed business venture. These parts of the software package allow users, as group of experts, to play with financial risk factors of the business that incorporate various types of capital investors (strategic investor,[1] hands-on investor,[2] angel investor,[3] venture capitalist).[4]

The investor must *first* decide in an early design stage whether to invest in a project, and if YES *then* to manage the risk by mitigating some of the selected factors, and *finally* with the whole executive management staff to operate in order to reduce or escape the potential loss and to reach or exceed planned performance.[5]

The 8R-Product hereby represented is a "matrix-of-states" used mainly for defining various risk assessments as the product of harmful probability categories and harmful severity categories. This is a simple and user-friendly Excel-based mechanism to create visibility of the risks and assist management in decision making.

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* **EIGHTER** (cardinal number that is the sum of **7** financial and **1** operational) risk factors—directly dependent on the others.

The system, which we practice and have been updating for a long time, consists of independent Quantitative Risk Assessment • **OPEN-SOURCE COMPUTER PROGRAM** •, and an extension for quality assessment of **two *F*actors**—(*d*) and (*o*) below—of critical importance for approval of a loan application as prospective and with acceptable total level of risk that would be covered by the insurance policy. The whole software package is part of a complex Online Cash-Flow Control System* (OCFCS), which monitors:

- project's revenue stream,
- tailored repayment profiles,
- extended grace period or repayment terms that must be justified by the project's cash flow plan,
- repayment profile, where the investor should have a solid business plan.

Selected are seven (7) risk ***F*actors** and the operational risk (*o*), variable as the case so requires, situated in two polar coordinate systems (see on sheet **INTRO** introduces).

8***F***:
1. Lenders' Capital Risk (*l*)
2. **Default Risk** (*d*)
3. Economic Risk (*e*)
4. Currency Risk (*c*)
5. Interest Rate Risk (*i*)
6. **Operational Risk** (*o*)

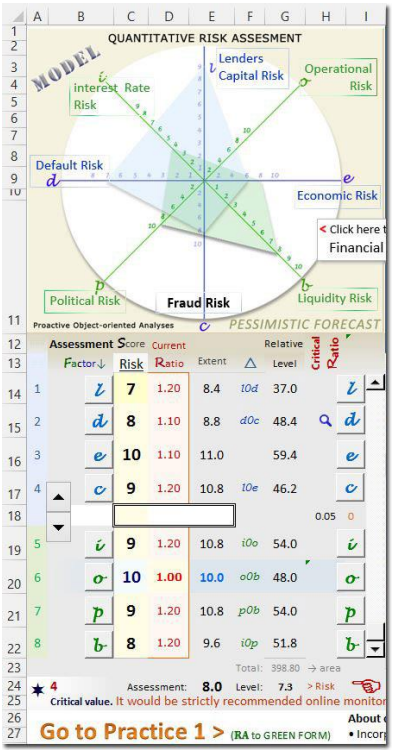

Fig. 22.

Fig. 1

A Risk Matrix is a matrix that is used during Risk Assessment to define the various levels of risk as the **product** of the harm probability categories and harm severity categories. This is a simple mechanism to increase visibility of risks and assist management decision making.

Risk assessment is a step in a Risk Management procedure. Risk assessment is the determination of quantitative or qualitative value of risk related to a concrete situation and a recognized threat (also called hazard). Quantitative risk assessment requires calculations of two components of risk, (1) the **MAGNITUDE OF THE POTENTIAL LOSS**, and (2) the **PROBABILITY** that the loss will occur.

(1) **MAGNITUDE OF THE POTENTIAL LOSS Scoring (*S*)** of ***F*** in the business wherein the risk for investment in this environment is quantitatively characterized and described in a scale from 0 (no risk) to 10 (max risk) — the potential of loss, represented by the numbers over the axes of both coordinate systems on the main matrix; and Cells C14 – C17 (the blue system) and Cells C19 – C21 (green).

PROBABILITY Ratio (*R*) of the risk factor to materialize the MAGNITUDE OF THE POTENTIAL LOSS and its specific contribution to the total level of risk, resulting in a fixed magnitude over the project from 1 to 2 (rate & impact) —represented by different scales over the axes of both coordinate systems on the graph; and in the matrix cells D14 –D17 (the blue system) and cells C19 – C21 (green).

Risk *S*cored with a large potential loss and a ***R*atio** of low probability of occurring is treated differently from one with a low potential loss and a high likelihood of occurring. Both are of nearly equal priority.

These are the two fields in the matrix wherein the developer makes S selecting different R for each F. The program computes each *Relative Impact* and the total ***Level of Risk***. That is all you have to do on the basic level.

Evaluation of the *prior probability* of possible impact, which two Fs—(d) and (σ) above—will inflict over the financial result, the cash flows from the project. It will be the scope of the *Sensitivity Analysis* of the Business Plan.

The 8R-Program allows the investor to assign risk assessment to up to three groups developers (A, B and C). Group D is structured and designed for practice ether the evaluation of the *prior probability* of possible impact *or* for a sequence of assessments of a single quality in personality traits exhibited in eight events referring especially to F (σ).

- **Group A**. **External Assessors.** Financial Advisor (as we are) to make risk assessment in a very crucial stage before accepting an audit engagement According to ISA 315 *"the auditor should perform risk assessment procedures to obtain an understanding of the entity and its environment, including its internal control."* [6] Then, we have to be assigned to make Feasibility Study of the project (together with the Project Company) and implement the complex OCFCS* *(**Recommended**)*.

- **Group B**. **Internal Expertise.** Risk assessments performed by internal auditors are usually designed to facilitate the annual audit plan. Using various elements, such as changes in volume of business, management, technology, and the economy, coupled with the knowledge and experience of management regarding the particular area, plus the previous rating of the area and the time since the last Independent Audit determines which areas have more risk and should be a priority within the audit plan. Only internal audit department generated risk assessments should be used for audit planning purposes. Usually it is designed to facilitate the annual audit plan using various elements, coupled with the knowledge and experience of management regarding their particular area of experience. Therefore, the risk assessed entity must view the Risk Assessment demo model [7] of the program, and it is recommendable to purchase it.

- **Group C**. **Prior Probability Independent Audit** of the assessment(s) is also recommended in various cases e.g. when the investor is "angel" type or venture capitalist. For audits performed by an outside audit firm, risk assessment is a very crucial stage before accepting an audit engagement. "The auditor should perform risk assessment procedures to obtain an understanding of the entity and its environment, including its internal control, evidence relating to the auditor's risk assessment of a material misstatement in the client's financial statements." [8]

- **Group D**. The outputs from this Group are independent but not mutually exclusive with other groups' assessments. There are two independent and completely different types of quality assessments.

The First Type (also called in our model "what-if" expertise) is designed for refining of the **Default Risk** "d". It provides means of computing the risk of two *posterior* mutually exclusive events of interest that can possibly occur—specifically answers the question: what happen if posteriorly some events cause the S of dF suddenly to jump up? This computation utilizes Bayes Theorem, extensively used in decision analysis.

The following block diagram shows probability revision using Bayes Theorem.[9]

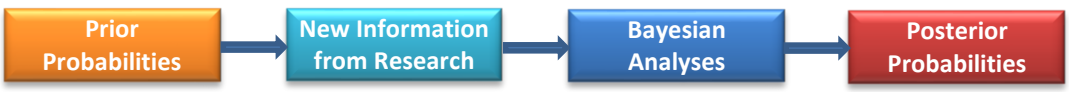

Fig. 3

The software can compute the probability level of risk, which totals the *Group*'s assessment and averages with the result of quantitative assessment of all *Groups* of assessors. Provision of this service might cost a bit more, however, the accuracy exceeds all expectations and surpasses models used by the so-called major bankers and investment companies.

The Second Type is a Mathematical Model for **Quality Assessment of the Personal Traits** of up to eight managers of the Project Company (the assumed Borrower of credit resource). It is designed for refining the **Operational Risk** "". As usually, some quantification of risk assessment is implicitly required by the lending and insurance institutions, but it is also highly recommended for the Investor himself to help him his make the right decision. However, it has only an informative and advisable nature. Finally, the Investor decides whether to spend his own and borrowed funds, and how to operate the business in which the funds are invested. With this type this product is unique with simultaneity of two complementary mathematical models for assessment of generally mutually exclusive areas of application—investment financing and personality traits in situation of decision making about the first area only.

Easy for Operation. Each developer from a group of experts enters his assessments in the main matrix placed by itself on Worksheet **Bul** (shown on Fig. 2 above), and then goes to sheet **Practice1** . There the assessments are filled in automatically within the designated sub-matrix. The use of two separate sheets helps avoid any influence from already completed data by others. The **8R-Program** computes the final specific subtotals and average level of risk, creates charts to illustrate and compare data, etc. The user has the option to compare and analyze them. Finally, the total risk and the composed average of all groups form an integrated evaluation that could be checked against prior experience when the user is taking a decision. Thus he could add feedback for multiple application of the program—basic attribute of the Theory of Control.

This brief inference is also a short guide, made for a broad audience of potential users—investors, borrowers, lenders, insurers. The model was successfully applied by investors intended to develop a production in different countries. Typical examples are chain stores (i) grocery and household goods, (ii) motor oils, (iii) gas stations, (iv) greenhouse vegetables, etc., with the intention to produce and/or packages part of the goods in local countries. Other users (such as project managers or risk assessors) who are responsible for making decisions or producing estimates regarding capital investments should find this guidance useful for understanding and directing the technical work of others who produce and analyze data. Data analysts should find it a convenient compendium of basic assessment tools. The software for the above assessments and analyzes is designed to assess and audit risk itself too.

Audit risk (AR) includes: inherent risk (IR), control risk (KR) and detection risk (DR).

AR = IR x CR x DR

- IR refers to the risk involved in the nature of business or transaction. Example, transactions involving exchange of cash may have higher IR than transactions involving settlement by checks.
- CR refers to the risk that a misstatement could occur but may not be detected and corrected or prevented by entity's internal control mechanism. Example, control risk assessment may be higher in an entity where separation of duties is not well defined.
- DR is the probability that the audit procedures may fail to detect existence of a material error or fraud. While CR depends on the strength or weakness of the internal control procedures, DR is either due to sampling error or human factors.

Conclusion. In the modern world investment decisions in any business (development of manufacturing, sports, etc.), solely based on personal experience, intuition, or insights from the cosmos are equal to an absurd. They must be objectified by friendly to use, easy accessible, computer models, and expertise.

[1] One that adds value to the money it invests with its contacts, experience, and knowledge of market . . .

[2] Investor holding a large portion of shares who has great influence over company decisions and management strategy . .

[3] A former entrepreneur or professional who provides starting or growth capital in promising ventures, and helps also with advice and contacts . . .

[4] Private investors who provide venture capital to promising business ventures . . .

[5] This program is the basic product of our RISK MANAGEMENT COMPLEX SOFTWARE PACKAGES. The program operates on level zero, of a pyramidal hierarchical structure, where every following higher level of management the business and the risk factors results mitigation and reduction of the total level of the risk, assessed by the program, to (theoretical) zero.

[6] **Automation Standards, *Practical Solutions from Industry Experts***

[7] Download it: http://www.eec.us.com/fin/bizPlan/RiskAssmnt_P.xlsm

[8] According to ISA315 Understanding the Entity and its Environment and Assessing the Risks of Material Misstatement.

[9] ✱Bayes theorem; Quantitative Methods for Business (Fifth edition); David R. Anderson, University of Cincinnati, Dennis J. Sweeney, University of Cincinnati, Thomas A. Williams, Rochester Institute of Technology; Library of Congress Cataloging-in-Publication Data.

RISK MANAGEMENT
Section 2

INTRODUCTION
OPERATION

FOREWORD

In this section we treat Inherent risk (IR) which is an assessed level of raw or untreated risk; that is, the natural level of risk inherent in a process or activity without doing anything to reduce the likelihood or mitigate the severity of a mishap, or the amount of risk before the application of the risk reduction effects of controls.

The chosen methods of displaying the assessment criteria in graphical presentation, could have been any of the known in mathematics. However, we did not randomly select them from the wide variety available. Our first selection is the triangle. On Fig. 2 of Page 2 above, the diagonals of the first quadrilateral (in green) match the axes with coordinates p-oXi-b. Suppose you rotate the pyramid to 45°. Its diagonals match the second, called "divine Cross" by the philosophers "divine Cross", polar axes d-eXl-c (blue coordinate system). In each of the two polar coordinate systems there are an even number of triangles formed by the coordinate axes and lines connecting the poles – the *Assessment Scorings* (**S**), brought along the axes with different scales – the *Assessment Ratio* (**R**). The surface of the shape enclosed by the broken line broken line is the sum of the areas of its composite triangles.

PREFACE

For better understanding of the philosophy of the computer model of **RISK MANAGEMENT** during the amortization of the investment capital involved, look at the pyramid on the right. It has perfect dimensional geometric shape of two planar forms—(A) square for the base, and (B) isosceles triangles on the surrounding walls [Fig. 4]. This is the ideal isomorph form that represents the worst possible results of our analyses. If we complete our job ideally, its bases will go to zero, and *the eye that sees everything will see nothing.* However, there is not ideal world, good or bad.[1]

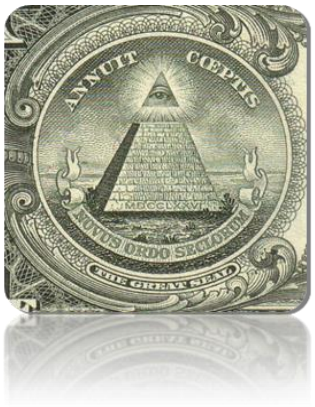

Fig. 4

(A) The quadrangle (in particular the square) is the best form for base. Imagine that the base of the pyramid, however, is not a square but one of the quadrangles composed of an even number of triangles, just as shown in Fig. 2. The quadrangle is the most stable form in the two dimensional space of the states. Ordinary tables have four legs; neither five, nor more and not less. A three-legged table is less stable.

(B) The triangle (the isosceles, in particular) is the simplest flat geometric form. Such triangles form the surrounding walls of the pyramid of our information model. Figuratively, these walls are information shields, "firewalls" of the model inside, and this is the best statically balanced form.

We could call this interpretation *meaningful*. The theorems we use to describe the selected symbols (the pyramid and its base and walls, in this case) and the true statements correspond to each other – i.e. this interpretation creates isomorphism between the algorithm and some part of the reality. This is the only true way to a mathematical interpretation by the Formal System[2] of real events like risks and of individual traits in situations of decision-making, whether the person behaves deterministically or not [See below].

This PREFACE predetermines critical factors for the formation, displaying and operation with the program. There are at least two risk **F**actors from the total of eight included in the program, as underlined in Section 1. They must be treated not as quantitative, but as qualitative assessment. They are leading in the decision making for both parties in an capital investment deal: (i) the funds provider (lender, investor of one of the discussed type or both)—the **Default Risk "*d*"**, *and* (ii) the developer (borrower, investor)—the **Operational Risk "*o*"**. The assessment of their **S**coring directly affect over the results as the software algorithm increases their respective values in the primary "matrix of states" (the cells C15 and C20, Fig. 2). This is only one step of transfer of quality into quantitative under the respective known mathematical methods, but with the consciously intent and decision of the assessor.

In some specific cases of decision making when it is necessary to obtain forecasts through "group consensus", the coordinator may use this program to compute the results of an applied *Delphi approach*. In the usual application all members of the panel of experts are physically separated from and unknown to each other. This is one of the reasons why the identification of experts is made by four-figure code on sheet **File** of the program, where the first figure identifies the group they belongs to. They are informed about the case and asked to complete the Ratios for each risk Factor and to respond to a series of questions until the coordinator feels that the differences between the separate expertise has diminished, and some degree of consensus has been reached in compliance with the conceptual scenario of the future based on a well-defined set of assumptions, placed at the top level. The data of their expertise and responses are tabulated automatically on sheet **File** for further estimations assumed for the next, upper, level of expertise. So they are used to prepare a second questionnaire comparing the information. Each respondent is then asked to consider and possibly revise his or her response of the previous level. The job of the decision maker is to decide which scenario is desired, to lay it down as an imperative, and when the final estimate is received, to make decisions accordingly.

One practical application of this functional model among others in **RISK MANAGEMENT** programs in which the decision maker operates, is the complicated case about his or her behavior at specific events. Then the expertise is made on case-by-case basis, repeatable indefinitely during the whole amortization period as part of risk management. The said conceptual scenario includes adjustment and improvement of behavior for mitigation of the Factor "o". At that time the strategy of the mathematical model for the best possible **Complex Quality Assessment of Behavior of Individuals in Specific Situations** is applied. Did the assessed decision maker, this *homo ludens,*[3] studied the Theory of Positive Mind, and does he practice it "here and now"? Certainly not. Usually he or she is simply an executive officer, a decision maker who spends out other people's money for the business they were employed to manage.

In the above cases our mathematical model of the **RISK MANAGEMENT** works. It is based on the two principles of Cybernetics as the science of control—(i) hierarchical structure (a pyramid in this scenario) of series of **levels of control**, where the information is transmitted from the bottom level up ↑, and imperatives descend from the top down ↓ to the lower levels; *and* (ii) on each level the Object **S** whose rules and axioms are described by symbols in mathematical formulas[4] of its formal system, is under control by negative feedback Controller **C** in order to optimally compensate the disturbing effects caused by the Risk Factors **F**.

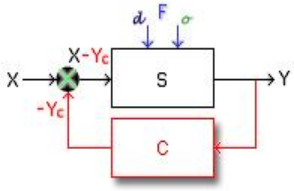

Fig. 5

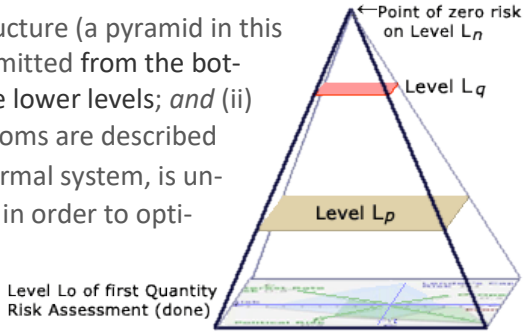

Fig. 6

More about the supplication method

INTRODUCTION

The RISK MANAGEMENT COMPLEX SOFTWARE 8R-PACKAGE consists of two programs and this is the second one, fully interdependent with the first, Quantitative Risk Assessment. The program operates on all levels of a pyramidal hierarchical structure, beginning on the zero Level$_0$ (Fig. 6). The information received from the Quantitative Assessment including amendments applied to Quality Assessment of both Factors d and o will be applied later in assessment of the risk on the next Level$_1$. Data *quality* is meaningful only when it relates to the *intended use* of the data. However, in the meantime, on Level$_0$ the System of Automatic Control (Fig. 5) works well. In Block **C**, where proceeds the output **Y** information, the management staff exercises control over of all Risk Factors.

On Sheet **Bayes** a highly qualified audit group applies expertise to add credibility to the final assessment, predominating about **Default Risk** "d"1 (but not limited to) to occur prior to probabilities that revoke the raise of **F**.

Worksheet Practice1 of the program file provides opportunity to model **Personal Traits** of up to eight managers of the Project Company to reform the **Operational Risk** o of Factors **F** (**Fig. 5**).

Factors Economic Risk "*e*", Currency Risk "*c*", Interest Rate Risk "*i*" and Political Risk "*p*" are not subject to control by the corporate staff operating the facilities and company trades.

OPERATION

Default Risk[5] (*d*) has two essential characteristics: the most important for the lenders, *and* it is subject to internal management by the borrower's staff and by external assessors. Henceforth it follows that it needs deeper analysis, a professional econometric,[6] which may result in assessment of specific qualities which might increase or decrease its impact in an operational sequence of events with conditional probability to happen. We begin probability analysis with initial or *prior probability* estimates for specific events of interest. Obtaining additional information about the events is achievable, from which we could revise the *posterior probabilities* of the events as shown on Fig.3, Page 2.

There are n mutually exclusive events $A_1, A_2, \ldots, A_n$ one of which must occur during the loan amortization period, and also event B has occurred. Computation of any posterior probability $P(A_i \mid B)$ of a posterior probability for a negative event and the impact over the risk increase.

$$P(A_i \mid B) = \frac{P(B \mid A_i)P(A_i)}{P(B \mid A_1)P(A_1) + P(B \mid A_2)P(A_2) + \ldots + P(B \mid A_n)P(A_n)} \quad *$$

The result of computing the above formula through the program (under defined conditions in the program code) is an increase the value of *d*-Factor's Ratio (cell D12 shown on Fig. 2) whereby the probability to happen bad event and the impact over the risk increase.

The auditors may collect new information from samples, or request for special report, or product test of the system output, etc. in order to obtain a new prior probability value and to define new events referred to as *posterior probabilities*. This is a sensitivity analyzes of *posterior probabilities*, that should be applied later in assessment at the next Level$_1$, and in the Business Plan. When applied on any new higher level the possibility for new events to appear is significantly reduced. Thus assessment of (*d*), respectively the total level of the risk, drops down at any further level.

The Risk Assessment made for the business plan and application for financing the business, as to so called MODEL, seen on Fig. 2 above, illustrates a high Total (***start***) level of risk equal to 178.53 (assessment **1.8**), bears the mark "critical value", and is therefore denoted as *PESSIMISTIC FORECAST*.

When the corporate staff (or their consultants) manage (*d*) and (*σ*) during the loan amortization period, they use this part of the software package (i) extensively in performing decision analyses and developing a decision strategy to constitute a code of imperatives reaching a top level risk of a perfect zero, reducimg **F** at each level down by identification and improvement of the algorithm of Controller **C** (Fig. 5) increasing the effect of the feedback -Y_c. And vice versa, this information is filed in on sheet File of the program, and updated on each higher level. The total level of risk on Level$_1$ scales down and so on, which results in decreased assessment of each subsequent upper "floor" of the pyramid. This forms an information upflow reaching to the typically used 95% success, or 5% risk (assessment **0.05**) at the top. At which level the developer will stop the **QUANTITATIVE RISK ASSESSMENT** and **MANAGEMENT** is up to him (or the assessment on his behavior at that time).

Operational Risk[7] (*σ*) is this eighth (8) *F*actor that is often not inherent in financial seven risk packages (7+1) used by the theoreticians but most often participates critically in forming the financial output of the business. It is organically correlated to the Default Risk (*d*), but its effect is visualized only when it is too late for tentative assessment and subsequent management. The problem is that it refers to the investor's managing staff, individuals, board, and ordinary operators, and their personality traits, not personal profiles but their behaviors in specific situations, mainly in decision making. This is a multidisciplinary and interdisciplinary field where the mathematical treatment is *terra incognita*, and in spite of its perfection, if any, ultimately an or more individuals make the final decision.

Worksheet Practice1 of the 8R-Program file submits eight sub-matrices of Group D. The Developer can switch the system from Quantitative Risk Assessment mode to Personality Trait Assessment by clicking the chart or the button abobe it. The software makes automatically the required changes, and you are on a new field. Fill in the assessment Scoring and Ratios for each characteristic of Personality Traits ("PT") in sheet Bul appropriately and push the button Go to Practice1 > sub-matrix sheet to complete them. Select the value of impact of PTs the Add-Ins scrollbar

and the quotient $P_{(o)}$ of a manager (or a group like the board) over the operational management of a specific event of interest. Move the slide between 0 and 2 to select the appropriate $\mathcal{P}_{(o)}$ that will define the specific Ratio of personality impact over the Factor "o" (Cell AN50). $\mathcal{P}_{(o)}$ will modify the PM Assessments ("MPTs") respectively by sliding to a selected value for each manger about every specific event of interest.

The secret lies in how the quotient $\mathcal{P}_{(o)}$ treasts (i) the **special change** of the total Factor "o" (cell AN41); *and* (ii) the total level of the risk already computed on cell AN46 as follows:

1. Which part of the average Total level of risk goes to Factor o? – cell AN48 (in order the relevant increase of o affect the total level of the complex quantitative risk assessment).
2. What is the relative quantitative of PTs in "o"? – Cell AN49 (often more than 100% as the examples shows).
3. The Impact of the PTs over the Factor o is computed as an increase (if the selected $\mathcal{P}_{(o)} > 1$) or decrease (if $\mathcal{P}_{(o)} < 1$) of the relative PTs' part assessment in the Operational Risk "o" with the square of the difference between the values of assessed PTs and modified, MPTs. The difference between simple linear ------- and square increase/decrease function of the MPTs is shown on the graph along with the Group D sub-matrix.

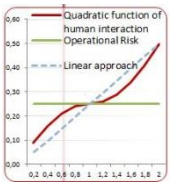

Fig. 7

"Why just a square function, doubled, presents the increase, respectively the MPTs?" – FAQ

"Because the inversed exponential functions of the type $y = 2^x$ and $y = \log_2 x$ are the closest statistic presentation of the phenomenon quality characteristics of *PTs > quantitative assessment > impact* over ordinary events in the business, however, people more easily accept the Quadratic Functional Dependence, which is quite closely to the exponential function, and easily to operate with."

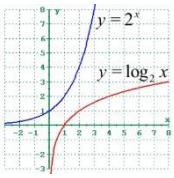

Fig. 8

4. Finally, go back to the mathematical model of the RISK MANAGEMENT on top of Page 5, Paragraph M (i). It is pyramid structure, predetermines the multiple assessments of the risk, including the assessment of Factor "o", and more specifically the impact of the quotient $\mathcal{P}_{(o)}$ over the total of risk, transmitting this information upward ↑ to each subsequent level of the pyramid. In return ↓, the imperative for mitigation of the risk factors (theoretically to reduce the assessment **0.05**) provides directives for optimal risk management. The area of each bases is reduces by Controller C of the system (Fig. 5); it is equal to the sub-total of four risk factors. Thus the human interaction factor in the operation of the business is going down level by level to a practical minimal financial risk for both interests – those of the fund provider (lender, investor + insurer) and those of the funds consumer (borrower, investor, developer). This is the main scope of the program, achieved through the complexity of the software package with OCFCS[8]. This is shown on Fig. 9. On sheet Practice1 of the Excel program file, along with the Group D sub-matrix, you can see how it works as the slide moves up and down in the Add-Ins Scrollbar (note the effect of the quadratic function at the higher the risk).


Fig. 9

At closing, in the modern world with such as a dynamic social and business environment as never seen before, the use of computer models for identification and control of the events in both sphere is strongly recommended and absolutely required. Other approaches are naive and limited.

About the Author. George Angelow is professor of Theory of Control, major risk management, assessment of the personality traits and behavior, and mathematical modeling with long-term experience as a business and political analyst.

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[1] **Criticism of The Positive Mind in the Energy - Information System**, eBook, Prof. Dr. George Angelow

[2] This kind of **formal system**, often called "the Post's System", was invented by the American mathematician and logician Emil Leon Post, best known for his work in the field of computability theory in the twenties of the last century.

[3] ***Homo Ludens*** or "Man the Player" refers to the Play Theory as a concept of the generation of the human culture, and the play is a most fundamental human function [more].

back

[4] Practitioners from the engineering society who are interested in the theory of pattern recognition and events of the practice through numerical methods of mathematical logic could find more information about this method by reviewing a special application. Click here to download.

[5] **Default Risk**. The event in which the investors will be unable to make the required payments on their debt obligations. To mitigate the impact of Default Risk, lenders often charge rates of return that correspond to the debtor's level of Default Risk.

[6] **Econometrics**, technique of economic analysis that expresses economic theory in terms of mathematical relationships and then tests it empirically through statistical research.

[7] **Operational Risk** can be summarized as human risk; it is the risk of business operations failing due to human error. Operational risk will change from industry to industry, and is an important consideration to make when looking at potential investment decisions.

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[8] **Online Cash-Flow Control System**, developed in 2003 by the International Investment Council-Los Angeles and the University of California, Prof. George Angelow, for remote operational control of cash out-lows via the Internet, requiring solid a solid business plan of the investment project (updated in 2013 in compliance with the effects of the recent financial crisis).