

## ДЕРЖАВА В СУСПІЛЬСТВІ ТА В ЙОГО ГОСПОДАРСЬКІЙ СФЕРІ: НЕКЛАСИЧНИЙ ПІДХІД

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Розглянуто державу з позицій неklasичних підходів, коли вона виступає організаційним центром суспільства і господарської системи, забезпечує їхню цілісність, здійснюючи економічні функції. Аналіз держави як організаційного центру суспільства проведено через діяльність державних органів, які здійснюють верховну владу, що набуває форм економічних функцій держави, які формують інституціональне середовище для господарської діяльності суб'єктів.

*Ключові слова:* держава, економічний центр, структура господарської системи, економічні функції.

## ГОСУДАРСТВО В ОБЩЕСТВЕ И В ЕГО ХОЗЯЙСТВЕННОЙ СФЕРЕ: НЕКЛАССИЧЕСКИЙ ПОДХОД

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Рассмотрено государство с позиций неклассических подходов, когда оно выступает организационным центром общества и хозяйственной системы, обеспечивает их целостность, осуществляя экономические функции. Анализ государства как организационного центра общества проведен через деятельность государственных органов, которые осуществляют верховную власть, которая приобретает формы экономических функций государства, формирующих институциональную среду для хозяйственной деятельности субъектов.

*Ключевые слова:* государство, экономический центр, структура хозяйственной системы, экономические функции.

## THE STATE IN THE SOCIETY AND ECONOMY: NONCLASSICAL APPROACH

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In the article the state is considered from the point of view of nonclassical approaches when it becomes an organizational centre of society and economic system, guarantees their integrity realizing economic functions. The analysis of the state as an organizational centre of society is examined through the activity of state bodies (carrying out the supreme state power) that acquires the forms of economic functions of the state. The economic functions of the state form an institutional environment for economic activity of entities.

*Key words:* state, economic centre, structure of the economic system, economic functions.

Методологічні підходи неklasичної науки передбачають дослідження проблем організації суспільства і господарської системи як його

складової. Основну роль в організації суспільства відіграє держава, яка історично підтвердила свої переваги перед альтернативними формами організації суспільного життя. Формування структури суспільства, напрямів і принципів взаємодії структурних елементів між собою, а також між її елементами та державою, що організаційно уособлює суспільну систему в цілому, забезпечує цілісність суспільства. Даний підхід є альтернативним варіантом стосовно традиційного (класичного) підходу до дослідження суспільства та ролі держави в процесі його функціонування й потребує всебічної уваги.

Тривалий процес трансформації української економіки вимагає поглибленого вивчення ролі держави в організації господарського життя суспільства. Набуває актуальності наукове обґрунтування її ролі не тільки у формуванні ринкової економічної системи, а й у подоланні наслідків сучасної світової фінансово-кредитної кризи. Падіння довіри до держави обумовлює перегляд низки традиційних її функцій та умов їх здійснення.

В еволюції поглядів представників різних напрямків економічної думки на роль держави в суспільстві та його господарської системи спільним є питання щодо міри втручання або невтручання держави в організацію господарського життя та пошук аргументів на користь тієї чи іншої позиції. Але в дослідженнях із цієї проблематики лише частково розглядається самоорганізація суспільства, її зв'язок з організаційною місією держави. У постановочному варіанті ця проблема була порушена в працях представників неklasичної теорії, і тепер вона потребує дальшого наукового опрацювання.

У запропонованій статті суспільство розглядається як система, що входить до складу більш широких систем (цивілізація, людство тощо), має власну будову та відносну автономність. Причому як його характеристики, так і існування неможливо розкрити без урахування постійного обміну із зовнішнім середовищем. Тлумачення поняття суспільства передбачає розглядати його як "...такий тип соціальної системи, який володіє найвищою мірою самодостатності стосовно свого середовища, що охоплює й інші соціальні системи... Будь-яке суспільство для збереження себе як системи залежить від того, що воно одержує в порядку взаємообміну із зовнішніми системами... Самодостатність стосовно середовища означає стабільність відносин взаємообміну і здатність контролювати взаємообмін в інтересах свого функціонування" [1, с. 20]. Завдання забезпечення цього процесу покладено на структуру суспільства, в якій зазвичай виділяють чотири основні сфери суспільного життя: господарську, соціальну, духовно-культурну та політичну. Усі вони, у свою чергу, мають власну структуру і механізми взаємодії їх складових. Слід зазначити, що Еммануїл

Валлерстайн виділяв три підсистеми суспільства: "...суспільне життя в сучасному світі поділено на три сфери – державу, ринок і громадянське суспільство" [2, с. 168].

Відносно автономне їх функціонування передбачає дослідження механізму збереження цілісності суспільства та його господарської підсистеми. Загальні уявлення про суспільство як єдиний організм з'явилися у результаті тривалого розвитку філософської думки. Погляди на системність у природі та суспільстві виникли ще в античні часи в процесі аналізу впорядкованості, цілісності буття, створення "ідеальної держави" тощо. Проблему системності суспільного життя активно розробляли такі мислителі XIX – XX ст., як О. Конт, Р. Спенсер, К. Маркс, Е. Дюркгейм, М. Вебер, П. Сорокін, П. Козловські, Т. Парсонс. Вони розкрили зміст основних понять і категорій, що використовувались у пізнанні суспільства.

Разом з тим і донині точаться дискусії щодо сутності суспільства, природи зв'язків, на основі яких люди його утворили. Не менш гостро ставиться питання про співвідношення між суспільством і державою та про перспективи останньої. На думку П. Козловські, "...суспільство не має ототожнюватися з економікою як своєю підсистемою; воно вміщує також культурну, релігійну і соціальну системи, отже, і дуалізм держави і суспільства не може зводитися до дуалізму держави та економіки" [3, с. 12].

Сьогодні суспільні науки стоять на порозі перегляду фундаментальних питань з теорій суспільствознавства. Відомий американський соціолог, засновник макросистемного підходу Еммануїл Валлерстайн так формулює одне з таких питань: "Яка природа тієї галузі знань, яку ми називаємо суспільствознавством, якщо вона взагалі існує? Як ми визначаємо її характеристики і її соціальну роль?" [2, с. 266–267]. Відповіді на це та інші гострі питання, одержання знань про сучасне суспільство, подальший розвиток суспільствознавства залежать від оновлення методологічних підходів у цій науковій сфері. Перш за все, це стосується використання евристичного потенціалу неklasичної науки.

Розвиток господарської системи, як і будь-якої іншої системи, відбувається внаслідок постійного впливу з боку середовища, в якому вона перебуває. Час вимагає постійного підтримання стану господарської системи, а вплив простору, що складається з політичної, духовно-культурної та соціальної систем суспільства, обумовлює необхідність її розвитку. Виникає потреба постійного реагування на сили зовнішнього впливу, адаптації системи до них, щоб зберегти цілісність системи. Напрями зв'язків господарської системи із

середовищем, їх характер, форми та інтенсивність відкривають можливість для встановлення її властивостей.

Практичним способом збереження цілісності суспільства та його господарської системи є їхня організація. Найбільш глибока характеристика поняття організації пов'язана з розкриттям взаємодії внутрішніх сил (самоорганізації) та зовнішніх сил (організації), що йдуть від зовнішнього середовища, репрезентованого політичною, соціальною, духовно-культурною підсистемами суспільства і природним середовищем. Ця взаємодія передбачає обмін силою (енергією), інформацією, речовиною – всім тим, що біологи називають процесом метаболізму. Під метаболізмом, або обміном речовин, слід розуміти перетворення, що відбуваються від моменту потрапляння живильних речовин у живий організм до моменту, коли кінцеві продукти цих перетворень виділяються в зовнішнє середовище. До метаболізму належать усі реакції, в результаті яких будуються структурні елементи клітин і тканин, та процеси, в яких з речовин, що містяться в клітинах, вивільняється енергія.

Для розкриття такої взаємодії важливо розглянути особливості суспільних систем, які докорінно відрізняють її від неживих та біологічних (живих) систем. Наприклад, Степаненко С. В. [4] виділяє такі відмінності суспільних систем: по-перше, соціальна система має надзвичайну складність і комплексність, обумовлені поєднанням у них фізичних, біологічних та соціальних процесів. По-друге, соціальна система, на відміну від біологічної, є відкритою. По-третє, на відміну від біологічних систем, у яких зворотні зв'язки виявляються як "подразнення – реакція", у соціальних системах вони формуються і здійснюються на основі знань, досвіду, інформації, що вирішальним чином впливає на цілісність та функціонування соціальної системи. По-четверте, у практичній діяльності людей формуються й реалізуються їхні індивідуальні та спільні цілі. Рівень органічності поєднання цих цілей суттєво впливає на стійкість і ефективність функціонування суспільства. По-п'яте, соціальні системи виникають і функціонують як свідомо організовані людьми.

Цілісність є результатом організації окремих складових системи та системи в цілому. "Щоб зв'язати між собою різні рівні опису й урахувати взаємозв'язок між поведінкою цілого й окремих частин, – пишуть І. Пригожин та І. Стенгерс, – необхідне поняття організації" [5, с. 153]. У науці широко використовується уявлення про організацію, яке вміщує формування структури і зв'язків між її рівнями та умов, за яких структурні елементи можуть виконувати притаманні їм функції, забезпечуючи тим самим цілісність системи.

Підходи неklasичної науки передбачають виокремлювати в процесі організації системи її складову – самоорганізацію. Остання розглядається як одна з фундаментальних властивостей матерії, природи і суспільства. І. Валлерстайн із цього приводу зазначає: "...Самоорганізація є основною властивістю матерії, що відображається у двох положеннях: існує не часова симетрія, а стріла часу; фундаментальним завданням науки стає не пошук простих формул, а, швидше, пояснення складності" [2, с. 253]. Самоорганізація в соціальних системах докорінно відрізняється від самоорганізації в природі, оскільки стрижневою рисою суспільства є наявність людини, яка має свідомість і, відповідно, здатна до цілеспрямованої діяльності. Такі системи, що самоорганізуються, спроможні в разі зміни зовнішніх або внутрішніх умов їх функціонування й розвитку зберігати або вдосконалювати свою структуру, враховувати минулий досвід.

У суспільному житті самоорганізація завжди так чи інакше доповнюється організацією, яка пов'язана з верховною владою та діяльністю держави. Ключові напрями такої діяльності, зокрема в господарській сфері суспільства, репрезентовані економічними функціями. Їх склад, способи та механізми реалізації історично змінюються і залежать від глибини пізнання людьми реальних умов господарського життя і здатності адекватно їх урахувати (відобразити) в організаційних формах. Держава виступає організаційним центром суспільства й уособлює його ціле.

Цілісність соціальної системи, як і будь-якої іншої системи, пов'язана з формуванням сил реагування, забезпеченням їх цілеспрямованості, координації і регулювання. Саме ця роль і відводиться державі, яка формує структуру суспільства, здатну реагувати на зовнішні впливи. Складові структури "спеціалізуються" на взаємодії із середовищем за окремими напрямками та виконують певну функцію. Тобто в структурі системи формуються якісно відмінні складові, внутрішньо поєднані між собою. У такий спосіб структура суспільства дозволяє забезпечити досягнення ним цілісності.

Важливе значення в розкритті ролі організаційного центру, досягненні цілісності господарської системи має визначення причин, що обумовлюють існування окремих структурних частин. Як відомо, Аристотель виділяв різні типи причин: рушійні, кінцеві, сутнісні (формальні) та стримувальні. Для дослідження цілісності господарської системи, як і суспільства, особливе значення мають кінцеві причини, єдність яких і гарантує збереження будь-якої системи як цілісного утворення. Кінцеві причини найчастіше виявляються у сфері свідомої діяльності людей та в живій природі. Аристотель зазначав, що будь-яким

подіям: "...властива мета. Заради чого-небудь відбувається все те, що робиться з міркування або створюється природою. ... Причина сама по собі є щось визначене..." [6]. Серед них особливе місце належить цілеспрямованій кінцевій причині. Саме вона обумовлює потребу утворення в структурі об'єкта такої структурної складової, яка б установлювала спільні цілі та акумулювала необхідні ресурси для їх досягнення.

Таким структурним рівнем є організаційний центр, котрий у процесі розвитку суспільства набував різних форм, серед яких є держава, її аналоги чи альтернативи. Лише в післясосьовий час державний спосіб організації суспільства став доміантним. "...Необхідно визнати, що еволюція держави була генеральною лінією політогенезу, а альтернативні їй лінії – побічними. І в цьому плані держава однозначно виявилася неминучим результатом соціополітичної еволюції. Проте навряд чи правомірно стверджувати, що держава виявилася із самого початку сильнішим типом організації... І далеко не відразу і не скрізь держава довела свої еволюційні переваги" [7, с. 13]. Держава не тільки виконує роль творця спільних цілей, а й виступає органом практичного їх забезпечення. Вона формує систему зв'язків з іншими структурними частинами, акумулює ресурси для досягнення спільних цілей, регулює та координує діяльність тощо.

Дослідження ролі організаційного центру, представленого державою, приводить нас до аналізу зв'язків, що виникають між ним та іншими структурними рівнями господарської системи. У живій природі яскравим прикладом є прямі (сигнали від головного мозку, що виконує роль центру, до виконавчого органу, що викликають його активність) і зворотні ("повідомлення" виконавчого органу про свій стан та дії центру) зв'язки нервової системи людини. Зв'язки, що відображають та реалізують спільні цілі структурних складових, позначаються як "вертикальні". Вертикальні зв'язки поєднують організаційний центр з іншими структурними рівнями на основі цілей, що їх об'єднують. Тому однією з основних функцій держави в організації господарської системи є встановлення спільних цілей усіх суб'єктів господарювання.

Зв'язки, що реалізують особливості (відмінності) кожної структурної частини, називають "горизонтальними". Вони пролягають між складовими структурних рівнів та державними органами, що організують господарське життя суспільства. Горизонтальність зв'язків тут має організаційний, а не геометричний характер, вони виникають між функціональними органами господарської системи.

Держава (економічні органи держави) посідає особливе місце в структурі господарської системи, оскільки покликана реалізувати спільні цілі всіх

суб'єктів і тим самим об'єднати їх. Підкреслюючи унікальність держави як організаційного центру, звернімо увагу на верховенство цього рівня господарської системи. Дана особливість виявляється в добровільній чи примусовій підпорядкованості центру, в ієрархічному характері зв'язків економічних суб'єктів з ним. "Панування як функціональна характеристика держави стосовно всіх інших підсистем суспільства дозволяє не тільки виділяти державу зі всіх складових соціальної системи, але й співвіднести її доміантне становище з ієрархією взаємозв'язків і взаємодій інших підсистем", – зазначає П. Козловські [3, с. 12].

Аналіз держави як організаційного центру господарської системи потребує розглядати діяльність її економічних органів у певних напрямках, що зовні набувають форми економічних функцій держави. Найбільш поширеним у науковій літературі є визначення функцій держави як відносно самостійних напрямів її діяльності. "Самостійність напрямів діяльності держави, іменованих її функціями, полягає в тому, що вони охоплюють, як правило, визначені, об'єктивно сформовані, відносно самостійні галузі (сфери) суспільних відносин і істотно відрізняються одне від одного, тобто є об'єктивно уособленими напрямками діяльності держави" [8]. В основі їх дієвості лежить верховна влада, що здійснює організацію взаємодії людей на найвищому рівні – суспільстві в цілому – і відображає вплив цілого на його складові. До таких функцій можна віднести:

1. Формування цілей господарської системи, які відображають зміни в середовищі, виклики, що стоять перед господарською системою. Такі цілі, як правило, відображаються в економічній політиці держави.

2. Акумуляція та розподіл ресурсів між рівнями господарської системи, що необхідні для адекватної реакції на зовнішні виклики. Це здійснюється, як правило, через податково-бюджетні інститути держави.

3. Координація та регулювання дій окремих суб'єктів структурних рівнів, що забезпечуються створенням і своєчасною модернізацією економічних інститутів чи адміністративного управління господарської діяльності.

4. Розбудова (добудова) нових структурних рівнів господарської системи або реорганізація наявних для більш ефективного виконання притаманних їй функцій. Це виявляється у створенні окремих функціональних підрозділів (наприклад, державного казначейства, об'єднання податкової та митної служб тощо).

5. Створення структур, необхідних для виробництва суспільних благ, – правоохоронної системи, військового захисту від зовнішньої загрози, національної системи мір, стандартів, освіти.

Економічні інститути мають виняткове значення

для реалізації зазначених економічних функцій держави. За Д. Норт, інститути є фундаментальними факторами функціонування економічних систем [9, с. 137]. Проте структура інститутів, їх класифікація залишаються дискусійними, як і визначення самого поняття "інститут". На погляд автора, склад інститутів господарської системи обумовлений необхідністю виконання місії економічного центру – збереження її цілісності, тому він може бути визначений на основі наведеного раніше переліку функцій економічного центру.

Отже, методологія неklasичного підходу дає можливість виявити механізм збереження цілісності суспільства і господарської сфери як його складової через дослідження організації функціонування й розвитку господарської системи. Ключову роль тут відіграє держава, що формує економічну політику та інституціональне середовище господарської діяльності людей.

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## THE GOAL-ORIENTED ORGANIZATIONAL STRUCTURE OF THE FRANCHISING SYSTEM MANAGEMENT

UDC 339.187.44

I. Semenenko

The basic issues of franchising system formation and optimization of its goal-oriented organizational structure are examined in the article. The main attention is given to the objective goal-oriented organizational structure of company's management, provided a company performs franchising operations and forms optimal franchising system to increase its competitiveness on domestic and foreign markets. The organizational structure of the franchise system should reflect the aggregate of the system components, communication and relationships in the process of their functioning and to ensure the formation of communication network for management decisions to meet the objectives of the franchise system. Achieving the goals of the franchise system is a major factor in the efficiency of the organizational system.

*Key words:* franchise, franchising system, franchising operations, goal-oriented organizational structure.

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### ЦІЛЬОВА ОРГАНІЗАЦІЙНА СТРУКТУРА УПРАВЛІННЯ ФРАНЧАЙЗИНГОВОЮ СИСТЕМОЮ

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Семененко І. М.

Розглянуто основні питання, пов'язані з формуванням франчайзингової системи та оптимізацією її цільової організаційної структури. При цьому основне питання зосереджено на об'єктивній цільовій організаційній структурі управління підприємством за умови провадження франчайзингової діяльності та подальшому формуванні оптимальної франчайзингової системи задля підвищення конкурентоспроможності підприємства на внутрішньому та зовнішньому ринках. Визначено, що організаційна структура франчайзингової системи повинна відображати сукупність ланок системи, зв'язок і взаємини їх у процесі функціонування, а також забезпечувати формування комунікаційної мережі для прийняття управлінських рішень, що відповідають цілям франчайзингової системи. Обґрунтовано, що досягнення цілей франчайзингової системи є основним фактором ефективності функціонування цільової організаційної системи.

*Ключові слова:* франчайзинг, франчайзингова система, франчайзингова діяльність, організаційна структура.

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### ЦЕЛЕВАЯ ОРГАНИЗАЦИОННАЯ СТРУКТУРА УПРАВЛЕНИЯ ФРАНЧАЙЗИНГОВОЙ СИСТЕМОЙ

УДК 339.187.44

Семененко И. М.

Рассмотрены основные вопросы, связанные с формированием системы франчайзинга и оптимизацией ее целевой организационной структуры. При этом

основной вопрос сосредоточен на объективной целевой организационной структуре управления предприятием при условии осуществления франчайзинговой деятельности и дальнейшем формировании оптимальной франчайзинговой системы для повышения конкурентоспособности предприятия на внутреннем и внешнем рынках. Определено, что организационная структура франчайзинговой системы должна отражать совокупность звеньев системы, связь и взаимоотношения их в процессе функционирования, а также обеспечивать формирование коммуникационной сети для принятия управленческих решений, отвечающих целям франчайзинговой системы. Обосновано, что достижение целей франчайзинговой системы является основным фактором эффективности функционирования целевой организационной системы.

*Ключевые слова:* франчайзинг, франчайзинговая система, франчайзинговая деятельность, организационная структура.

Functional analysis helps to create a more objective goal-oriented organizational structure of the franchise system, as the joint work of the franchisor and the franchisee, who understand the importance of the combined efforts, would be most effective only when each of them clearly understands his role in joint efforts, and how their roles are interrelated. Creating and maintaining a system of roles is largely an administrative function in the organization of the franchise system.

Many Ukrainian and foreign scientists have examined issues related to franchise and franchising operations: E. Legenda, G. Tsirat, L. Tsymbal, G. Androschuk, O. Suhovatyy, O. Gorodov, N. Shyrobokova, V. Shkromada, V. Liashenko and others. However not all issues have been fully revealed, and besides, the proposed organizational structures while forming franchising system usually do not take into account goals of franchising system. Therefore it is necessary to conduct more research in this field.

The aim of this paper is to determine the optimal goal-oriented organizational structure franchising system.

To set up a franchising system the following goals should be considered [1 – 3]:

- clear understanding of the main duties or spheres of activity;
- certain discretion or authority, so that franchisee (the manager and performer) knew what he personally could do to get the desired results. In addition, the performance of every function requires the timely provision of information and other tools. The role of structural elements of the franchising system and the construction of the formal organization of the system are defined according to the functional analysis.

Organizational activity acts as a process of combining various activities required to achieve of the assigned goals, subordination of each functions group to the manager, authorized with certain control power by the specific element, and provision of vertical and horizontal coordination in the franchising system structure.

The organizational structure is the set of units and actors in a specific hierarchy, who are authorized with certain rights and responsibilities and perform certain management functions. The organizational management structure reflects the static position of units, posts and nature of the relations between them. According to [5; 6] the following relations are distinguished:

- linear (administrative responsibility);
- functional (by the sphere of activity, with no direct administrative hierarchy);
- cross-functional or cooperative (among units of the same level).

Depending on the nature of the relations several basic types of organizational structures of control are distinguished:

- linear;
- functional;
- linear functional;
- matrix;
- divisional;
- multiple.

Achieving the goals of the franchising system is the major factor in system performance, so when designing the organizational structure the following principles should be considered [4]:

- the principle of goals' unity. The organizational structure is effective if it promotes cooperation in achieving goals. Applying the principle of the goals' unity in the franchising form of business organization requires a clear formulation of goals of the franchisor and the franchisee. If the goal is obtaining profit for the certain period of time, the organizational structure should contribute to achieving this;
- principle of efficiency. The organizational structure is effective if it contributes to the achievement of goals with minimum unwanted effects or costs. The effective goal-oriented organizational structure for a franchising system is the one which does not allow losses or errors, ensures satisfaction from work,



suggests a clear hierarchy of responsibilities, allows to be involved in problem solving, gives confidence in the future, provides a certain status and opportunities for career growth, and a relevant level of wages.

According to the specified principles, the organizational structure of the franchising system management should be goal-oriented. The goal-

oriented organizational structure of the franchising system should reflect the system components, their connection and relations in the process of their functioning, and ensure the formation of communication network for management decision making, which meets the goals of the franchising system and helps to achieve them (Figure).

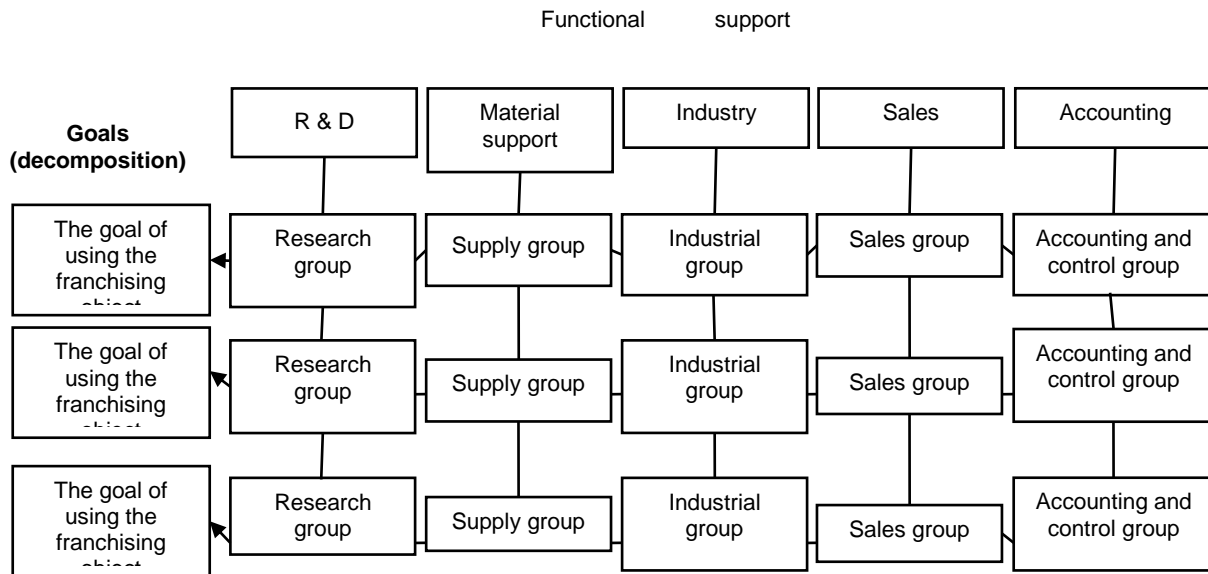


Fig. The goal-oriented organizational structure of the franchising system management

Such organizational structure is based on the principle of decomposition of goals when different franchising objects are used. Among the goals may be increase of income, profit maximization, growth of the market share, growth of popularity, competitive recovery and others. The type of the goal-oriented organizational structure of management of the franchising system is matrix, which helps to direct the executives of each department toward the fulfillment of different goals by using different franchising objects. Every worker from every department has to understand his functions clearly, know the actions which he needs to undertake to reach a certain goal, and undertake them at his work. This will help to support the value of the franchising objects used by the company and the level of the company's effectiveness.

The most effective way to form the franchising system is to use a matrix goal-oriented organizational structure of management. Such organizational structure is based on the principle of decomposition of goals when using different franchising objects and distribution of functions between the workers of different departments, fulfillment of which helps to achieve the set goals. Thus, the goal-oriented organizational structure is the set of units and actors in a specific hierarchy, who are authorized with certain

rights and responsibilities and perform certain management functions to achieve the assigned goals. The proposed goal-oriented organizational structure of franchising system management is optimal as it helps to achieve the goals of franchisees and franchisors.

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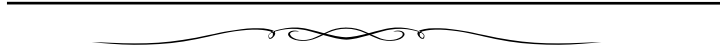
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# THE EVOLUTION OF RESEARCH OF RATIONAL ECONOMIC BEHAVIOR

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This paper selectively analyzes the parts of the respective discussion on the human "nature", as a new psychological and genetic basis for understanding the economic behavior of people. This discussion supplements the neo-classical, new-institutional and other researches of rational economic behavior. The scientific importance and practical timeliness of cognitive and psychological analysis of rational economic behavior consists of formalized research modeling, which have undergone experimental and empirical verification in certain and various situations in economic realities. Its hypothesis is that people and their psyche are characterized, apart from the theoretical epithets which are being attached to them by particular economic theories ("economic" and "institutional" man), by a smaller or greater degree of "natural irrationality" associated with the individual-social contradictions, which are immanent in humans.

*Key words:* choice, rational economic behavior, rationality of economic subjects, rationality, substantial rationality.

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## ДО ПИТАННЯ ЕВОЛЮЦІЇ ДОСЛІДЖЕНЬ РАЦІОНАЛЬНОЇ ЕКОНОМІЧНОЇ ПОВЕДІНКИ

УДК 330.16

О. Стієпчевіч

Проаналізовано сучасну дискусію про природу людини як нову психологічну та генетичну основу для розуміння економічної поведінки людей. Ця дискусія доповнює неокласичні, неоінституціональні та інші дослідження раціональної економічної поведінки. Наукове значення і практична своєчасність когнітивного і психологічного аналізу раціональної економічної поведінки полягає у формалізованих дослідженнях і моделюванні, які пройшли експериментальну та емпіричну перевірку в різних ситуаціях економічної реальності. Гіпотеза такого підходу полягає в тому, що люди і їх психологія характеризуються не тільки загальними теоретичними рисами, які надаються їм у теорії економічної та інституційної людини. Також має місце, більшою чи меншою мірою, природна ірраціональність, пов'язана з індивідуально-соціальними протиріччями, які іманентно присутні в самих цих людях і їх взаємодії з оточенням.

*Ключові слова:* вибір раціональної економічної поведінки, раціональність господарюючих суб'єктів, раціональність.

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## К ВОПРОСУ ЭВОЛЮЦИИ ИССЛЕДОВАНИЙ РАЦИОНАЛЬНОГО ЭКОНОМИЧЕСКОГО ПОВЕДЕНИЯ

УДК 330.16

Е. Стієпчевіч

Пронализирована современная дискуссия о природе человека как новая психологическая и генетическая основа для понимания экономического поведения людей. Эта дискуссия дополняет неоклассические, неоинституциональные и другие исследования рационального экономического поведения. Научное значение и практическая своевременность когнитивного и психологического анализа рационального экономического поведения состоит в формализованных исследованиях и моделировании, которые прошли экспериментальную и эмпирическую проверку в различных ситуациях экономической реальности. Гипотеза такого подхода заключается в том, что люди и их психология характеризуются не только общими теоретическими чертами, которые придаются им в теории экономического и институционального человека. Также имеет место, в большей или меньшей степени, естественная иррациональность, связанная с индивидуально-социальными противоречиями, которые имманентно присутствуют в самих этих людях и их взаимодействии с окружением.

*Ключевые слова:* выбор рационального экономического поведения, рациональность хозяйствующих субъектов, рациональность.

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The idea of rational economic behavior of people in the system of market economy of any type is very important. Because the forecasts or different sorts of consequences of certain relations or, for example, economic policy measures are possible only when it is assumed that people will behave rationally. Hejne [1] wrote two decades ago that "if people would not provide clear rationality, but favored a temporary fashion through coincidences and useless actions, economic theory would lose its power of prediction." In practice, the choice is realized in terms of risk and uncertainty, giving preference to one of several alternatives. Sometimes decisions are made without thinking, automatically by a routine behavior which was created through many years of practice [2; 3]. There are decisions to which the individuals do not attach greater importance and give very little attention during the election, but also there are decisions that need long-term thinking, because the choice has a unique character. It is the uniqueness of the situation in which the choice is made, an insufficient definition of the consequences of its decisions and the existence of a set of heterogeneous influence factors that must be taken into account.

The question of rationality of economic agents is one of the most contentious questions in modern economic theory. In multi-decade mainstream dominance of neo-classical theory the assumption of rationality has been one of its central categories. As a theoretical hypotheses it is related to the fact that people always clearly understand their goals, they unambiguously rank them according to their own preferences and tend to their satisfaction. This is an instrumental rationality, that is the assumption of neoclassical economics that made it a theory without the institutes... Incomplete information and limited mental capacity by which we are supposed to process information are defining the

transaction costs that make the formation of the institute. Respective neo-institutional theory has significantly and multidisciplinary expanded the aspects of economic analysis, but did not significantly impinge on the assumption of complete rationality. However, the new institutional economics has focused on the above postulate as well as introduced the concept of incomplete or limited rationality. The idea of limited rationality involved three assumptions, namely:

- a) human ability to define goals and calculate the consequences in the long term is limited;
- b) economic entities are trying to achieve their goals gradually, not immediately;
- c) they are trying to achieve a certain level of their goals, rather than their maximization.

The following hypotheses on the lack of rationality, is the so called substantial rationality, which is partly in contrast to procedural rationality. It is believed that an individual achieves goals while respecting the costs of decision-making and information processing. The difficulty at the stage of collecting and analyzing information is caused by the inability to use the existing information when making economic decisions. Therefore, the experience, intuition, etc. are partially being used, and the profit is less than the maximum possible (ideal). Later its modified version, was also developed according to which rational behavior is more a course of action, rather than utility maximization in the jargon of classical theory. The reason for this is that the market accepts all agreements that bring profit, regardless of whether it is maximal or not.

Regardless of the periodically dominant mainstems (main directions), economic science has never presented a unified theory. It has always been a set of different scientific approaches (directions, schools), whose leading representatives and their

followers gave their own analysis (events, occurrences, actions and processes), of economic realities, as well as appropriate recommendations for economic policy and its management. During the last 20 years the route known as behavioral economics (the theory of economic behavior - hereinafter referred to as TEP) has strengthened as a new way to study economic phenomena. It is the introduction and application of psychological research in the field of economic theory, which gives specific interpretations of the behavior of economic agents in markets where the cognitive abilities of individual subjects are limited, that is why they have difficulties in decision – making.

This is an opportunity to point to three facts: first, – that a long time ago Samuelson [4] indirectly pointed to the desire to develop a theory of consumer behavior without signs of category of benefits, second, – that many economists have known for decades strictly denied psychological role of assumptions and third, – that for a long time even Hicks's [5] remark regarding the importance of human characteristics and cognitive processes that occur in their minds during the elections, which should complement the econometric models was not respected. It would be unjustified to neglect the fact that Adam Smith wrote the book "The theory of natural feeling," in which he discussed the basics of human behavior that can not only manage their personal interests, but also other motives such as the principle of naturalness.

Only in the last decade the interest has sharply increased, and with it, the importance and popularity of research conducted by TEP, especially in terms of compounding and the volatility of economic reality, which is full of risks and uncertainties. Development of formalized models of individual behavior in different situations of choice, the real foundation of assumptions of analysis and their empirical and experimental verification have made possible the increase of ability of explanation of traditional theory. Also it does not negate the individual achievements of the neoclassical school (utility maximization, general economic equilibrium and efficiency), but only reduces the boundaries of their abstractness. Representatives of the TEP have accepted the opinion that there are three valid criteria (generality, convenience and reality), which show the solidity of competing economic theories [6; 7 – 9].

The pioneer introduction of experimental methods in traditional economic methodology contributes to this, for which Smith received the Nobel Prize in Economics in 2002 [7; 8]. One of the most significant results of experimental studies is discrediting the orthodox theory of expected utility by Fon Neiman and Morgen-Stern and the theory of subjective expected utility by Savage.

Representatives of the TEP have set themselves the task to eliminate the discrepancy between normative and descriptive analysis of economic relationships. In this way they gradually revealed many paradoxes. In the field of rational choice theory they explored the

foundation of the principle of maximization, the axioms of the theory of the expected, subjectively expected and discounted utility, comparing them with experimental data which they discovered. In this context, there are significant pioneering works by Simon, Allais, Markowitz, Ellsberg, Strotz, Nisbett, Ross, Kahneman, Slovic, Tversky, Fishburne, Loewenstein, March, and others [10]. The works of most of these scientists were devoted to problems of the theory of choice under risk and uncertainty, i.e. to emphasizing the factors through which individuals process and evaluate available information and it formed the basis of qualitative and quantitative judgments that determine their choice of one of the many available alternatives. It is difficult to single out the most important achievements, but we must mention so-called concept of "bounded rationality" by Simon and its associated psychological category of "difficulty level" by Levin. Kahneman and Tversky in their classic work "The theory of perspective: analysis of decision under risk" (most cited in this area and the second in the number of citations in economics science) and the later work in 1992 entitled "Advances in theory of perspective: a generalized representation of uncertainty" have generalized the results of years of research and presented an interpretation of the theory in the axiomatic way [11]. In this way the factors that characterize a universal and essential human nature have permanently found their place in the theoretical analysis [10].

Using the mathematical apparatus of game theory in economic theory proved to be very fruitful, especially in the strategic reciprocal action of economic agents. It has contributed to the explanation of their real behavior and to prediction of consequences of certain conflict behavior. Classical game theory did not have the ability of greater use and was therefore replaced by behavioristic theory of games. One of the greatest achievements of the representatives of TEP in this area is the theory of social preferences (Theory of Social Preferences) and equitable distribution, (see more in [10]).

The claim that people are motivated in their actions by money and the possibility of acquiring profit, says Scott [12] allowed the interest, the identification and construction of formal and often predictable models of human behavior. Researchers in the field of sociology and political science have tried to carve out an original theory based on the idea that all kinds of human actions are essentially of rational character and that people before making decisions estimate the gain and loss in all their actions. This theoretical approach was developed as a theory of rational choice. Sociologists discussed rational actions in parallel with other forms of action, in which there are rational and irrational elements. That approach, says Scott [12], recognizes traditional and accustomed activities, emotional or affective action and various forms of value (ideologically) oriented activities, which actively communicate with the pure forms of rational action.

Representatives of rational choice theory have attempted to explain economic phenomena by formalized mathematical modeling in various areas:

- in the theory of voting and coalition formations in political science (Downs, Buchanan, Tullock, and Riker),

- relations between ethnic minorities (Hechter),
- Social mobility and class reproduction (Goldthorpe, Breen, Rottman),

- crime and marriage (Becker),

- crime and marriage (Elster, Roemer and Wright).

All of them in genuine and specific ways present that individuals are aware of their actions (awards – social approval and money on the one hand and punishment on the other hand, that the so called Homans's "Created conditions") and motivated by the satisfaction of their needs and goals, through which they express their subjective desires, and that their actions are determined by the available information about the conditions in which they operate. Since the resources are limited, they must make choices between alternative objectives in accordance with their preferences, priorities and available resources, but also between alternative forms of action, through the calculation that is most beneficial for them and that gives them the greatest satisfaction (Heath, Carling and Kahneman).

The idea of "rational action" implies that the social subject is always aware of his work and performs with deliberate and calculated strategy. Many authors agree that human behavior is conditioned and shaped by rewards and punishments which people face. People are doing some actions that lead them to the reward and avoid those actions that cause punishment. These are technically called the "created conditions" that determine human behavior. People learn from their past experiences. In addition, in social mutual activity they are interconnected by mutual general support (approval) or general opposing (disapproval). The approval is part of the process of social exchange, according to behavioral psychologists.

In the interpretations and explanations of key elements of rational choice theory Scott [12] stated the following questions: "Why would individuals ever feel any obligation or desire to act in a selfless manner? Why should individuals respect the rules that lead them to acting in the selfless manner?". The answer is simple: because of the obligation (standard behavior) to do so, because of moral and / or ideological commitment to the organization or because of the existence of reciprocity and cooperation (instinctive responses). This leads to the conclusion that the "rational choice and normative commitment are complementary processes in the formation of social action".

The methodological component of rational choice theory is reflected in the acceptance of methodological individualism, according to which all social phenomena come down to individual action. "Explanation of sociolo-

gical facts in terms of other sociological fact is the best shorthand overview of much detailed processes that produce them and which are responsible for their individual stratification," says Scott [12], noting that Homans held that "there are no autonomous social structures ", because " there is nothing in society that was not left by people." Homans argued that his analysis of the elemental social behavior in human inter-activity involves sub-institutional level of social analysis and that all highly – ranked social institutes depend on all these interactions. The higher the institutional level the more complicated the behavior, because there is a greater number of intermediaries. Research and analysis of social network have enabled reaching the conclusion that the social structures can be understood as interconnecting chains, which form a broad network of exchanges through which the resources flow.

Attempts to explain specific structural features of social life have resulted in understanding of so-called "unintended consequences" of individual action. The combination of unintended consequences produces social phenomena of which the individuals may be only partially aware and perceive them as restrictions. Classic example is the interpretation of the effects of market relations in neoclassical economic theory. The operation of competitive market leads to harmonization of supply and demand, and therefore (supposedly) there is no need for centralized planning and coordination (i.e. government regulation as the Institute of Economics). Equating supply and demand is the unplanned consequence of the enormous number of individual actions. In this way, rational choice theorists tend to deny any autonomy or restrictive power of social structures (and therefore social institutes). This dilemma (not to say error) is not discussed by the theory of rational choice and methodological individualism as its platform, because most of its representatives perceive the given problem as philosophically unchangeable. In terms of neo-institutional pluralism, it is quite clear that this is a monistic interpretation, which focuses on individual action and leaves out the analysis of social structure, social norms (altruism, reciprocity, trust, etc.) and collective action. These are serious limitations of the discussed rational choice theory.

The famous social psychologists Kahneman and Tversky [13], through their research work (the Nobel Prize in Economics in 2002) have significantly influenced the development of behavioral economics as a science that uses knowledge about the social, cognitive and emotional phenomena that influence the economic behavior of people. They have successfully introduced psychology in the area of economic science and proven its indispensability in explaining and predicting economic behavior of people. In this way, they have significantly reduced the disparity between economic theory and actual behavior, which was reflected in a lack of predictiveness. They have increased the validity of economic modeling, which until then was

based on mathematical axioms and formalization of decision-making. Of course, people are, however, only people who make mistakes when making their decisions and estimating available (incomplete and asymmetric) information, emotions, past experiences, attitudes, beliefs, situational context in the form of which the problem is set. In addition, people with limited mental capacity process many essential information for decision making. So they rely on mental shortcuts (heuristics) that they believe will effectively lead to quality decisions, but they are not aware that this may lead to undesirable consequences as well. Cognitive abnormalities that affect a wide range of economic behavior of people (consumption, saving, investing, borrowing, etc.) are numerous.

Summarizing the common characteristics of the winners of six Nobel Prizes in Economics (Sen, McFadden, Akerlof, Stiglitz, Kahneman and Smith) researchers highlight [3; 7; 8] the following:

First, four of them believe that the interpretation of classical and neoclassical theories that rational individuals are at the heart of business processes is denied.

Second, they all deny that individual decisions can lead to an efficient equilibrium that "purifies the market".

Third, various models of universal human psyche, to which all the winners tend to in one way or another, essentially differ from each other, so that, objectively, they do not provide a unique and universal alternative to neoclassical theory, which they criticize.

Fourth, they do not even question the types of the human psyche, they even don't mention any details contained in the works of Keynes, Marshall, Veblen, Pareto and others.

The behavior of economic agents is defined, [10] by not only genetic (congenital) basis of their psyche, neo and social norms that they adopted, the rules, values, habits, etc., i. e. institutions as coordinators, limiters and regulators of human behavior. Their desires and goals are primarily motivated by preserving the status quo and avoiding risks and uncertainties. Decisions in a market system by economic entities are made intuitively, starting from the psycho-social heterogeneous criteria, due to which they cannot be in equilibrium and they rather tend to an optimum, due to the impact of asymmetric information, uncertainty, involuntary unemployment, inefficiency, etc. The accumulation of tension is prevented by evolutive and flexible development of institutional system, in which the state support of the market plays an important role. This undermines both the neoclassical and neo-institutional way of thinking of Coase and Williamson and leans to post-Keynesian and evolutionary theory of economic development. Independently, principled lack of rational choice theory consists of the fact that the latest achievements of the new field of human genetics – psycho-genomics are not being used [10].

Relatively stable basis of the psyche exists in real terms, as evidenced by the achievements of

geneticists, who have deciphered the molecular structure of the human genome and determined the specific functions of many genes, even those who manage various aspects of human psyche. In this sense, a special area of genetics – psycho-genomics is being developed. It is believed that genes affect only 50 % of the psyche and behavior, while a society, environment, education, skills, education, habit (unconscious and routine), etc. play an equivalent or even greater role [9]. So psycho-genomics does not negate the possibility of forming of certain schemes of opinions in human brains, but in fact a leading role is played by intuition and imitation, which means sub-cognitive, not cognitive-logical analysis. Wrong neo-classical axiom of "economic man" is not socially, politically and ideologically neutral, but is a direct logical path to the "economic imperialism" and neoliberal "market fundamentalism," says Olsevich [14]. As a consequence of these doctrines he gives predatory corruptive-oligarchic elite and proposes a salvatory alternative – the constitutional ideology of democratic and socially responsible market (which includes institutional pluralism).

Modern economic science in matters of universality of research directions and methodological approaches is no different from the past. Although many contemporary theoretical concepts do not negate the individual parts of the neoclassical paradigm (e.g. economic behaviorism does not negate the utility maximization, general economic equilibrium, economic efficiency and methodological individualism), decades of dominating (axiomatically) neoclassical mainstream are not nearly as consistent as it was. Despite the apparent contributions in the field of the positive approach to studying the process of individual decision – making in situations of risk and uncertainty, a limiting paradigmatic factor of the theory of rational behavior as an alternative direction (upstream) presents a monistic approach, i.e. ignoring the social pluralism.

The theory of rational behavior has a logical analytical structure, which has proved its fruitfulness in the study of some economic phenomena. Most authors, however, waive its paradigmatic significance, because many of its elements and segments do not yet have a proven practical application, which does not mean that this will not happen in the near or distant future. However, it seems that it has contributed to the methodological individualism to rise to a higher level, combined (amended) with "methodological behaviorism", i.e. cognitive and psychological approaches to economic behavior. It remains to be seen whether the evolution of this promising economic direction will take into account the so called "methodological institutionalism" (a term by Frolov [15], who in pursuit of originality reduces it only to the subject of scientific research), under which in a broader sense the institutional and conventionalist (regardless of its typological amorphous nature) pluralism may be included, denying all forms of monism. Practical application of this pluralism is different from country to country, but there is not absolute anywhere. Approaching the absolute insti-



tutional pluralism includes and requires completeness of institutional conditions and democratic procedures in the society. It is evident that the theory of rational behavior distanced itself from the institutional structures, in which the behavior of economic agents is realized.

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# **SOCIAL INSURANCE IN UKRAINE IN THE CONTEXT OF THE PENSION REFORM**

UDC 351.84

*O. Kozmenko  
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The article studies the main problematic aspects in the current functioning process of the social insurance system of Ukraine. The article shows that the main problem of the proper pension reform implementation is the absence of necessary condition. Until these conditions are created, the most promising way for the pension reform is the further development of it (the introduction of professional pension schemes and corporate pension plans). Also, the social responsibility of the business structures is pointed out by authors. Special attention is paid to the problems of implementation of business entities' social responsibility and the completion of the pension reform. The article provides characteristics of the pension system state regulation, which is the most suitable for Ukraine.

*Key words:* social insurance system, social responsibility, pension system state regulation.

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## **СОЦІАЛЬНЕ СТРАХУВАННЯ В УКРАЇНІ В КОНТЕКСТІ ПЕНСІЙНОЇ РЕФОРМИ**

УДК 351.84

*Козьменко О. В.  
Конопліна Ю. С.*

Розглянуто основні проблемні моменти поточного функціонування системи соціального страхування України. Показано, що основною перешкодою для завершення пенсійної реформи є відсутність необхідних умов. Відзначено соціальну відповідальність суб'єктів підприємницької діяльності. Особливу увагу приділено аспектам реалізації соціальної відповідальності підприємств і необхідності зниження загального навантаження на бізнес у вигляді обов'язкових платежів. Акцентовано увагу на доцільності використання жорсткого режиму державного регулювання пенсійної системи для забезпечення успішної реалізації пенсійної реформи.

*Ключові слова:* система соціального страхування, соціальна відповідальність, державне регулювання пенсійної системи.

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## **СОЦИАЛЬНОЕ СТРАХОВАНИЕ В УКРАИНЕ В КОНТЕКСТЕ ПЕНСИОННОЙ РЕФОРМЫ**

УДК 351.84

*Козьменко О. В.  
Коноплина Ю. С.*

Рассмотрены основные проблемные моменты текущего функционирования системы социального страхования Украины. Показано, что основным

препятствием для завершения пенсионной реформы является отсутствие необходимых условий. Отмечена социальная ответственность субъектов предпринимательской деятельности. Особое внимание уделено аспектам реализации социальной ответственности предприятий и необходимости снижения общей нагрузки на бизнес в виде обязательных платежей. Акцентировано внимание на целесообразности использования жесткого режима государственного регулирования пенсионной системы для обеспечения успешной реализации пенсионной реформы.

*Ключевые слова:* система социального страхования, социальная ответственность, государственное регулирование пенсионной системы.

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Under the current demographic trends and the level of Ukraine's socio-economic development its system of social insurance requires special attention especially considering the fact that the influence of external and internal factors significantly complicates its functioning. In addition, the fundamental scientific, technical and socio-economic changes that are observed in the leading countries constitute challenges for the social security as a system while the increase in the efficiency of social insurance depends on the speed and the quality of responses to these challenges.

Regarding the impact of external factors on social security many publications pay special attention to the processes of the European integration [1; 2]. Most scientific papers are focused on finding ways for effective use of social partnership institutions and collective agreements despite the fact that as a result of globalization the conditions for the weakening of the social partnership are created [3; 4]. In our opinion, at the present stage of development of the social insurance in Ukraine it is expedient to analyze the consequences of the decline in the role of social partnership and the transformations in the model of labor relationships.

In preparing this article we have formulated the following objectives: 1) characterize the problematic aspects in the functioning of the system of social insurance in the post-crisis period, 2) examine the main vector of the pension reform in Ukraine, and 3) determine the nature of the pension system state regulation suitable for Ukraine's conditions.

The main objective of the state policy in the field of social insurance in the post-crisis environment is the minimization of risks involved in the functioning of the system of social insurance. It is necessary to point out that the financial and economic crisis in Ukraine has not only external but deep internal causes related to the unpreparedness of the main social institutions to exist in non-standard and complicated conditions. In the years preceding the crisis, Ukraine had experienced a relatively stable economic growth, but the possibilities of reforming the social and economic institutions were lost. In particular, a holistic concept of the social responsibility of business entities was never implemented in practice and the pension reform remained uncompleted (the second level of the pension system was not introduced). In this context, the state should give great attention to the social sphere in general and to such a considerable part of it as the area of pension provision, which, in the absence of

the necessary measures, threatens to become a source of not only socio-economic, but political risks.

The reduction of the total investments in the economy in the post-crisis period, including the reduction of investments into the social sphere, can lead to the decrease in the income of the population. In this case, the lack of sufficient income can cause significant social risks. In addition, the financing of infrastructure projects and public works by the state can also be significantly curtailed. Therefore, the social part of the state investment programs will be reduced, resulting in the economic growth without job creation. It is evident that for some time after the overcoming of the crisis employers will be severely limiting the number of people they hire, further exacerbating the problem of graduates' unemployment. The situation on the labor market in Ukraine has some specific features that were formed in the period that preceded the financial crisis. In particular, the labor market has insufficient vertical and horizontal mobility. The low vertical (social and professional) mobility is explained by income differentiation and commercialization of the health care and education. The problems of the horizontal labor mobility are associated with the imperfection of the necessary market infrastructure.

Judging from the foreign experience, social responsibility of business entities goes beyond the scope of charitable activities and becomes part of their core activities and is realized by the joint efforts of all structural units of business entities, because social investments form their reputation and reflect their stability. In a broad sense, social responsibility of business entities includes the creation of jobs with high wages and social guarantees on the part of the employer, solving the problems of the region's social infrastructure, charitable activity. The main principles of business entities' social responsibility should be: the search of new areas for social investment; the transition from charity to the creation of conditions for the economically efficient functioning of the social infrastructure, attraction of the region's population to the solving of social problems. In the world's leading countries citizens have high expectations regarding the social responsibility of business entities, which is indicative of the wide-spread practices of social responsibility. To promote such practices in Ukraine it is necessary to stimulate the social responsibility of business entities by the state.

However, the effective solution of problems in the national system of social insurance is impossible without

the consideration of the full range of factors that influence the operational parameters of the system, and without the consideration of the impact of such global trends as the growing globalization. One of the most important issues of the national social insurance in the context of the current socio-economic and demographic trends is the problem of determining the rates of social insurance contributions (Fig. 1).

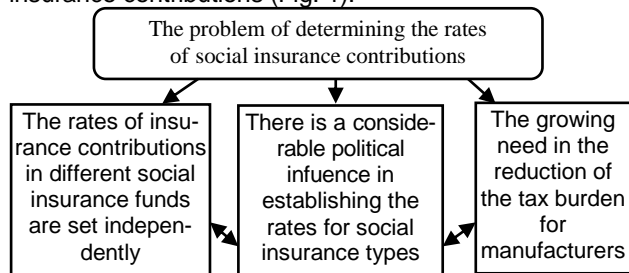


Fig. 1. Problems of determining the scientifically grounded rates of insurance contributions

#### for certain types of mandatory state social insurance

In addition, in Ukraine the share of wages in the GDP and in the production costs is still low according to the international standards due to the desire of manufacturers to win the price competition through the reduction of production costs by saving on wages (Fig. 2).

At the present stage of unstable socio-economic situation in Ukraine as a result of exogenous and endogenous factors (Table) the major financial issue in the social sphere appears to be the problem of improvement in the functioning of the pension system, which can be divided into two components: the problem of overcoming the devastating impact on the pension system of such demographic tendency as the aging population and the problem of eliminating the internal shortcoming of the pension system in its present form, which significantly reduces the efficiency of its functioning.

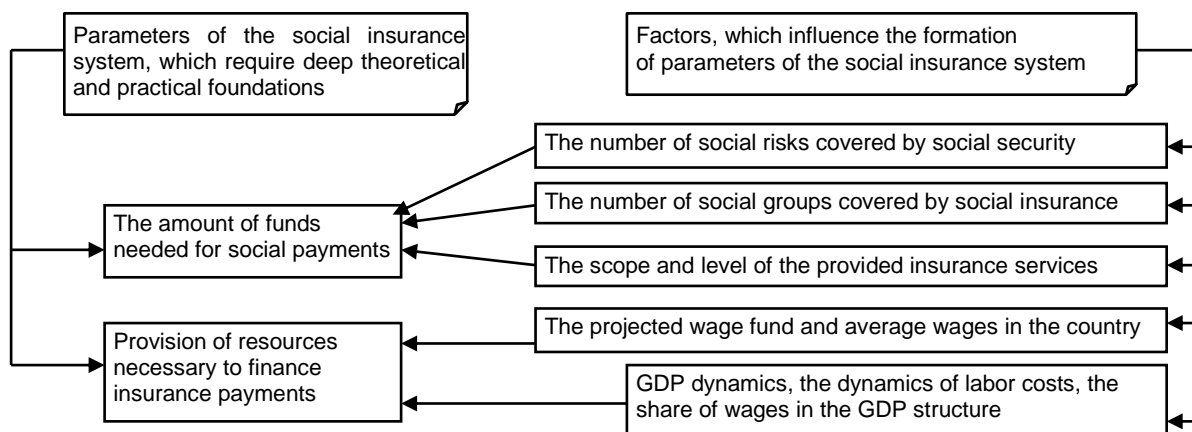


Fig. 2. Problem parameters of the social insurance system and the factors which influence their formation

Table

#### Key indicators of the social and economic situation in Ukraine [5]

| Indicator                        | 2007 | 2008 | 2009  | 2010 | 2011 | 2012 | 2013 |
|----------------------------------|------|------|-------|------|------|------|------|
| GDP in 2000 prices, bln. dollars | 52,3 | 53,2 | 47,9  | 49,3 | 50,8 | 52,3 | 53,8 |
| GDP growth/decline rate, %       | 7,5  | 1,8  | -10,0 | 3,0  | 3,2  | 2,9  | 2,9  |
| Inflation rate, %                | 12,8 | 25,2 | 13,0  | 12,4 | 7,8  | 5,9  | 5,3  |
| Population figures, mln. people  | 46,3 | 46,0 | 45,7  | 45,4 | 45,1 | 44,9 | 44,6 |
| Export to GDP ratio, %           | 44,7 | 56,6 | 50,6  | 47,2 | 48,7 | 51,4 | 54,9 |
| Import to GDP, %                 | 50,9 | 55,5 | 41,3  | 39,1 | 41,4 | 45,3 | 50,7 |
| Unemployment level, %            | 6,7  | 6,4  | 10,0  | 9,8  | 9,5  | 9,2  | 8,9  |

It should be noted that further development of the accumulation component in the pension system of Ukraine would make it possible to eliminate most of the typical internal flaws and economic risks of the solidarity pension system in its present form: 1) squeezing of the labor force into the shadow

economy; 2) wage cutting; 3) early retirement; 4) inefficient use of resources of the state budget (Fig. 3).

The aggregate pension system is financed from the contributions, which increase due to the aging of the population and exercise pressure on the labor market,

reducing employment. The existing high rates of pension insurance contributions, which do not have any influence on pension sizes, push the labor into the shadow economy, where it is used less efficiently

due to the restricted access of the shadow economy businesses to capital markets and certain types of products.

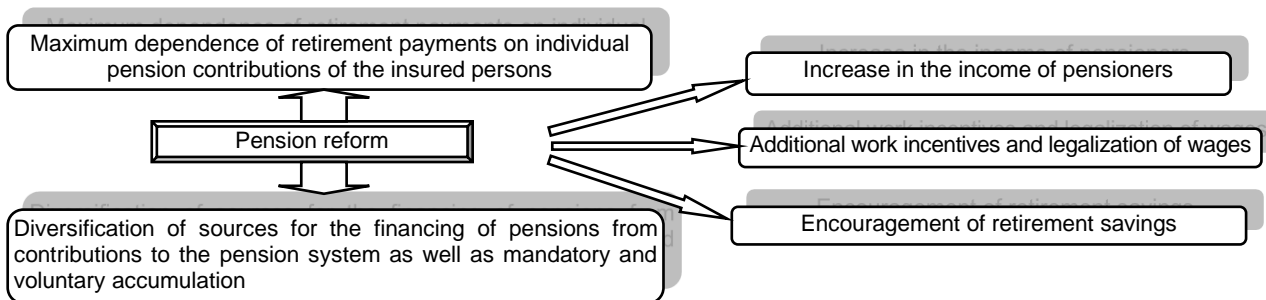


Fig. 3. The goals of reforms in the pension system of Ukraine

The legal employers are not interested in the growth of the pension contributions' absolute value and, as a result, try to restrain the growth of wage levels even when labor productivity increases. The current solidarity pension system provides for an early retirement with little or no loss in the pension size, which makes it possible to hide unemployment and provide benefits to certain layers of the population, but destroying the financial basis of the pension system and reducing the experienced workforce on the labor market. Within the system of pension insurance the expenditures of the pension system are higher than the contributions resulting in the pension fund budget deficit, which subsequently transforms itself into the public debt.

Therefore, the budget funds, which could be used to train new qualified professionals in the fields that are in demand on the labor market by investing into education, are spent on pension payments. With the current state of affairs, the aggregate system of pension insurance is not always justified, leading to the reduction of national savings, low rates of return under the state management of the pension system assets, has mostly negative impact on the labor market and the level of wages. There is also the risk of the deficit financing of pension payments, which can cause inflation. During the current pension reform there is a partial transfer of responsibility for the payment of pensions from the state to employers and citizens themselves (Fig. 4).

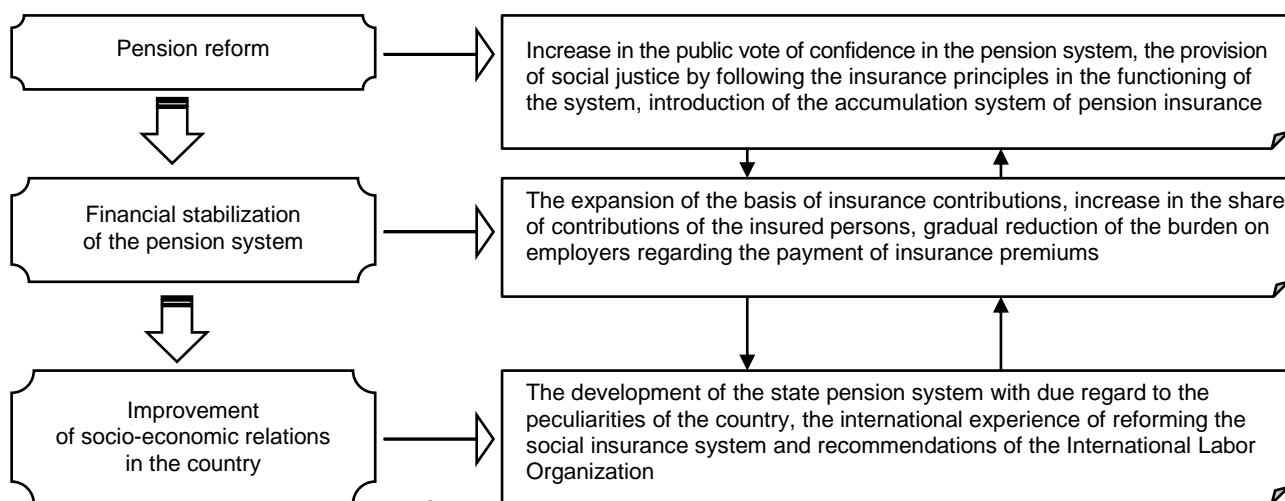


Fig. 4. Pension reform as an instrument for improving the socio-economic relations in the country

The further development of the third level of Ukraine's pension system is an important precondition for the successful implementation of the pension reform. In Ukraine, non-state pension services are provided by three types of financial institutions: non-state pension funds (NPF), insurance companies and banks. In our opinion, non-state pension funds should be given the opportunities of priority development,

because NPFs are the only non-commercial institutions among the mentioned ones. It is also expedient to increase the possibilities of participation in non-state pension provision of other financial institutions. However, the achievement of this goal is complicated by the fact that the general capacity of the market of non-state pension provision remains unsatisfactory due to the low income of the population and insufficient GDP growth

rates in the country. Practice shows that the most developed segment of the market of non-state pension provision is the NPF segment, with the banking segment being the least developed.

A promising way of improving the current pension system in Ukraine is the introduction of professional pension schemes designed to improve pension provision of citizens with working experience in difficult and hazardous conditions. The general financial, economic and social benefits from the introduction of professional pension schemes are the following: 1) employer's participation in the professional pension scheme – an important factor of his personnel policy; 2) opportunities for an employer to discontinue the transfer of obligatory pension contributions into professional pension schemes if normal (adequate) working conditions are provided at workplaces with hazardous and difficult working conditions, which must be confirmed by the results of workplaces' assessment (an incentive to improve working conditions); 3) elimination of injustices in the redistribution of financial resources in favor of the privileged categories of citizens within the pension system.

There are the following obstacles on the way to the introduction of professional pension schemes: insufficient financial resources of business entities; 2) lack of trust in financial intermediaries in general, and in the institutions that offer services of non-state pension provision in particular; 3) the probability of a temporary reduction in the competitiveness of the business entity resulting from its growing financial obligations connected to the payment of pension contributions.

In addition to the professional pension schemes an important place in the process of improving the national pension system should belong to corporate retirement programs. The economic and social benefits of corporate retirement programs provide employers with the opportunities: 1) to conduct efficient employment policy, 2) to optimize the tax burden, and 3) to attract additional investment resources.

In organizing the corporate retirement program a business entity should consider the following factors: 1) demographic indicators of the business entity (age and sex structure of the personnel, indicators of staff turnover, retirement rates, statistical data about the workers' disability and mortality rates), 2) financial indicators of the business entity's performance; 3) levels of wages and salaries in the firm.

In the current pension system of Ukraine its first (solidarity) level is the most developed, but it does not provide decent pension payments depending on the labor contribution of each working person, while the replacement ratio in all sectors of the economy remains low. Therefore, after the retirement the basic requirement of a person's economic security – keeping his and his family's comfortable living intact – is not fulfilled. However, in none of the world's countries the decent level of pensioners' living is guaranteed exclusively by the state solidarity level of the pension

system. In the implementation of the pension reform in Ukraine the replacement ratio of 60 – 75 % existing in many countries is considered. However, the revenue from all levels of the pension system (in Ukrainian conditions mainly from the first and the third levels of the pension system) should be taken into account.

The further development of the accumulating pension system in Ukraine should lead to direct positive consequences for the functioning of the national pension system as a whole. Firstly, within the accumulating pension system there is a clear dependence of the pension amounts on the contributions, which has to reduce the distortions in the labor market (pushing the labor force into the shadow economy), because employees no longer consider pension contributions as an additional burden that provides no increase in pension sizes. Secondly, the accumulated pension contributions and the corresponding investment income are transformed into retirement benefits of citizens through gradual withdrawals from accounts. This means that employees are interested in retiring as late as possible in order to receive a bigger pension. As a result, the average retirement age increases automatically without state interference. In this way, the number of experienced personnel in the labor market is kept on the same level. Thirdly, the investment of citizens' pension contributions within the accumulating system is based on economic rather than political considerations. Financial institutions, which provide accumulating pension services, try to maximize their investment profit rates by carrying out diversified investment, support the development of financial markets by creating the stable demand for new financial instruments and financial institutions leading to the creation of new jobs and increasing employment within the financial market.

Despite the partial transfer of the responsibility for pension provision from the state to employers and citizens themselves there is still the need in the preservation and improvement of state regulation of the pension system in general. There are two approaches to the pension system state regulation: soft approach and hard approach. The basic principles of the soft mode of the pension system governance are as follows: 1) mixed voluntary and obligatory participation of citizens in the pension system, 2) availability of a high degree of individual choices for citizens, 3) no need in special permits for financial institutions to carry out activities in the field of non-state pension provision; 4) opportunities for citizens to accumulate money simultaneously on several personal accounts; 5) opportunities for an employer to set up several pension funds; 6) lack of restrictions for providers of non-state pension services regarding their differentiated price policy; 7) opportunities for non-state pension providers to determine the list of services to charge fees for (in particular, fees can be charged for the admission of a person as a participant of a non-state pension scheme and for the termination of such participation; fees may or may not depend on the amounts of

accumulated pension funds of a citizen); 8) the transfer of the principle "rational behavior" into the investment activity of non-state pension providers without the detailed investment restrictions; 9) opportunities to invest the funds accumulated in the pension system into foreign corporate securities; 10) lack of requirements to the minimum profitability of invested pension funds except for guarantees against fraud. Contrary to this approach, the hard mode of the pension system governance provides for: 1) mandatory participation of all working members of society in the pension system; 2) lack of a high degree of individual choices for citizens; 3) the need in special permits for financial institutions to carry out activities in the field of non-state pension provision; 4) lack of opportunities for citizens to accumulate money simultaneously on several personal accounts; 5) lack of opportunities for an employer to found several pension funds; 6) uniform pricing in the area of pension services; 7) regulation of the types of fees, which are charged by the providers of pension services (but not their sizes); 8) detailed rules for the investment of pension funds (limiting the maximum amounts of investments into one instrument in order to avoid risk concentration); 9) prohibition or legal restriction on investment of pension funds into foreign corporate securities; 10) the necessity to follow the requirements to the minimum profitability of invested pension funds and provision of state guarantees against unforeseen reduction of investment profitability.

Countries with developed financial markets and long traditions of mostly voluntary pension systems created with active participation of economic entities may use a softer regime of state regulation. To confirm the effectiveness of the "rational behavior" principle these countries have introduced training programs on the responsibilities of managing the funds of pension system participants as well as training systems to ensure the necessary understanding and control of risks. If a state in some cases uses the restriction on investment activity and the minimum rates of investment returns on pension funds, persons who do not wish to take advantage of state guarantees may be allowed to make contributions to funds, which are less regulated by the state. In countries with underdeveloped financial markets and the lack of historical experience and practices of voluntary pension provision a hard approach to the regulation of the pension system is more acceptable. With the accumulation of experience by the providers of non-state pensions in these countries and by citizens themselves it is expedient, in the future, to use the soft mode of state regulation.

Under any circumstances a state should require that financial institutions, which are non-state pension providers, separate their assets from the assets of their founders, make minimum capital reserves, offer intensive information coverage of their activities, constantly seek to develop and improve the system of effective state supervision over the activity of non-state pension funds.

Strict state regulation of the pension system is necessary to ensure the simplicity and transparency of the pension reform, to win the public trust and to provide the necessary protection of citizens. Undergoing the process of transformation, the pension system of Ukraine should be regulated by the state on the basis of the hard approach as this would create the foundation for the further successful implementation of the pension reform and make it possible to take into account the peculiarities in the development of the national economy.

The social responsibility of business entities in Ukraine can develop only with substantial state incentives given the generally weak financial position of local business entities. Contribution rates on different types of social insurance should be coordinated among themselves considering the need to reduce the overall burden on businesses in the form of obligatory payments. One of the most important tasks is increasing the share of wages in the GDP, because the reduced wage levels lead to insufficient insurance contributions to social insurance funds. The main obstacle to the completion of the pension reform in Ukraine is the lack of conditions necessary for the introduction of the pension system's second level. Until these conditions are created, the most promising way for the pension reform is the further development of the third level of the pension system (the introduction of professional pension schemes and corporate pension plans) and finding ways to free the first level of the pension system from certain unfounded possibilities for early retirement. An effective state regulation of the pension system grows in importance during the implementation of the pension reform. In Ukraine it is expedient to use the hard regime of state regulation of the pension system to ensure the successful implementation of the pension reform.

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# ORGANIZATION OF CLUSTER STRUCTURES POTENTIAL DEVELOPMENT MANAGEMENT WITH BALANCED SCORECARD TOOLS

UDC 658.012.32

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Relevance of forming clusters development management contours used as their available potential development level management levers has been proved. The approach to representation of cluster structures as a system of atomic elements has been offered. The theoretical and methodological grounds of approach to the multiagent modeling of business entities interactions. These entities are involved in several chains of value creation. Cluster structure is represented as logistic chains aggregate. Balanced scorecard system and viable systems model have been chosen as tools of management organization.

*Key words:* quasiintegration, cluster structure, balanced scorecard, management organization.

## ОРГАНІЗАЦІЯ УПРАВЛІННЯ РОЗВИТКОМ ПОТЕНЦІАЛУ КЛАСТЕРНИХ СТРУКТУР ЗАСОБАМИ ЗБАЛАНСОВАНОЇ СИСТЕМИ ПОКАЗНИКІВ

УДК 658.012.32

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Доведено доречність формування контурів управління розвитком кластерів, що використовують як важелі управління рівень розвитку наявного у них потенціалу. Кластерні структури запропоновано подавати через систему атомарних елементів. Наведено теоретико-методологічне обґрунтування підходу до мультиагентського моделювання взаємодії суб'єктів господарювання, що беруть участь у декількох логістичних ланцюгах створення вартості, сукупність яких становить кластерну структуру. Як інструментарій організації управління обрано збалансовану систему показників та модель життєздатних систем.

*Ключові слова:* потенціал, квазіінтеграція, кластерна структура, збалансована система показників, організація управління.

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## ОРГАНИЗАЦИЯ УПРАВЛЕНИЯ РАЗВИТИЕМ ПОТЕНЦИАЛА КЛАСТЕРНЫХ СТРУКТУР СРЕДСТВАМИ СБАЛАНСИРОВАННОЙ СИСТЕМЫ ПОКАЗАТЕЛЕЙ

Доказана уместность формирования контуров управления развитием кластеров, использующих в качестве рычагов управления уровень развития имеющегося у них потенциала. Кластерные структуры предложено представлять через систему атомарных элементов. Представлено теоретико-методологическое обоснование подхода к мультиагентскому моделированию взаимодействия субъектов хозяйствования, принимающих участие в нескольких логистических цепях создания стоимости, совокупность которых представляет собой кластерную структуру. В качестве инструментария организации управления избраны сбалансированная система показателей и модель жизнеспособных систем.

*Ключевые слова:* потенциал, квазиинтеграция, кластерная структура, сбалансированная система показателей, организация управления.

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In recent years several new trends have that describe up-to-date phenomena and processes have appeared in economic research. Correspondingly, a large quantity of papers is devoted to their consideration. On the other hand, scientists ignore basic economics and management postulates, which have to adapt to new characteristics and requirements of business environment. Thus, we will consider the issue of management organization of cluster structures potential development in the context of updating the existing experience concerning up-to-date requirements. We suggest to use the concept of Balanced Scorecard, developed by R. Kaplan and D. Norton [1; 2] as tools. Today this concept is considered as versatile tool, which can solve all possible problems of any enterprise. That is not entirely true. Nevertheless, unification of different theories of the company and the management concept by the authors of Balanced Scorecard deserves special attention.

It should be noted that there is no unity of scientists' views about issues of management organization of cluster structures potential development and the corresponding relevance of research in this direction. First, there are differences in interpretation of the category "cluster". Most researchers [3; 4] use the definition of cluster, given by M. Porter [5]. Thereby, the identification of the cluster is mainly based on the criteria of interconnection and geographic proximity. However, this approach ignores the trends of information and communication technology development, which allows leaving out the territorial aspect. Therefore, it is more appropriate to use the phrase "cluster structure". There is no unanimous and lasting position for its understanding. The European cluster memorandum [6] confirms the relevance of cluster initiatives activation and the need of innovation

basis of cluster formation, but does not give clear definitions.

Another problematic situation is the issue of identifying the essence of the term "cluster structure potential". On the one hand, there are many research works devoted to the consideration of multifaceted and multidimensional category "potential" (even adapted to unpredictable environmental conditions [7]). However, in most cases scientists conduct research at the level of an individual company or a region, ignoring mild integration structures. There are only a few works, which consider the potential of aggregate enterprises. For example, S. Sachs and co-authors [8] emphasize the necessity to define and manage the potential of enterprise interaction with its stakeholders. At the same time there is no approach to potential quantitative measurement. European Cluster Memorandum [6] only states the need to consider cluster potential as something more than the sum of cluster members' potential (can be defined as the need to potentials synergy achievement). At the same time, it says nothing about the tools and mechanisms of such potentials synergy achievement.

Thirdly, there are differences in the interpretation of the phrase "management organization". On the one hand, management as another process should be organized in a specific mode. Such organization should consider the achievements of the organization theory [9; 10]. On the other hand, organization is one of the management functions. This fact complicates the final understanding of the phrase "management organization". In any case, within the classical organization theory the management of an individual business entity can be organized. As regards cluster structures and their potential management, it is necessary to supplement classical approaches

with the achievements of other theories, focused on regulating cooperative and integration interaction.

In the authors' opinion the concept of organizational ecology [11] and evolutionary and institutional approach should be referred to such theories [12]. The concept of organizational ecology will determine the features of cluster members' behavior, and the institutional theory will regulate the formal and informal rules and regulations of such interaction. We separately mention the study [13], which is dedicated to the features of business ecosystem formation (presented as a network of customers and suppliers, who interact in a specific social and economic environment and are the subject of its own legal framework). Although these studies do not deal directly with potential management or cluster formation, this approach allows us to determine the architecture and subordination of the contours feedback. Only this feedback will ensure the realization of cluster structure management processes through the criterion of maximizing its member's potential.

The objective of the article is to develop theoretical and methodological basis and appropriate tools for cluster structures potential development management organization. The article is based on such authoring as the spiral of business entities integration development (ID). It bases on a widespread approach to reflection of evolutionary development flow (presented in the V. W. Ebeling's works [14, p. 12]), but with the addition of bifurcation points and revolutionary stages. This spiral, represented in Fig. 1, has been sufficiently expounded in other author's publications. It is based on the idea of individual actors' presence within the cluster (given by the set {A}), the interaction of which occurs within certain system of integration restrictions ({IR}).

It is clear that the operation of a cluster needs specified regulation. To organize such regulation we offer to use such element of institutional economic theory as the Concept of Control (formalizing the appropriate set {CC}). The elements {CC} will contain the institutionalized system of rules and regulations of cluster members' joint activity. The components of the

set and {CC} regulate the transition of the cluster and its members along the spiral, represented in Fig. 1.

To provide the manageability of individual enterprises and their associations it is necessary to establish a quantitative criterion. In the authors' opinion, this criterion should be the cluster structure potential, which is calculated on the basis of consolidating cluster members' reporting indicators (to eliminate double accounting of the remainders of mutual debts and unrealized profits on intra-group transactions, which are not included in the calculation). To manage organization of cluster development, it is necessary to use different kinds of potential. Therefore, we offer to present it in the form of an appropriate set {P}.

The condition of development, as shown in Fig. 1, will be the potential nondecreasing during the transition between stages of evolutionary and revolutionary development. To ensure realization of this condition we offer to use the concept of Balanced Scorecard (BSC). We decided to use the BSC tools because of its perfect compliance with the resource paradigm of strategic management and the concept of dynamic capabilities (initially developed by D. J. Teece [15]). Considering the multiplicity of approaches to understanding the essence of the category of "potential" (their analysis is not the objective of the article), we focus on the resource paradigm (considering the D. J. Teece's works [15]). Within this paradigm, potential is considered on the basis of the existing resources of the business entity and the possibilities of their use (concerning the objective of the article – on the basis of allocation in a particular area). It is appropriate to use the idea of another strategic management concept – the concept of Core Competencies [16; 17]. We propose to consider the competencies in the context of exclusive and distinctive capabilities to process available resources (we consider cluster activities in the context of available resources transformation processes or in the context of benefit of their presence). We offer to correlate the spiral of development and the concept of Core Competencies in accordance with the scheme, shown in Fig. 1. In this case, BSC becomes a tool of implementing this correlation.

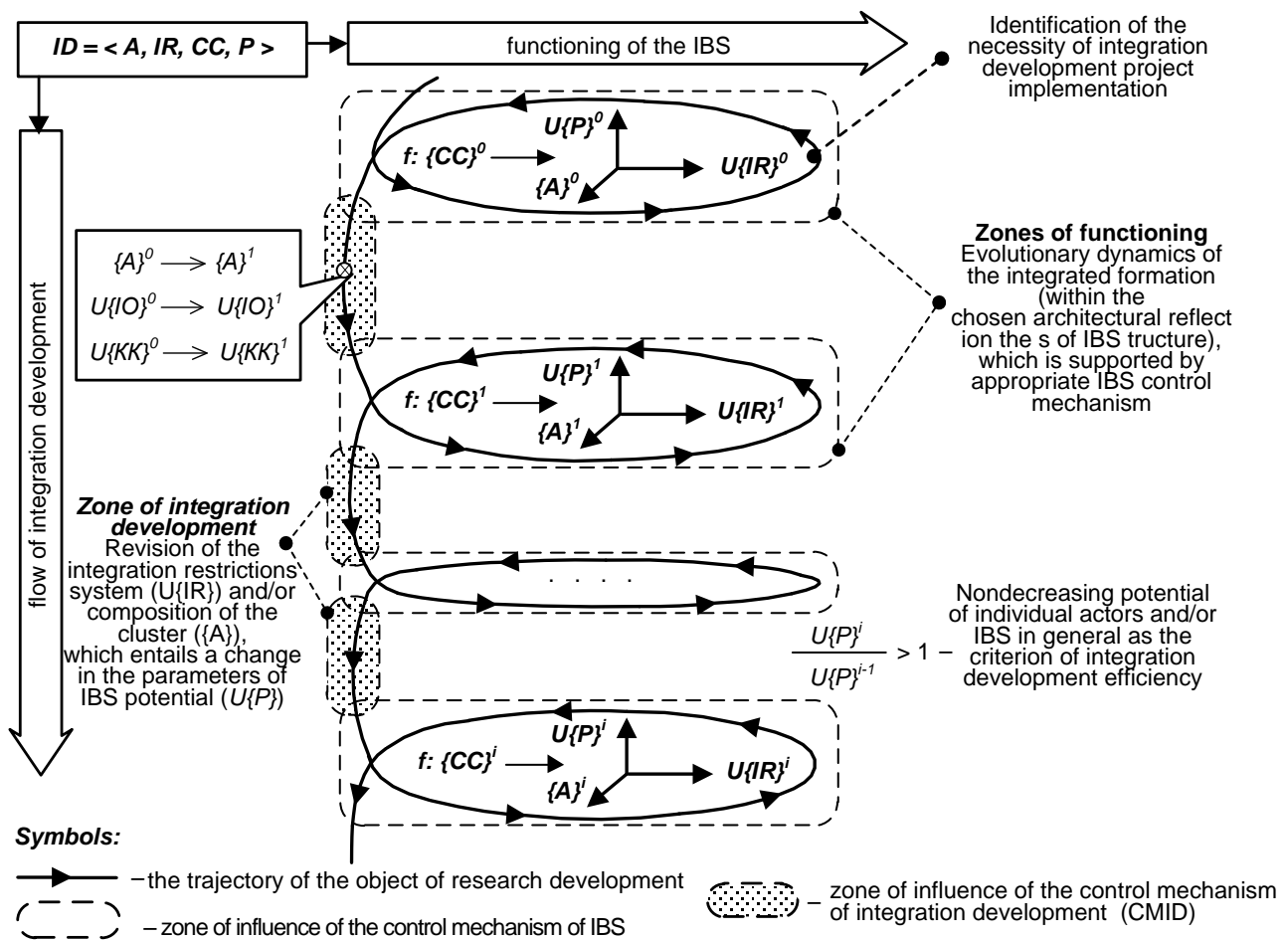
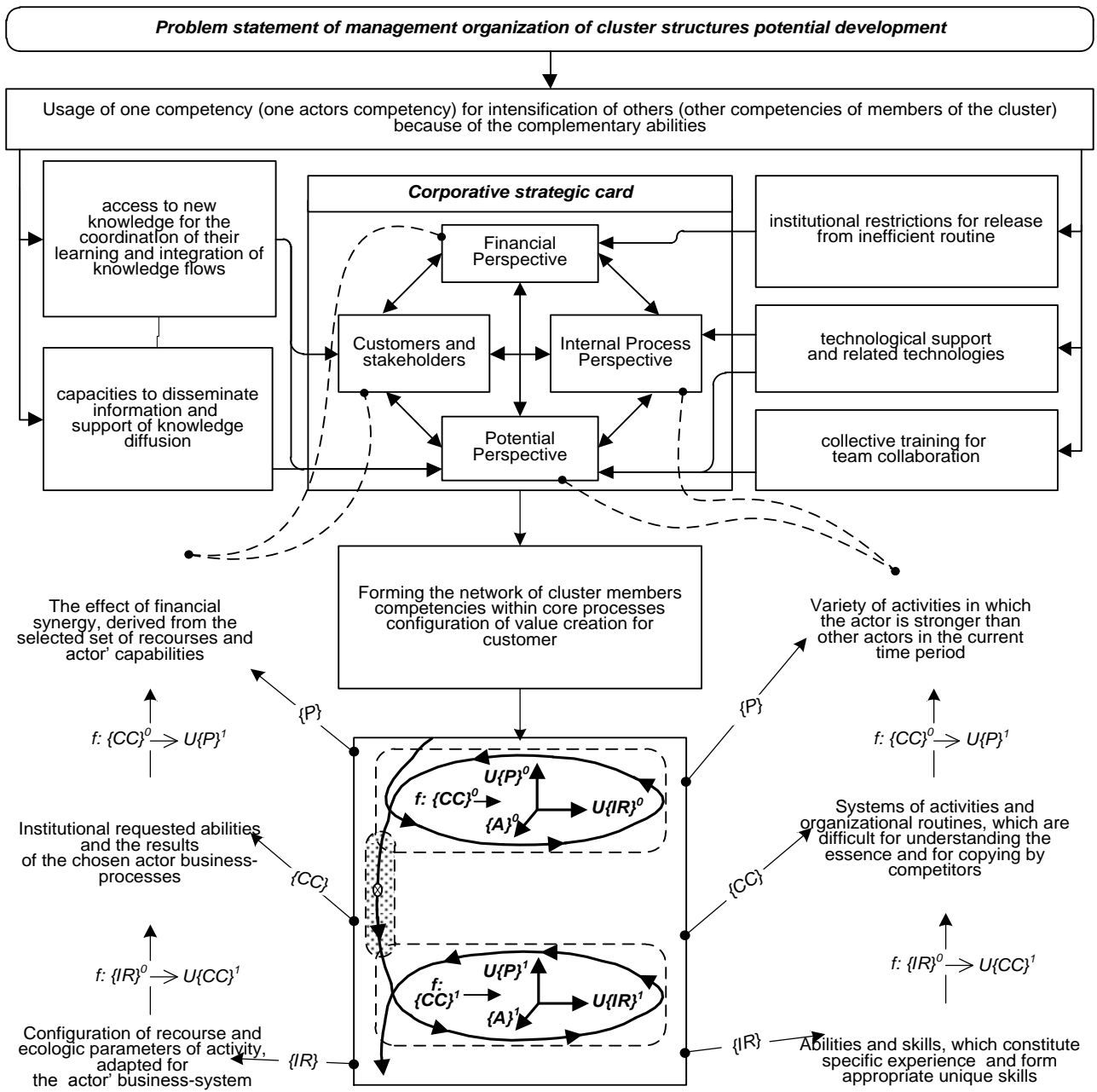


Fig. 1. Spiral representation of the process flow of cluster development

Adoption of the approach, shown in Fig. 1 and Fig. 2, allows to avoid the theoretical inconsistencies, mentioned earlier in this article. Firstly, the cluster structure identification will be based on determining the strength and structure of the integration restrictions (IR). Secondly, the parameters of BSC will be clearly correlated with core competencies of the cluster, which is complied with the requirements of [1; 2]. In this case,

core competencies are identical to such element of BSC concept as Key Success Factor (KSF). However, it is necessary to take into account the structural heterogeneity of the cluster and different variants of its organizational design. Depending on cluster organization features will vary the approaches to potential development management organization and to implementation of cascading procedures, which are the BSC tools.



**Fig. 2. The concept of core competencies in the development of cluster structure Balanced Scorecard**

The cluster potential development management organization must consider that a new market entity is not created, but we have the control over the behavior of formal independent agents with no control over their property. This feature makes the appropriate use of the multiagent system concept. As objects of management, it will consider members of the cluster ( $\{A\}$ ) regardless of the industry sector and ownership. Within this set, it is appropriate to allocate a subset of objects of state ownership.

Multiagent approach enables to regard a cluster as a quasiintegrated logistic system (QLS). Appropriately, QLS will be a geographically restricted area of interaction, within which the coordination of the interests

of integrated structures' members occurs. Inherently, QLS is a system of continued mutual training and joint creation of consumer value. The methodology of advanced logistic interaction will form common information and innovation space of knowledge exchange within the cluster. For this, every agent is endowed with a certain set of individual and joint actions, including possible communications and various interaction types. The purpose of such knowledge exchange is to facilitate the search of the most effective combinations of cluster members' resources and competencies. Accordingly, the cluster structure potential development will occur via optimization of this correlation.

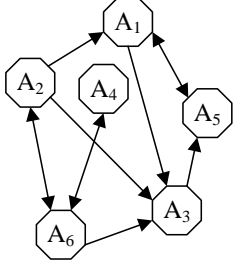
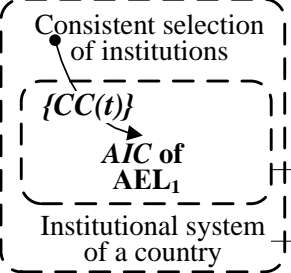
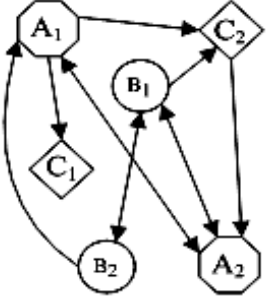
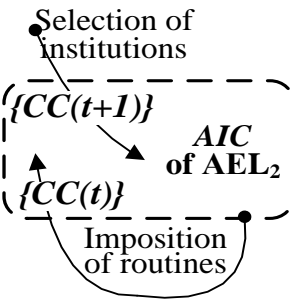
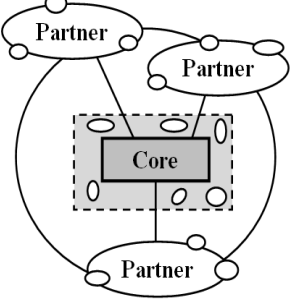
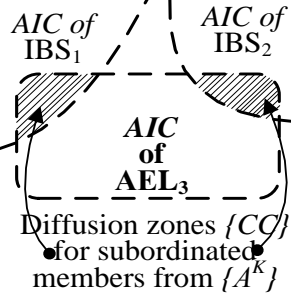
In the context of modeling the cluster structure potential development must be determined by the set of environments in which the agents will operate, (their combination will determine the cluster infrastructure). The set of agent types and the corresponding set of agent states, social laws, institutional restrictions and possible strategies must also be defined. This is the only basis on which it is possible to achieve optimum correlation of resources and competencies.

To accommodate these requirements and features of cluster structure potential development management, Table presents the authors' view approaches correlation to BSC implementation and forms of cluster organizational structure. To present the mentioned suggestion as the theoretical basis we used research works [13; 18] about the allocation of atomic elements of

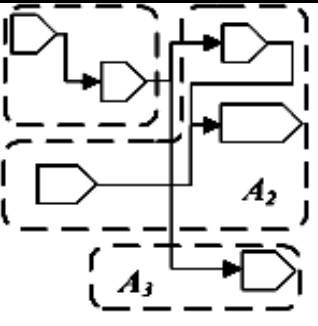
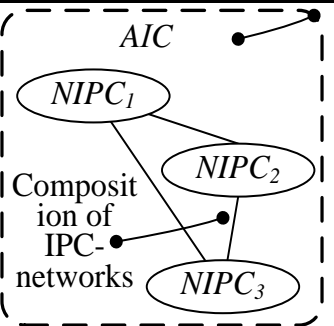
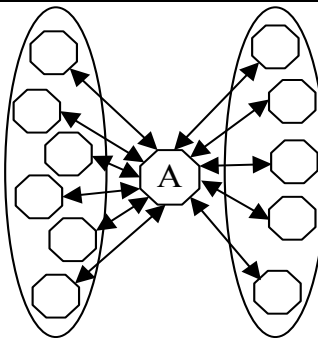
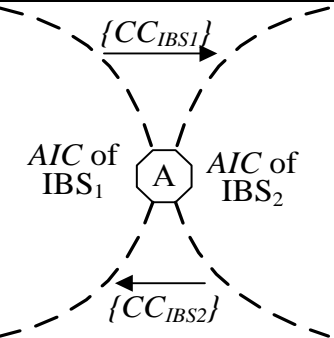
integration interaction (given by the set {AEL}). In the context of these atomic elements the Table was constructed. The hierarchical approach to the integration of business entities in the cluster should be noted. Several integrated structures can function within one cluster. Their cooperation meets the definition of the cluster and the adopted multiagent approach to modeling its activity. As integrated structures can be formed without creating a legal entity, we offer to interpret them as networks of interaction parameters coordination (IPC-networks or NIPC). Under such approach, the cluster will be formed from several IPC-networks, which create similar consumer value of the output. These networks enter the relationships of competition (within interaction with the customers of a cluster) and cooperation (in struggle for positioning the cluster in the global market).

Table

**Features of BSC tools usage for different forms of cluster organizational structure**

| Reflection of the relations of NIPC members   | Representation of the cluster area  | Characteristics of BSC tools application   |
|---|---|--|
| <i>AEL<sub>1</sub></i> – homogeneous network of cluster members, which have similar description and parameters (high density of similar relationships of cluster members is observed)                         |   |  |
|    |  | <p>A strategic map is created for each cluster member, which has a weak relation with the center and has all powers for independent realization of the strategy. Corporate strategic map typically contains a small set of financial KPI, sufficient to evaluate the efficiency of potential utilization. Bottom-up cascading of indicators occurs</p>   |
| <i>AEL<sub>2</sub></i> – heterogeneous network of cluster members of different types and differentiated in terms of economic power (there is a high diversity and differentiation of the connection strength) |   |  |
|    |  | <p>A strategic map is created for all members, which differ in strategic directions and cooperate with contractors external to the cluster. For the subjects of infrastructure KPI, is sufficient corresponding to their role in cluster KSF development. There is cascading of mixed type and a small number of divers indicators of potential realization</p>  |
| <i>AEL<sub>3</sub></i> – dynamic focal network ("web of value creation"), when cluster or network formations emerge around a certain central unit   |   |  |
|    |  | <p>The focus on joint value creation allows to create a strategic map only for the members of the cluster core. For the rest SBU only a set of indicators are produced, the composition of which is sufficient for the implementation of operational management of the members that are subordinated in the hierarchical level (it is possible to create for them strategic maps that detail strategic roles and relations of strategy implementation)</p> |



|  |  |  |
|--|--|--|
| <p><i>AEL<sub>4</sub></i> – network of value creation (logistic chain of value creation). Cluster initiatives are oriented to the processes of setting and intercompany information processing</p> |  |  |
|   |   | <p>As a cluster is a composite of IPC-networks, each of which has behavioral and mental models, it provides formation of several levels of BSC strategic maps. At the top level of BSC cascading coordination of interests NIPC occurs. Interests of individual members are coordinated within strategic maps of NIPC)</p>   |
| <p><i>AEL<sub>5</sub></i> – bridge "translator". Cluster structure consists of several integrated networks which are joined with each other by the "central" member of the network</p>             |  |  |
|    |  | <p>A business entity, which is the "bridge", comes within institutional constraints, selected by different cluster members, with which this actor established relations and restrictions. This subject defines guidelines of cluster structure potential development and standards for BSC strategic map indicators. The system of indicative maps, developed by the actor-"bridge", defines directions of potential development</p> |

As an example of approach application, shown in Table, we represent the power-engineering cluster of Kharkiv region as a set of atomic elements. This cluster focuses on satisfaction of consumer needs in steam and gas turbines, turbogenerators, electric motors and high power hauling equip-

ment. It should be noted that the cluster core consists of several large enterprises. Therefore, management of its potential development should be organized within core competencies of these enterprises. It is necessary to develop BSC strategy map for every element of the scheme, shown in Fig. 3.

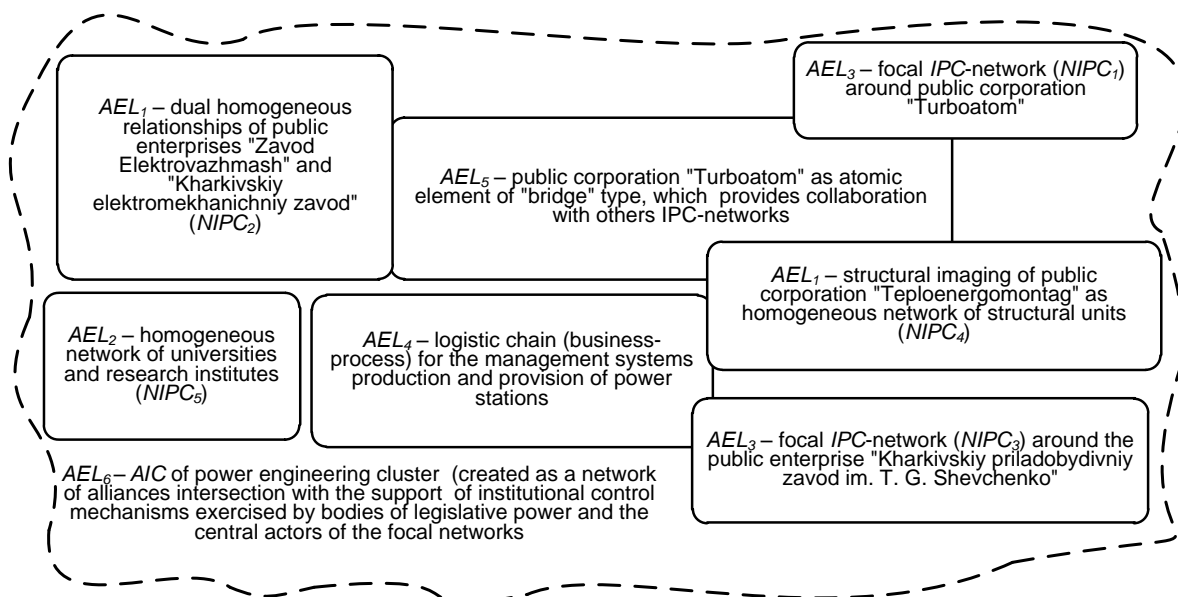


Fig. 3. Representation of the members' interaction within power engineering cluster as a composition of atomic elements of the network integration

In the context of management organization of cluster structure potential development, represented in Fig. 1, we offer to extend tools of BSC concept with achievements of the Viable System Model (VSM), developed by S. Beer [12]. This model can be easily correlated with multi-agent approach that will ensure practical realization of its recursive property. It means that the structure of the management system of cluster structure potential development reproduces within each contour (of each actor).

The basic version of VSM includes five levels of hierarchy in the management system, which is built on the same principles as human central nervous system [19]. Concerning the cluster structure, we suggest that the first level will compose individual enterprises – members of the cluster (elements of the set {A}). Infrastructure subdivisions and operators will compose the second level, which is responsible for regulation of members' logistic activity. The third level will be based on the controlling and monitoring system of the cluster potential development. We refer the specially dedicated control center of cluster structure potential development (it is most rational to form it within governmental authorities) to the fourth level. Developing the policy of logistic interaction will be referred to the fifth level of VSM. Inherently, it will represent regional industrial policy and institutional regulations of cluster members' collaboration.

Thereby, the theoretical and methodological approach to the forming of management contours of cluster structures potential development is offered in the article. These contours are represented through the system of atomic elements. The tools for management contour realization are the concepts of Balanced Scorecard, Viable System Model and Multiagent Modeling. At the same time, it is necessary to ground the procedures of institutionalization of cluster structures members collaboration.

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# INSTITUTIONAL ECONOMIC THEORY AS A ROLE MODEL OF ECONOMY OF CONVENTIONS

UDC 330.837.1

D. Radovic

This paper explains some important elements, indicating that the consensus theory and economy of conventions, despite the indisputable originality, have their role model in neo-institutional economics theory. The author tries to define relationship between these original economic theories, their similarities and main demarcation lines. Its hypothesis is that these directions, despite many formal and conceptual differences, have enough similarities to imply the conclusion that neo-institutional economic theory in some parts can be viewed as a role model in relation to the economy of conventions.

*Key words:* agreement, institutions, neo-institutional economics theory, economy of conventions, theory of agreement.

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## ІНСТИТУЦІОНАЛЬНА ЕКОНОМІЧНА ТЕОРІЯ ЯК РОЛЬОВА МОДЕЛЬ ЕКОНОМІКИ КОНВЕНЦІЇ

УДК 330.837.1

Д. Радович

Досліджено деякі важливі елементи теорії консенсусу та теорії економіки конвенцій, які, враховуючи їх безперечну оригінальність, відіграють важливу роль у моделях неінституціональної економічної теорії. Зроблено спробу обґрунтувати та визначити зв'язок між цими оригінальними економічними теоріями, риси їх подібності та принципові лінії демаркації. Гіпотеза наведеного дослідження полягає в тому, що ці напрямки, незважаючи на численні формальні і концептуальні відмінності, мають досить багато спільного. Зроблено висновок про те, що неінституціональну економічну теорію в деяких її частинах можна розглядати як зразок для наслідування з боку теорії економіки конвенцій.

*Ключові слова:* угода, установа, теорія неінституціональної економіки, економіка конвенцій, теорія угод.

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## ИНСТИТУЦИОНАЛЬНАЯ ЭКОНОМИЧЕСКАЯ ТЕОРИЯ КАК РОЛЕВАЯ МОДЕЛЬ ЭКОНОМИКИ КОНВЕНЦИИ

УДК 330.837.1

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Исследовано некоторые важные элементы теории консенсуса и теории экономики конвенций, которые, учитывая их бесспорную оригинальность, играют важную роль в моделях неинституциональной экономической теории. Сделана

попытка обосновать и определить связь между этими оригинальными экономическими теориями, черты их сходства и принципиальные линии демаркации. Гипотеза представленного исследования заключается в том, что эти направления, несмотря на многочисленные формальные и концептуальные различия, имеют достаточно много сходства. Сделано вывод о том, что неинституциональную экономическую теорию в некоторых ее частях можно рассматривать как образец для подражания со стороны теории экономики конвенций.

*Ключевые слова:* соглашение, учреждение, теория неинституциональной экономики, экономика конвенций, теория соглашений.

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The issue of institutional analysis is the focus of economic science since 1980 until now. It began as a criticism of old institutionalism, later developed as neoinstitutional economic theory, an original direction of economic thought, that due to its identical methodology to some extent, represents specific (partial) extension of the neoclassical theory. Later there was a new French institutionalism as a criticism of neoinstitutional economic theory and the neoclassical one-sided and abstract rationality and appropriate treatment of methodological individualism. These directions are formally and conceptually different, but they have some essential similarities, primarily in ideological terms.

Economy of conventions is one of the modern economic science courses. It is part of a broad intellectual movement, based on discussions of economists, sociologists, historians, psychologists and other social scientific representatives. It is a heterogeneous intellectual movement, in which the researches are trying to overcome the basic principles of neoclassical economics, especially the alleged existence of market equilibrium (which implies an optimal resource allocation and pricing in the conditions of ideal market) as well as rational behavior of economic agents (who optimize their economic activities in order to draw maximum benefit). So, one can say that this is a specific critique of neoliberal notions of autonomy and even the dominance of economic factors in relation to the impact of social, political and other factors.

The phrase "economy of conventions" appeared in the last ten years as an extension of the "theory of agreement", discussed in the French economic and social journals two and a half decades ago. The research of founders of conventions economy [1 – 6] is characterized by multidisciplinary. Its outlines were registered from mid 1960 to mid 1980. According to conventionalists, resolution of the fundamental economic questions which are related to value, coordination, control, rationality, etc., is not possible without multidisciplinary discussion, research and cooperation of many social science disciplines, especially between economics and sociology.

To create conditions for multidisciplinary analysis, it was necessary to accept the basic elements of the new-institutional analysis and pragmatic sociology. It would be the first condition for postulating many coordination principles of economic and social life (as opposed to the neoclassical theory, which is recognized as the sole

coordination and regulation principles of competition, which is – institutional monism, or, as some authors call the extreme – market fundamentalism). Second, it emphasizes the interpretative rationality involved in the critical value and the ability (unlike calculating rationality standard economic theory). Third, focus is on the creation and change of norms and rules (conventions) as necessary conditions of economic activity based on the algorithm presented in previous papers of authors.

French "New institutionalism" formulated a theory of agreements (conventions, consensus), which was first exhibited by Boltanski and Thévenot [7]. Their multidisciplinary and synthetic approach implies a critique of neoclassical methodological individualism, with starting point that the economic, political and social spheres are closely linked and mutually conditioned [8].

Boltanski and Thévenot see market institution as a specific form of social relations between atomized individuals. To overcome the contradiction between the rational market behavior and the requirements for compliance with certain standards in their daily lives, they formulated the original concept and a pretty consistent standard, by which they cease to be the outer limit of rational activity, because they are used solely for better and more complete realization of individual's own interest and easier coordination of economic activities. In their interpretation, norms are the way to understand the effects of contra-agents in all situations where the direct exchanges of information are impossible. Thus, the norms become a) a significant mechanism for harmonizing actions of individuals with the environment, and therefore the actions of others and b) a realization hypothesis (certainly not a barrier) of rational choice.

Bessy and Favereau's article "Institutions and Economics Convention" [1] is one of the most important attempts to clarify the fundamental methodological issues and the essence of the concept of economic conventions. It explains the relationship of concepts, "convention" and "institute" and place the institute in conventional analysis. The central thought is, except for the organizational function, utterly contradictory, because the authors listed [9] point out that "conventions give birth to an institute and breathe life into them, institutes form the convention and organizations are place of mutual functioning." In virtue of detailed but very abstract conceptual analysis of conventions and institutes, they try to explain the relationship between economic conventions and neoinstitutionalism, as well as their disciplinary boundaries.

By identifying the basic evolution stages of the term "institute", Bessy and Favereau claim that this is not considered in orthodox economic analysis, which was focused on the coordination of economic sequence (neoclassicism) and/or its reproduction (marxism). Since the mid 1970 economic institutes are in focus of theoretical economic analysis, both in terms of economic heterodoxies, and other social sciences. In the early works of conventionalist economic institutes are not mentioned, except in the part of "incomplete" general rules. Stressing the importance of interpretive activities of economic entities, conventionalists focused their analysis on the concept of convention, explained as a scheme of a rule interpretation, instead of the institute, which is commonly defined as "the game rules". Over time institutes were increasingly recognized in conventional analysis.

Regarding the relationship between concepts of institute, convention and organization, Bessy and Favereau define conventions as an inter-subjective scheme of interpretation, that appears as something similar to reflective part of the institute. Convention "activate", i.e. "breath life" into institutions, which in return give them a form. The process of drafting new conventions lies in interpretation, application and review of the overall formal and informal rules (the institute). Organizations use both of them as resources in their approaches.

The above mentioned separate views show considerable complexity of the convention definition, both in terms of coordination problem and aspects of cognitive measurement. At the same time as the founders of conventions economy agree that the convention should not be reduced to habit or custom, whose violation can lead to sanctions by society, or random alignment between individuals. Dual character of the Convention becomes evident when compared with the concept of the institute. Conventions can be considered institutes only to the extent to which they are able to coordinate their interactions. On the other hand, they cannot identify with the institutions of traditional, new-institutional terms [10], or with the terms of "rule of conduct", "contract" or "transaction costs", which place restrictions on the operation of the market as the exclusive principle of coordination.

Respectfully, we should understand the metaphor of "society-businesses," through which Bessy and Favereau try to mark the distance of the economy compared to the mainstream and neo-institutionalism. To explain the differences between conventions and institutes [9] they cite the following metaphor: "Imagine that society = theater, institutes = roles that await implementation, organizations = actors seeking roles and conventions = play summary."

The book "Institutional Economics", edited by Olejnik [11] published with subtitle Thévenot "values, coordination and rationality: economics convention or convergence era of economic, social and political sciences," notes the ambition of the author that the former theory agreement (convention) would be called economy of agreement. Similarly to the economy of neo-

institutionalism, there is a theoretical imperialism, which is exclusively methodologically oriented (without detailed instrumentation, operationalisation or analysis), in this case not only economic, but social/economic/political. Therefore, methodology indirectly applies to universality, which can be seen from the title.

In the aforementioned article, Thévenot interpreted his own attitudes and ideas of other representatives of French conventionalism, noting that "Economic program agreement focuses on three issues, which are opposed in economic thought for the past century and a half: characteristic of the agent and his motives; variants of coordination activities and roles of value and public good, and that he tries to overcome the dichotomy of the standard theory" (referring to the neo-classical) between "rationality and coordination issues, which have never been connected with the third issue – value judgments and norms of behavior" [11; 12]. Immediately following the main explanation of the key ideas and their theories: "If we agree that coordination requires efforts that are not realized automatically according to natural laws, then follows the first interpretation, rather than calculative character of rational human behavior".

Obviously, the principle of rationality is not rejected but rather given a relative and an interpretive character, which seems quite logical, as people in everyday economic activities not only depart from their own rational calculations, but must apply and respect the different conventional framework through which they understand the intentions and actions of others (contra-agents), which involves cognitive and evaluation (interpretation) efforts.

Since the basic problems of economics have been associated with uncertainty and information, where uncertainty has the character of "critical" ("radical"), Thévenot believes that it can cut agreements (conventions) by introducing a general assessment procedure of subject (interpretability) as an assumption of coordination [7]. He proposes a new approach for the analysis of two central ideas of economic science: rationality and equilibrium.

The starting point of his approach is the fact that in many ways, many scholars have pointed that economic activities are performed in conditions different from the abstract theoretical model of perfect competition, which assumes neoclassical theory. He proposes a theory of reasonable (evidence) acting as the most acceptable explanation for the variety of coordination mechanisms. In this regard, he cites a hypothesis: "about the recognition of many important factors underlying the motivation, just as many ways of coordination". It implies that rationality is only one of motivation factors of market exchange, for which the term reasonable, not rational is used.

To give the considered theory necessary scientific consistency, understandability and applicability, Boltanski and Thévenot [7] proposed "the concept of the worlds" (key institutional and real subsystems of economic reality) directly related to the economic theory. It is about seven institutional subsystems (worlds) that have their own specific procedures and mechanisms of coordi-

nation (Figure), their own order of things and standards (requirements for people behavior).

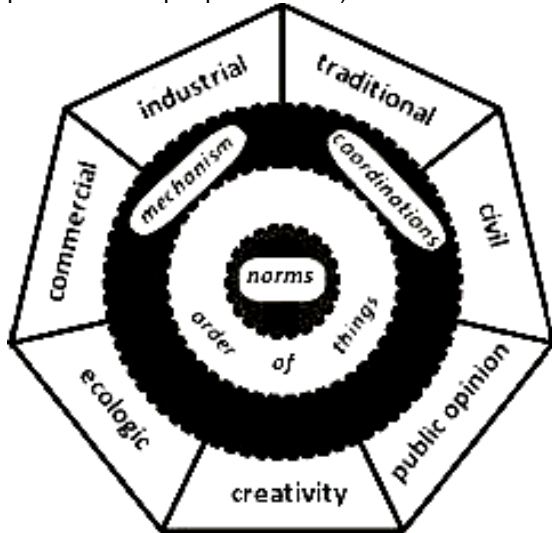


Fig. Structure of the "concept of seven institutional worlds"

Relations (Table 1) between various institutional subsystems ("worlds") of economic reality Thévenot qualifies as critical: what is important in one, is irrelevant in another world. Collision of different worlds is likely to lead to a crisis that can be avoided by seeking compromise and exceeding a critical charge between the "worlds". Compromise is very different from a private agreement, which is dominated by mutual concessions. These actions are affected by severe constraints, focused on search for reality and meaningful action in order to establish the overall balance between observed "worlds", which are variable. The search and finding of a compromise in long perspective contributes to building a new "world," said Thévenot. In fact no form of argument has a universal character because it contradicts to other forms, which allows explaining the nature of critical situations. Any form of coordination is a constitutional arrangement, whose character is manifested only in the process of conflict with other forms of coordination.

Table 1

Incomplete matrix of institutional worlds

| subsystem name | coordination principle                        | order of things           | dominant behavior            |
|----------------|---|---------------------------|------------------------------|
| commercial     | market transactions                           | set of goods              | rationality                  |
| industrial     | standardization                               | set of standardized goods | functionality, compatibility |
| traditional    | personification of connections and traditions | –                         | –                            |
| civil          | subordination of private interests to general | –                         | –                            |
| public opinion | based on famous and most attractive           | –                         | –                            |

|            | events                              |   |                           |
|------------|-------------------------------------|---|---------------------------|
| creativity | –                                   | – | –                         |
| ecologic   | harmonization with cycles of nature | – | protection of environment |

Observing the above matrix of institutional worlds, we can see it is unfinished and the criteria of specified subsystem (worlds) are heterogeneous and questionable. The issue of incompleteness becomes clear after reading the work of Thévenot "Various modes of coordination: balance and rationality in a complex world", in which he discusses the first two subsystems (commercial and civil) to explain specific phenomena of the proposed theory, such as "critical situation", "commercial agreement", "real (designed) actions" and "critical uncertainties". Other "worlds," he states pragmatically, indicate complexity of conditions and consequent unjustified simplification of economic reality and its reduction to perfect competition, where it is possible to achieve the general equilibrium.

This is an original theoretical concept, which attempts to analyze the mutual relations of different "worlds", that really exist and operate in economic reality, and to point out the complexity of economic behavior in modern conditions of exponentially growing changes. Also, there is a synergism (pluralism) of institutional subsystem, which maintains a dynamic balance of their relation and compromising reconciliation, which neutralizes possible expansion of individual subsystems at the expense of others. For a better understanding of the basic ideas of the French conventionalist-institutionalists, we "amended" these empty fields of stated matrix (Table 2).

Table 2

Amended matrix of institutional worlds

| subsystem name | coordination principle                        | order of things                      | dominant behavior                          |
|----------------|---|--------------------------------------|--|
| commercial     | market transactions                           | set of goods and services            | rationality                                |
| industrial     | standardization                               | set of standardized goods            | functionality, compatibility               |
| traditional    | personification of connections and traditions | set of reputations, trust and habits | respecting seniority and local obligations |
| civil          | subordination of private interests to general | collective awareness of obligations  | respecting collective awareness            |
| public opinion | based on famous and most attractive events    | set of media influence               | following                                  |
| creativity     | inspiration                                   | set of innovations                   | creative scientific-research               |
| ecologic       | harmonization with cycles of nature           | natural balance                      | protection of environment                  |

The above figures and tables are presented to show the great complexity of economic reality and its environment, i.e. to perceive the complex conditions in which individuals make their economic decisions by exercising choice. All these institutional systems are important factors influencing the economic behavior of particular individuals, where each one has its own norms and mechanisms of behavior, principles of coordination, types of arrangements, order of things, dominant behavior, objective world, information sources and the time dimension (orientation). Considering the above factors it becomes clear that the processes of market exchange are very different from hypothetical and abstract model of perfect competition, which uses neoclassical theory. It also suggests the conclusion that these are not the imperfections of the market per se, but characteristics of the complex economic reality in which all these institutional "worlds" act as realistic and pluralistic.

In social sciences, the term "institution" is used in a different sense. Interpretations vary considerably. There is no unique definition. The institute includes constitutional system of government, any legitimate social association, a collective belief and a way of behavior, rules of the game, where players are organizations and entities of domestic economy, rules of behavior known to all members of society, whose respect is provided by personal interests or external power, codification strategies to reach evolutionary equilibrium etc.

Generally D. North views institute as a foundation for functioning of the organization [10]. Economic institutes are regulators and coordinators of economic behavior, containing rules and mechanisms for successful implementation of economic activities. Draskovic states their primary functions: a) restrict behavior of economic agents, b) economize their time and efforts in making decisions, c) reduce transaction costs, d) help adapt to changes, e) minimize the risk, uncertainty and entropy, f) allow implementation, connection and coordination of economic relations, resources, subjects and activities, g) facilitate economic and interpersonal communication, and h) provide reliable protection against opportunistic behavior [13].

According to North, the main economic institutes (property, market regulation and state regulation) are supplemented with positive acts, which regulate rights, obligations and permitted forms of economic behavior, as well as sanctions for its violation. In addition, the same author insists on importance of institutions and institutional competition because institutional development has become one of the fundamental and universal progress criteria of civilization. It includes formed institutional environment (set of basic political, legal, social and other rules governing economic activity) and existence of institutional arrangements, stipulating ways of cooperation and/or competition between economic agents. Protection is especially important part of property institute and specification of property rights on resources and results of their use, because it is the basis of any economic activities and stimulus

assumption for effective use of resources. Draskovic describes them as defined, agreed and generally accepted patterns that govern human behavior and represent means for adaptation to the changes, minimization of entropy, risk and uncertainty [14].

According to North, institutes are "game rules" of society, ie. limiting framework determined by people, serving to organize and coordinate their mutual relations (behavior).

They provide driving motives of action among people in politics, economy and social sphere. This formulation includes economic and noneconomic institutes. If institutes were game rules, then the first fundamental question concerns the nature of these rules: are they completely external or not? What are the elements of this game rules? To what extent are these economic agents recognized and what impact is made on them?

Characteristically, North presents this concept in reversed order. Institutions determine formal (rules) and informal (norms and conventions) constraints, structural interaction between the actors, especially the organization. Institutions are not always aligned with the efficiency criteria, which denies them ability to reduce (but not eliminate) uncertainty in terms of mutual interaction between agents, a priori (but not systematically) rational and working for their own interest. During a collision of informal restrictions with new (exogenous) assumptions, as well as formal restrictions and interests of organization, changes in relative prices gradually change institutes, too. That way, individual economic entities expend resources to modify the rules. But they work on two logical levels: choice of rules and ways of their implementation.

To create a rational model, which connects these logically disparate areas (i.e. levels: rule selection and in accordance with them, selection and mode of rule application), conventionalists introduced the idea of rational action, which includes: a) political adjustment (or suitability) and b) common good criteria in society. Interactions within economy of conventions are represented not only as exchange of goods and information, but also as exchange of arguments.

The consensus theory has no conceptual boundaries, which methodologically provides for the argumentative criticism of neoclassical and neo-institutional rationality. Therefore, as well as for its multidisciplinary, it presents an alternative theory, since, instead of a thesis on the universality of market behaviour norms, it insists on the existence of the abundance of (reasonable) coordination forms and consensus types. Methodologically and terminologically, it is similar to neo-institutionalism, especially in part of limitations in economic behaviour and the pluralism of coordination forms, but there is also a difference in the originality of their interpretation, language expression and extremely wide range of motivation system.

Numerous mutual elements (terms, categories, economic imperialism and similar) such as norms, regulation, reasonable as a synonym for rational and



other, imply that the attempt to create an original concept appears rather as a substitute than as a constructive and paradigmatic theoretic alternative. Additionally, we cannot deny numerous descriptive elements of convention economy conceptual originality, nor can we dispute certain visible compilation reflections of neo-institutional economic theory (Table 3).

Table 3

**Similarities and differences in interpretation of institutes and conventions**

| differentiation criteria                     | neoinstitutionalists   | conventionalists  |
|--|--|---|
| basic concept                                | institute  | convention  |
| interpretation of basic concept              | formal and informal game rules, representing restrictions      | scheme of rule interpretation   |
| short definition                             | rules of behavior, agreement and its mechanical implementation | interpretation (implementation) of rules  |
| basic problem                                | coordination of actors (organizations)                         | harmonization of mutual expectations of actors, their coordination and reproduction                 |
| function                                     | coordination i regulation of reciprocal effects                | coordination and assessment of reciprocal effects   |
| goal   | meta-individual results  | harmonization of social autonomy with the idea that people act individually                         |
| way of expressing                            | form   | essence   |
| accent on                                    | rational behavior of economic agents                           | situationality and reasonable action that involves political perception and criteria of public good |
| reciprocal action of economic agents         | exchange of goods and information                              | exchange of goods, information and arguments  |
| evaluation of efficiency                     | reduce transaction costs                                       | logic of justification  |
| relationship to methodological individualism | rationality of individual agents                               | social essence  |
| relationship to Popper's three worlds        | objective content of thought                                   | state of knowledge – subjective and interpersonal qualities   |
| factor model                                 | institutes   | conventions-institutes-organizations  |

It seems though that the latter is much more consistent, more appropriate for economics and terminology, and more applicable in economic reality. Economy of convention provides useful tools for understanding the problems of institutional change. It allows understanding that institutes in general and economic institutes in particular, cannot develop or stabilize unless they are supported by "bottom-inside" at the organizational level, where the convention act as a generally accepted and where everyone shares the same forms and criteria of evaluation and behavior. Similarly, the sources of radical uncertainty, characteristic of post-socialist economies (often described as chaotic and limitless), should be sought in absence, or, to a lesser extent, in unclearly defined rules (of conduct).

The originality of the economy of conventions consists of understanding that empirical diversity of economic and non-logical institute is justified. Conventionalists believe that real markets, organizations and networks of economic agents coordinate by a complex set of conventions of a different nature. They go beyond the observation of the institute as a means of lowering transaction costs, i.e. minimization of losses. They believe that institutes form densely interwoven social network (environment), beyond which one cannot imagine the effect of economic agents. This means that institutes are not only simple intermediary of direct interaction, but their objective prerequisite and resource, which creates certain restrictions, on the one hand, and provides opportunities to more developed perspectives, on the other. As a result, a multidisciplinary theory of conventions is seen as a special and original paradigm in the analysis of institute.

Regardless of the previous statements, and for the purpose of the application in economic policy, it is important that the existence of norms, rules and conventions is not coherent with "universal" (essentially monistic and vulgarised) interpretation. It is about the neoliberal promotion of market and individual rationality and polarized orchestrated interpretation of state interventionism. Similar to neoinstitutionalists, conventionalists advocate for pluralistic mechanisms of coordination. They correctly imply that neither free market nor state intervention can or may be the only universal form of coordination. The cited conclusion is sufficient to evaluate the appearance and development of the economy of conventions positively from the aspect of possible influence on economic policy and economic development. Future theoretic discussions are yet to show how significant the contribution of theory of conventions is.

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# ECONOMIC GROWTH AND DEVELOPMENT: WHO CARES?

UDC 330.8

J. McNeill

In this article the author, an experienced, anthropologist who worked in Central and Eastern Europe, has studied questions of greed and need as they relate to economic issues. He has used the example of a growing ethical code in anthropology to suggest the need for ongoing development of ethical standards and practices in economics.

*Key words:* anthropology, matters of economics, human fallibility, ethical standards and practices, money influence.

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## ЕКОНОМІЧНЕ ЗРОСТАННЯ І РОЗВИТОК: КОГО ЦЕ ХВИЛЮЄ?

УДК 330.8

Дж. Мак Ніл

Автор цієї статті – антрополог з багаторічним досвідом роботи в Центральній і Східній Європі, розглядає питання жадібності і потреби, тому що вони пов'язані з питаннями економіки. Він використовує приклад етичного кодексу в антропології, щоб указати на необхідність постійного розвитку етичних стандартів і практик у галузі економіки.

*Ключові слова:* антропологія, питання економіки, схильність людини до помилок, етичні норми й практики, вплив грошей.

## ЭКОНОМИЧЕСКИЙ РОСТ И РАЗВИТИЕ: КОГО ЭТО ВОЛНУЕТ?

УДК 330.8

Дж. Мак Нил

Автор этой статьи – антрополог с многолетним опытом работы в Центральной и Восточной Европе, рассматривает вопросы алчности и потребности, так как они связаны с вопросами экономики. Он использует пример этического кодекса в антропологии, чтобы указать на необходимость постоянного развития этических стандартов и практик в области экономики.

*Ключевые слова:* антропология, вопросы экономики, подверженность человека ошибкам, этические нормы и практики, влияние денег.

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We have all heard or read reports of economic activity that are heavy with numbers and comparisons. Some of them even provide glowing reports of typical increases in material benefits being enjoyed. But these reports tend to be faceless, in spite of the news about average citizens X, Y, and Z. They do not tell us what is happening to real people, how the economic changes that are being reported affect the lives of actual human beings in their daily lives.

For me as an anthropologist, it is the lives of real individuals that are of central importance. For this reason I appreciate the distinction sometimes made between economic growth and economic development. Growth has been described as measurable quantitatively – for example more money, more production, a larger overall economy. Development, on the other hand, is qualitative, seen in such things as a better quality of life, development of human potential, and provision or maintenance of a sustainable and enjoyable environment. (Payne and Nassar 2008, 108) [1] Although some people suggest that economic growth will automatically produce development that benefits people, my experience suggests that is not necessarily the case.

Before proceeding with the discussion I need to provide some context. First of all, I am not an economist. In fact, my highest accomplishment in economics, to live within my means and debt free, would suggest to some people that I am from the economic Stone Age. My professional experience, however, has allowed me to observe economic and developmental activity in a rich variety of contexts. It is on the basis of this experience, and the observations it made possible, that I write.

My experiences have mostly been in Central and Eastern Europe, with a large part of that being in what I sometimes call the Former Soviet Union (abbreviated FSU). Being aware of local sensibilities, I trust that the use of this abbreviation will not be offensive to anyone reading this article. In the 1980s I began working in Central Europe and the present-day FSU as an educator, providing leadership training and other classes. By 1990 it became obvious that the system in the FSU was breaking down, and that, as a consequence, the groups I worked with were often too hungry to listen well. That led me to organize shipments of food (and also medicine through a doctor friend and the hospital she worked with) in tandem with my teaching trips. As I was living in West Germany at the time, it was relatively easy to gather donations of materials for shipment to the places where I was teaching, and to deliver them myself in a small truck. The food and medicine delivery part of my work was pure humanitarianism in both its better and worse senses, but because it was associated with leadership training and educational betterment, it did have a development dimension as well. In doing this humanitarian work I encountered many of the logistic problems associated with it, and found creative ways to solve them. That is another story.

Some of you may already be asking how this relates to economic growth and development. The definition of development as having a dimension of care for the quality of life of real people is the point of connection. Humanitarian or relief work, such as I briefly described above, has as one of its goals to decrease people's suffering and to improve their quality of life. At this point humanitarian work and development work share a very important central element, care for people. Unfortunately humanitarian work often cannot, or does not, contribute to any significant development, leading instead to a kind of dependence on, or addiction to, ongoing humanitarian help. A better approach to humanitarian work provides some input toward development and sustainability, thus increasing its overlap with economic development as a whole.

Crossing borders in Central Europe and the FSU with shipments of food and medicine exposed me to another form of economic activity: profiteering from the suffering of others. As time passed after 1990, various border officials in the region became increasingly greedy and adept at extracting bribes to allow the passage of humanitarian goods. This reached such proportions that by 1992 I had to give up transporting materials from Germany to the FSU. On my last trip I barely escaped arrest and imprisonment because I had not bribed the right people. At the time I had made a decision on principle not to use bribes. Were I to do the same work today I might reconsider the question of bribes, perhaps treating them as a necessary cost of doing business.

Experiences like the ones I described left me wondering about the role of greed in the realms of economic growth and development. Clearly fear and greed are two basic human motivations, and they do affect our economic activity as well. Just as border guards in Central Europe, motivated by greed, and perhaps also by need, found ways to profit from the humanitarian compassion that produced loaded trucks which rolled through their booths, humanitarian organizations and development projects can also be infiltrated by greed. When the chance for gain is high, greed can motivate; when the person "on the take" is likely to be caught and punished or shamed, fear may dominate. Excessive profit on the suffering of others is widespread. Cochrane describes some United Nations agency workers as "festival elephants" who supposedly serve the poor but actually live like kings. (Cochrane 2009, 16, 17) [2] Similar examples can be multiplied in a variety of contexts. Nor does religious conviction necessarily keep greed at bay. The controversy reported by Smith and Leonard includes a mix of Protestant religion, exorbitantly high salaries on the one hand, and at the other end of the social and economic scale, loss of income and livelihood. (Smith and Leonard, 2009) [3] The story they report raises the question of rapidly increasing and perhaps excessive compensation for CEOs, in this case in a humanitarian organization. But the question of executive "compensation" is not limited to a single type of organization. In fact, it has been in the news for a wide spectrum of organizations of all types.

The public perception is that executive compensation has greatly increased at a time when the pay for average workers in the same organizations has been almost stagnant or even diminished. Polly Curtis wrote an article in which she assumed the truth of a recent drastic increase in executive pay, and instead of questioning its reality moved on to ask about its cause. She described the British trend over the past 30 years that had produced an "earning gap between the very richest and the rest of society wider than at any point since Queen Victoria." (2011) Rasmus [4], writing in 2004 and from the perspective of labor union participation in the USA, described a

world in which the previous 40 years had produced almost no increase in an American worker's pay but a 20-fold increase in the average pay of CEOs. (2004) Gabaix and Landier [5] suggested that the increased size of the firms being managed, plus the perceived higher talent needed to work in these more complex times and companies, account for a significant part of this increase. (2008, passim) But this argument, in spite of the valid elements it includes, does not deal with the relative difference in pay between workers and CEOs. Rasmus [4] notes that in the USA, while workers have become significantly more efficient in their work since the 1990s, pay on the average has not reflected that improvement. In short, workers are not being adequately rewarded for real increases in efficiency, while CEOs are being hugely compensated for superior skills that may be more perceived than real.

Commentators on recent economic changes and the pay of CEOs often mention a cultural change which they say occurred in the 1980s: one that produced, for example, tax relief for top earners, and encouraged entrepreneurship. (Curtis, 2011) [6] None of these writers, however, mention a recent global development that may have significantly influenced the economic changes that followed. In the same decade of the 1980s we saw the decline and eventually the collapse of the Soviet Union, which was, in spite of its faults, the world's greatest icon. I use the word icon deliberately. The Soviet Union symbolized something that many people in other parts of the world admired and aspired to as more humane than the economic and social systems they knew in their home countries. Even in the 1980s the Soviet Union was still feared in the West, and, in spite of its inner inconsistencies, was taken seriously as an adversary of, and alternative to, Western capitalism. Representing an economic alternative to capitalism. Clearly Soviet economics were not all that their ideals suggested, but the system did represent, on the world stage, competition to capitalism. Just as business competition can contribute to price control, political competition may keep politicians from indulging their most extreme visions, and from making the most radical decisions that their ideology suggests. In the case of capitalism in the West, the presence of the Soviet alternative may have kept Western business and government leaders from indulging their most selfish dreams at the expense of workers, workers who might vote with their feet by moving toward more socialist political options along the Soviet model. The collapse of the Soviet Union removed a competitor for the capitalist system, and simultaneously publicly discredited, at least in many minds, the socialist ideas that the Soviet icon represented. As a result a serious rival to capitalism was removed.

If we accept that greed can be a significant motivation in economic matters, it follows that it could be helpful to have some counterbalancing forces to prevent greed from becoming dominant. I have written that perhaps the ideas of the Soviet system (what I have called the Soviet icon) provided one such check against unbridled greed in Western capitalism. But whether or not the reader accepts my Soviet icon notion – and I agree that it may be a bit unusual – we still, I suggest, need to have balancing forces at work to counter the powerful greed motivation that is often attached to matters involving money. In Christian teaching the statement from 1 Tim. 6:10 "the love of money is a root of all kinds of evil" is well known. Although it has been variously interpreted, it generally is not thought to mean that money and the making money is wrong. It is usually seen as a warning against excessive attachment to money and material goods, i.e. against coveting and greed. The need for such balancing forces suggests that human beings are subject to various motivating forces, and not always concerned about the good of others. This brings our discussion to the topic of anthropology proper: what is humankind?

Without getting into a technical discussion of human nature, I note that the idea of human fallibility is widespread in Western thinking. The framers of the US constitution were clearly influenced by this notion. They had lived through a period of economic exploitation at the hands of the more powerful British colonizers, and wanted to prevent something similar from happening again. Thus they devised a governmental system of checks and balances that has been described as "America's most significant contribution to government," despite the fact that it is widely recognized as not always having functioned as well as had initially been hoped. The system is designed to balance each of the three branches of government (executive, legislative, and judiciary) so that they are interdependent, and none of them is capable of dominating either of the other two. (Raphalides 1981, 40–41) [7] This system also has the potential to provide different, non-political interest groups in society with the means to prevent their being dominated by other groups with different priorities. It is interesting to note that this same country the (USA) has provided many fewer checks and balances for its economic activity. In fact, Morone [8] gives an example of how anti-trust laws, that were initially intended to protect workers and small businesses in their encounters with larger businesses, were turned by big business against labor unions in the 1894 Pullman strike. "In a fragmented system, full of checks and balances, it is difficult to alter the bias of the political status quo." (Morone 1990, 149) [8] The status quo in the USA seems to be to put as little control as possible on business activity, while checking and balancing politics at every turn.

Perhaps it is the inefficiency attendant upon checks and balances that makes them less attractive in the context of economics. Some of the results of these political checks and balances in the USA are, according to Morone, incoherent government organization and a fragmented state characterized by the pursuit of narrow self-interests. (Morone 1990, 9, 112) [8] This does not sound like the kind of environment needed for efficient economic activity.

The fact that economic activity in the USA is in need of some kind of "gatekeeping" has become obvious through several recent waves of business scandals in that country. Writing about 10 years ago Bert Ely described the enormous and ongoing cost of the 1980s American savings and loan scandal. He saw lack of competent government oversight as a major contributing factor, with criminal activity playing a significant but relatively minor role. (Ely n.d., passim) [9] The accounting scandals of 2002 in the USA were described as an "avalanche" so large that "it's getting hard to keep track of them all." There were so many of them, that when Penelope Patsuris

[10] made a list, she had to limit herself to the major ones, since "chronicling every corporate transgression would be impractical." (2002) In his 2005 analysis of corporate scandals in the USA, comparing them to similar events in Europe, Coffee noted rapid growth of stock options in the compensation package for American business executives. Having surveyed the relevant research he concluded that "there is a 'dark side' to option-based compensation for senior executives: absent special controls are absent, more options mean more fraud." This involves a coincidence of the selfish interests of company executives, who can cash in their options when share price is maximized, and minority share holders who desire a quick return on their investment. Coffee goes on to describe the attempt, with the Sarbanes-Oxley act of 2002, to deal with this "gatekeeper failure" (Coffee 2005, 8–11) [11] But, as the subsequent 2008 financial crisis demonstrates, the act, whatever good it has done, has not provided sufficient oversight to eliminate fraud and greed from the ranks of business in the USA. As Richburg [12] reports in The Washington Post, Canada with its more stringent supervision of banking did not experience the same banking collapse as in the USA. (2008) In the case of European-style corporate structure, where concentrated ownership is more common, a different approach is necessary to defraud the company. "The real conclusion is that different systems of ownership encourage characteristically different styles of fraud." (Coffee, 2005, 15) [11] Europe is not more morally upright than the USA; in both regions there is need for adequate gatekeeping to limit the effects of corporate greed.

When, earlier in this article, I mentioned my experiences crossing Central European and FSU borders with humanitarian goods, I hinted at the tension between greed and need. How much did the bribe-takers in their border uniforms act out of greed, and how much out of need? It is clear that people will do desperate things to provide for themselves and those who are dependent on them. Powerful elites, aware of basic human needs, have often attempted to assure a reliable supply of basics in order to keep their subject populations peaceful. But when is enough enough? This is very hard for each of us to answer on a personal basis, and impossible to prescribe for others, unless we use some kind of force to do so. It is, however, a question that takes us, gradually but surely, from the zone of basic provision of needs to the domain of greed.

One of the ways that humans have learned to deal with this problem area is through cooperation. If I am willing to share what I have with others, there is less likelihood that we will end up fighting over what I have. In order for a society to be a sharing one we need to be attentive to and cooperate with one another. While Marxism tried to enshrine this cooperation as a fundamental ideal and practice of society, capitalism also acknowledges its importance by elevating it in the form of benevolence or charity. Both recognize its importance.

In the field of anthropology, which is my specialty, we have experienced an interesting, century-long, moral struggle. While I hope, and am reasonably sure, that similar processes have been at work among economists, I have not experienced them first-hand and am, therefore, not competent to comment on them. What I do want to do is briefly describe the process that anthropology has gone through in the hope that it might shed some useful light on the topic of ethics as it relates to economics and development.

Anthropology and economics could be compared to toolboxes, with useful instruments and outcomes that can be broadly applied, sometimes in other disciplines and by non-professionals. Initially the fruit of anthropological research, i.e. cultural insight and detailed understanding, was often used by colonial powers to further their own agenda and exploit local populations. More recently, the fruits of anthropological study have, for example, been used by the US military to enhance their operations in such places as Iraq and Afghanistan. The anthropological profession as a whole has come to recognize, in such situations and others like them, that there is a great potential for abuse of insight and research outcomes to the detriment of relatively powerless people. For more than the past 50 years the profession has taken considerable pains to find ways to prevent abusive application of the results of its work. The fact that the abuses mentioned above are separated by more than a century makes clear that the struggle on the topic is an ongoing process, one that is far from complete, and will never see a definitive end. But it is a struggle that must never be abandoned.

In wrestling with the issue of use and misuse of its work, anthropology has continued to hone its ethical statements and sharpen its focus. In addition to obvious issues about full disclosure and confidentiality in research, American anthropologists have decided that "the primary responsibility of researchers is to the people with whom they work and whose lives and cultures they study." This is emphasized in the assertion that whatever other research responsibilities they may have are "always secondary to their responsibility to the study population." (Angrosino 2010, 71) [13] This strong stance in favor of the populations being studied represents a clear decision to try to prevent these populations from being abused as a result of research done in their midst. Knowledge is power, and professional anthropologists want to be sure that the power that is produced through their research does not come back to bite the very people in whose midst it originated.

It could be argued, with some justification, that the stakes in economic activity are higher than for anthropology and its often exotic research. After all, money makes the world go round, doesn't it? But who cares about the cultural practices of a small people group in the mountains of Afghanistan? And if they should be wiped out, because someone's army found out their secret vulnerability, well... too bad, but so what! Perhaps only the anthropologists care, and maybe not even they will mourn if they are paid well enough for their research. But if money makes the world go round, money can also derail the train of society on its tidy circuit around the world. I argue that while the immediate stakes in matters of money are probably higher than for anthropology, so too are the potential dangers. If one were to argue that money matters are too urgent to be constrained by ethical concerns, I would counter that the dangers are too acute not to have such constraints. If enough people become upset past a certain level about their own real or perceived economic disadvantage, the potential for social upheaval is enormous, with incalculable consequences. We need gatekeepers; greed can not be allowed free

rein.

All of us, in spite of our generosity and care for others, are also vulnerable to greedy impulses. We have our different ways to deal with these impulses individually, and we need to do so institutionally and socially as well. Living as we do in a tension between modernity and post-modernity, we are caught between the poles of modernity's self-alienation and the fragmentation of the self associated with post-modernity. (Jameson, 1993, 62-92) [8] Both alienation and fragmentation can weaken the personal bonds and social forces that, otherwise, might mitigate our mistreatment of others. Modern and post-modern people, faced with situations where they can be tempted to be greedy and abuse others, be that by physical force or using economics, are culturally weakened in their resistance to such a temptation. Faced with the question, how much is enough, we can easily conclude that we can never have enough. My experience suggests that the offspring of socialism are as vulnerable to this temptation as are the children of capitalism. This makes the need for ethical frameworks that guide our decision-making and limit our worst tendencies, and for gatekeepers to monitor compliance, even more urgent.

It might be easy to hide behind the argument that facts and knowledge in our scientific disciplines are objective, and neutral; in no need of the fuzzy thinking associated with ethics and morale. This is not the case. Facts can be very effective tools, like a scalpel in the hands of a skilled surgeon or the switchblade held in a cruel grip at the throat of a victim. Knowledge is power, and even if we are unaware of the fact, the powerful of the world would like to monopolize knowledge for their personal ends. Whether we like it or not, the moral and ethical implications of our professional study and research face us on all sides.

The ongoing struggle for ethical standards in anthropology illustrates the difficulty we face in elaborating and enforcing ethical standards. Problems, some of which are new every day, generally only become apparent to us through our experience. This obliges us to continually examine our experience with critical eyes and look for areas of abuse and related ethical problems. This will not always be easy, as a headlong rush toward progress and a thoughtful process of reflection are not always compatible. Those in our midst who are capable of critical reflection, rather than being shoved to the fringes, need to be given space and encouragement to work, and listening ears for their ideas and insights. To those who are interested in the epistemology behind my thoughts here I suggest further reading in critical realism found in Hiebert and Lauden listed in the bibliography. In wrestling with moral issues relating to the disciplines of economics and anthropology we will not find quick and easy answers along clean and precise modernist lines. But the Orwellian alternative of an elitist abuse of science should motivate us to not give up the effort. Our work will always be fuzzy, messy, incomplete. But this does not need to push us to hopelessness or postmodernist despair. Although our grasp of moral issues affecting our professions may be partial, it will grow as we work at it, adapting to changing conditions. We will see, even if partially and incompletely, our science at work helping in the process of caring for people.

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# SYNTHESIZED CAPITAL AND MODERNIZATION OF SOCIETY

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Definition of the category of "modernization" has been given, development of modernization school has been represented. It was found that in social sphere social and demographic aspects of modernization are described by the concept of "social mobilization", and in economic sphere they are accompanied by technological growth, the principles of which are scientific knowledge.

It has been proved that at the macro and mezolevels the capitalization process is seen as industrial consumption of the national income and regional revenue as a whole. It has been proved that capitalization is a system entity that provides increment of assets, both material and other ones, promotes growth of national economy, and as a general indicator of capitalization not only describes the state of management object, but also determines the rate of the economy growth as a whole, level of welfare and living standards.

It has been emphasized that the sustainable development of a country, a region, a company within modernization is possible due to capitalization, causing the processes associated with transferring synthesized capital, increasing relative value added. We suppose that capitalization should be seen as a strategic direction of country modernization.

*Key words:* synthesized capital, modernization, capitalization, knowledge management.

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## СИНТЕЗОВАНИЙ КАПІТАЛ І МОДЕРНІЗАЦІЯ СУСПІЛЬСТВА

УДК 005.336.4:330.341.1

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Подано визначення категорії "модернізація" та представлено розвиток школи модернізації. Встановлено, що в соціальній сфері соціально-демографічні аспекти модернізації описуються поняттям "соціальна мобілізація", в економічній сфері – супроводжуються технологічним розвитком, принципами якого є наукові знання. Доведено, що на макро- та мезорівнях процес капіталізації розглядається як виробниче використання національного доходу і доходів регіону в цілому. Доведено, що капіталізація – це системний об'єкт, який забезпечує приріст активів, матеріальних та інших, що сприяє зростанню національної економіки; також те, що загальний показник капіталізації не тільки описує стан об'єкта управління, але й визначає швидкість зростання економіки в цілому, рівень добробуту і рівень життя.

Підкреслено, що сталий розвиток країни, регіону, компанії в умовах модернізації став можливим завдяки капіталізації, яка обумовлює процеси, пов'язані з передачею синтезованого капіталу, збільшенням відносної доданої вартості. Автори вважають, що капіталізація повинна розглядатися як стратегічний напрям модернізації країни.

*Ключові слова:* синтезований аналіз, модернізація, капіталізація, управління знаннями.

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## СИНТЕЗИРОВАННЫЙ КАПИТАЛ И МОДЕРНИЗАЦИЯ ОБЩЕСТВА

УДК 005.336.4:330.341.1

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Представлено определение категории "модернизация" и развитие школы модернизации. Установлено, что в социальной сфере социально-демографические аспекты модернизации описываются понятием "социальная мобилизация", в экономической сфере – сопровождаются технологическим развитием, принципами которого являются научные знания. Доказано, что на макро- и мезоуровнях процесс капитализации рассматривается как производственное использование национального дохода и доходов региона в целом. Доказано, что капитализация – это системный объект, который обеспечивает приращение активов, материальных и других, что способствует росту национальной экономики; также то, что общий показатель капитализации не только описывает состояние объекта управления, но и определяет скорость роста экономики в целом, уровень благосостояния и уровень жизни.

Подчеркнуто, что устойчивое развитие страны, региона, компании в условиях модернизации стало возможным благодаря капитализации, которая обуславливает процессы, связанные с передачей синтезированного капитала, увеличением относительной добавленной стоимости. Авторы полагают, что капитализация должна рассматриваться как стратегическое направление модернизации страны.

*Ключевые слова:* синтезированный капитал, модернизация, капитализация, управление знаниями.

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At present in Ukraine, the processes of integration and globalization are deepening, as the impact factors of knowledge economy in all spheres of life have increased, and an innovative investment model of development has been formed in the state. Theorists and practitioners pay special attention to the modernization of the system that promotes renewal, recovery and acquisition of new features of the society; its economy must be competitive. Modernization provides qualitative restructuring of the society, which is determined by several factors, among which one should indicate the level of development and use of human, intellectual and social capital, synthesized capital components of the society. Thus, the research issues related to synthesized capital in the context of modernization meet modern challenges of national scientific thought, taking into account the fact that capitalization of synthesized capital can increase its overall value and be regarded as a means of modernizing the society, which reflects the importance and urgency of this work.

The works of foreign researchers who have begun to examine the issue of modernization in the twentieth century are devoted to this issue. The recent

works include the ones by George Burley, H. Bleklendu, K. Chinu, J. Meyshyonisu and others. In Soviet theory and practice, the research of this problem originated in the late 90's and continues up to these days. Modern works are presented in the writings by V. Golovko, G. Zelenko, E. Libanova, M. Mikhalchenko and others. The leading scientists have also initiated the case on modernization of the national economy, in connection with capitalization that will ensure growth and sustainability of macroeconomic indicators of socio-economic development of Ukraine. Despite the research results, modernization can be considered in the synthesis of human, intellectual and social capital, and with the view of the necessity to restructure the national economy and renew social modernization in Ukraine, it should be based on democratic principles and social responsibility, requiring consideration of constructing and modernizing society development model to create conditions for capitalization growth.

The above mentioned led to setting research objectives, which are to establish the scientific and theoretical principles of synthesized capitalization as a means of society modernization.

Target setting caused the following objectives:

- introducing a definition of the category of "modernization" and defining the stages of modernization school;

- defining the essence of synthesized capital and justifying its place in modernization of the national economy;

- proving that capitalization of synthesized capital is a means of society modernization.

Increasingly, the scientists, elaborating the category of "modernization", pay attention to its sense load. Most researchers agree that there is no single approach to the perception of modernization and it is considered through the prism of various scenarios for the future of every society and is associated with the emergence of a stable political, legal, democratic state with a high-tech economy and developed social sphere. Thus we consider that modernization should be regarded as one feature that should provide the most valuable impact on Ukraine's position in the global environment.

The classical works describing the theory of modernization are by Auguste Comte, Herbert Spencer, Marx, Weber, E. and F. Dyurkheymu Tonnisu. The most classical concepts of modernization are aimed at the formation of industrial society. Modernization is often viewed as a process parallel to industrialization, which is associated with the transformation of a traditional agrarian society into an industrial one, i.e. it is viewed in the light of transformation of the economy, technological weaponry and organization of labour.

The cycle of social science defines modernization as a process that provides the evolutionary transformation from traditional to modernized society that provides upgrading by operating evolutionism theories.

The scholars [1, p. 146] determine the existence of four stages of modernization schools' development: 1) the late half of 1950s – early 1960s – the period of birth and rapid growth of modernization processes' research, 2) late 1960s – 1970s – the critical period during which the concept has been established under the influence of critical perception of the modernization by the founders of the lagging theory (the dependent development), Microsystems Analysis (I. Valerstayn), neomarxist and 3) since the 1980s, there has been a postcritical period of regeneration of the research of modernization, when namely. "new modernization shtudiyi" appeared (E. Sow) – convergence trend of modernization schools, dependency and microsystems analysis, 4) the late 1980s – 1990s – formation of neomodernization and postmodernization analyses was significantly influenced by the grand transformation in Central and Eastern Europe and Eurasia. We believe that the development of our modernization school undergoes the fifth stage characterized by rapid changes in growth at the macrolevel (the system prior to the crisis of social and economic sustainability in the most economically developed countries, the crisis is accompanied by the aggravation of contradictions in society, increasing social transformations, change of social matrices con-

figuration), which corresponds to the postmodernizational analysis in the post-crisis period.

The scholars proposed a number of models, which stimulate the definition criteria of modernization and are formed on the principle of clarity of the society development. S. Eyzenshtadt, in particular, offers a linear model of modernization and identifies specific events and signs that accompany it [2]. Thus, socio-demographic aspects of modernization describe the concept of "social mobilization", and economic ones are accompanied by technological growth, the principles of which are scientific knowledge, that leads to a rapid transition from industrial to postindustrial society. The Principles of scientific knowledge are, in turn, processes of formation, accumulation and use of intellectual, human and social capital, that are synthesized components.

Handling the categories of "human capital", "intellectual capital" and "social capital" lies beyond the scope of a comprehensive approach, which leads, in our opinion, to the necessity of introduce the category of "synthesized capital" category introduction, which is generated by the country's human resources and accumulates the above mentioned types of capital.

Synthesized capital is owned by a person who, at the macrolevel, is seen through the prism of the country's human resources. On the one hand, taking into consideration the significant amount of people in a state, we can assume that labor has more capacious potential, that allows to consider it as less limited than others, provided that limitless resources do not exist. On the other hand, basing on the fact that people live, learn and work in different conditions, get and generate information in different ways, have unequal abilities, skills, creativity, we believe that the process of synthesized capital accumulation is uneven: it is more intensive in big cities with a greater number of higher educational establishments than in small towns and rural areas. Of course, this accumulation is exposed to certain logic: there is no targeted distribution of college graduates and there is low level of both tangible and intangible incentives to highly-qualified employees in small towns and rural areas, etc.

Capitalization, in its turn, is a complex and multiaspect category. Although the definition of capitalization as a process of surplus value transformation in "The Capital" proposed by Karl Marx and modern economic characteristics determine the newest view of capitalization and enlarge this notion. This is due to the fact that the evolution of society is accompanied by proliferation of the main capital goods representations. Along with land, labor, and capital the following component as human, intellectual and social capital emerged. Considering the issue of limited material resources and increase in their value in the world draws attention to these types of capital either separately or in a synthesized form. The fact that our society is in transition to the knowledge economy, when synthesized (human, intellectual and social) capital, embodied in technology and business processes, creates a framework to

increase the level of non-material production in the country.

According to the Dictionary of Economics capitalization is defined as transformation of surplus value into capital, calculation of property values for the income that it brings, converting income into capital, i. e. the use of income for business expansion, attributing costs to assets' capital growth, not the costs of the reporting period [3]. Focus on the transformation of surplus value into capital is at stake and the use of the revenue for business expansion, due to synthesized capital formation. Its efficient use is a subject of continuous development of labor potential (education, training, acquisition of competencies, learning), a framework for enhanced reproduction by increasing the cost of living and salaries, improving the regulatory and legal framework of the society.

At the macro-and mezolevels the process of capitalization is seen as production of the national income and income of the region as a whole. We assume that capitalization is an economic system that provides advanced rendering assets, materials etc. that promote the growth of the national economy [4, p. 90]. Capitalization as a general indicator does not only describe the state of management object, but also determines the rate of the economy as a whole, the level of welfare and the quality of life.

Thus, successful implementation of the country and its regions' development strategy predetermines the conditions for such capitalization, which provides the most efficient use of existing synthesized (human, intellectual and social) capital. The above mentioned issue has been embodied in terms of development strategy, particularly relating to the necessity of development and capitalization of human potential areas.

Contemporary domestic theorists and practitioners point out that Ukraine still maintains strong research complex, which includes 1378 scientific organizations of various subordination types and is capable of generating world-class results [5]. However, almost one fifth of this potential deals with foreign customers, and 90 % of financial resources stand for execution cost aimed at the development of technical science, industrial sector and support of institutions subordinated to the Ministry of Industrial Policy, i. e. domestic science generally provides intellectual services to other countries. The above state of national science results from insufficient funding of scientific and technical areas, low level of innovative activity, lack of motivation to use own human, intellectual and social capital effectively, as evidenced by the following data.

Thus, the costs per a scientist in Ukraine are almost 3 times less than in Russia and 70 times less than in the U.S.A. Research intensity of GDP, which is defined as the weight of the research and development cost in GDP, in Ukraine fell to 0,95 %. At the same time in the U.S.A. and Germany the figure is 2,7 % [5]. Taking into account that Ukrainian economy may lose its competitiveness in the Programme for Economic

Reforms in 2010 – 2014 the goal is to enhance innovation processes, as well as fully use Ukraine's scientific potential within the process of national economy modernization [5].

Owing to this, let us recall the tasks of the new public governance, country costs in particular, as a businessman determines company value, following the principles of social responsibility. This policy at the state level should ensure gradual growth of its prestige and raise the level of socio-economic indicators. Creation of this value at the state level provides development and effective use of human, intellectual and social capital, i.e. the development and effective use of synthesized capital of the country is at stake.

It has been suggested to trace capitalization of knowledge economy (only constant exchange of knowledge leads to the effective use of intellectual capital, which is closely related with the quality of knowledge management), delivered at the level of government, but the basis for transition to knowledge economy is initially formed at enterprises, and also regional and national levels. Thus, at the enterprise level knowledge is used to create intellectual property. In the process of knowledge management its inner organizational transfer, plays a crucial role: initiation, movement and integration included. The effectiveness of knowledge transfer is determined by the influence of factors depending only on the subject of knowledge, namely a man and his environment. The influence of each factor depends on the knowledge transfer phase [6]. Without any doubt one of the most important factors influencing the knowledge transfer is motivational support and trust of its owners and carriers, that provides effective personnel management. In addition, we emphasize that individual staff knowledge is transformed into organizational one in case of people socialization within the performance of common tasks, projects, etc. Therefore, the cycle of organizational knowledge circulation is proposed to be considered relating to express or implied knowledge of the staff. Circulation of organizational knowledge begins with investing in training, followed by formation, accumulation, storage, use, transfer and finishes with the reinvestment of funds gained from the successful exploitation of knowledge [6].

Thus, capitalization of knowledge that leads to an increase of added value due to the creation of intellectual property provides conditions for development and effective use of intellectual capital at the enterprise level.

Starting with microlevel intellectual property objects pass to the mezolevel, playing a leading role in the knowledge capitalization. All this is accompanied by accumulation of synthesized capital at the regional level, the use of which will create an effective investment and innovative model of regional governance, in which capitalization takes the central place.

Capitalization of knowledge at the macrolevel is provided by the research activity and intensity of the idea generation. But, above all, the intensity of the processes

that affect formation and use of intellectual capital is reflected in the increasing amount of intellectual property. For example, in postindustrial countries, the frequency of protective documents applications related to intellectual property objects in 2005 in Germany was 22,618.95, in the United States – 33,121.87, in Japan – 21,989.49. In comparison, in 2005 in Ukraine there were 7,034 applications. The share of sales of innovative industrial products in total sales volume in postindustrial countries was as follows: in Germany – 19,7 %, in the UK – 19 %, in Italy – 18,3 % in 2005. In Ukraine the figure was 4,67 % [7]. These data confirm the existence of extensive approach to the development and use of intellectual capital of the nation.

It should be noted that the current processes that take place in the world and affect the environment of Ukraine, are connected with the global factors that ensure its integration into the global environment. It is stated in the Strategy for Economic and Social Development of Ukraine for 2004 – 2015 survey "Through European Integration", which sets the main priorities of foreign public policy, proposes certain benchmarks and appropriate measures that can help to speed up the integration into the global economic system. The question about the urgency of the domestic enterprises, organizations and institutions adaptation period to the requirements of the integration environment still remains open. To speed up these processes it is necessary to develop and use the adaptive model of economic mechanisms as an inherent part of capitalization.

In turn, when determining the configuration of the socio-demographic factors of modernization, capitalization should be one of its factors, and, therefore, it is appropriate to consider capitalization as a strategic direction of Ukrainian development within the postcrisis period.

Existing problematic factors and analysis of their effects justify the need to determine copyright claims, to provide efficient after-the-crisis modernization.

We propose the following:

- accumulation of synthesized (human, intellectual and social) capital of the country, followed by its distribution and redistribution;
- creation of conditions for capitalization of synthesized capital (e. g. capitalization of knowledge, that forms intellectual, human and social capital);
- a framework for the transformation of synthesized capital into geo-economic capital of the country;
- improvement of labor market control and regulation to ensure efficient allocation and reallocation of synthesized capital in postmodernization conditions;
- a socio-economic mechanism of efficient use of synthesized capital in postmodernization (this mechanism includes state, market and organizational impact levers in the process of synthesized capital formation, the efficiency of which is determined by capitalization).

Considering the above mentioned in order to provide the socio-economic development of a country in the modernization conditions it is necessary to focus on distribution and redistribution of synthesized capital to achieve the uniformity of its accumulation and,

consequently, the development of rural and other "unsightly" areas (administrative-territorial reform in Ukraine provides integration of the communities and "unsightly" areas by reorganizing the corresponding items), promotion of regions and countries innovation development in general, creation of conditions for the intellectualization of labor at all, not only of top or "branded" enterprises of Ukraine. Efficiency of synthesized capital, as noted above, is determined by capitalization, calculation methods of which are presented at the company level. At the mezo-and macroeconomic level the index method that will identify trends of synthesized capital use can be applied.

Conclusion. Thus, continuous development of a country, region, an enterprise within modernization is subject to capitalization, causing the processes associated with transfer of synthesized capital, increasing the relative value added. We believe that capitalization of synthesized capital should be seen as a means of modernization of the society and should lead to:

- accumulation of synthesized (human, intellectual and social) capital of the country, followed by its distribution at the national level (creation of national and regional integrated structures, which may include universities);
- provision of conditions for the transformation of synthesized capital into geo-economic capital of the country, which should ensure efficiency creating both innovative models of an enterprise development and socio-economic development of a country.

Considering the author's calculations along with updating capitalization of synthesized capital enables to specify strategic directions of development towards sustainability of socio-economic configuration through modernization.

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# DIVERSIFICATION: THE SYNERGETIC EFFECT OR THE MULTIPLIER OF COMPLEMENTARY

UDC 338.33

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The synergistic effect of the conglomerated diversification at the enterprises is investigated. Herein the existing methods of calculating the synergistic effect are reviewed and it is shown that it is impossible to use them for pre-calculating the synergistic effect in combining the enterprises. A supposition that the synergistic effect occurs when there is a complementary relationship between goods and services produced by the combining enterprises is substantiated. A fundamentally new approach for determining the synergistic effect based on the multiplier of complementarity is proposed.

*Key words:* conglomerate diversification, synergistic effect, strategic management, multiplier of complementarity, effectiveness of diversification, discount method.

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## ДИВЕРСИФІКАЦІЯ: СИНЕРГЕТИЧНИЙ ЕФЕКТ АБО МУЛЬТИПЛІКАТОР КОМПЛЕМЕНТАРНОСТІ

УДК 338.33

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Досліджено синергетичний ефект під час проведення конгломератної диверсифікації на підприємствах. Розглянуто існуючі методи розрахунку синергетичного ефекту, показано, що на їх основі неможливо заздалегідь розрахувати синергетичний ефект при об'єднанні підприємств. Обґрунтовано припущення, що синергетичний ефект виникає при наявності комплементарного зв'язку між товарами і послугами, які випускають підприємства, що об'єднуються. Запропоновано принципово новий підхід визначення синергетичного ефекту на основі розробленого мультиплікатора комплементарності.

*Ключові слова:* конгломератна диверсифікація, синергетичний ефект, стратегічне управління, мультиплікатор комплементарності, ефективність диверсифікації, метод дисконтування.

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## ДИВЕРСИФИКАЦИЯ: СИНЕРГЕТИЧЕСКИЙ ЭФФЕКТ ИЛИ МУЛЬТИПЛИКАТОР КОМПЛЕМЕНТАРНОСТИ

УДК 338.33

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Исследован синергетический эффект при проведении конгломератной диверсификации на предприятиях. Рассмотрены существующие методы расчета синергетического эффекта, показано, что на их основе невозможно предварительно рассчитать синергетический эффект при объединении предприятий. Обосновано предположение, что синергетический эффект возникает при наличии комплементарной связи между товарами и услугами, которые выпускают объединяющиеся предприятия. Предложен принципиально новый подход определения синергетического эффекта на основе разработанного мультипликатора комплементарности.

*Ключевые слова:* конгломератная диверсификация, синергетический эффект, стратегическое управление, мультипликатор комплементарности, эффективность диверсификации, метод дисконтирования.

Diversification and the synergistic effects are the core interest aspects in contemporary economics. A vast number of scientific papers are dedicated to further studying of synergism and diversification issues – that certainly come as no surprise, as the very purpose of achieving synergistic effect that serves as the basis for economic decisions made in the area of diversification as the strategic goal of business development. In most cases synergism is regarded, first and foremost, as the process of amplifying the efficiency of using the company's resources.

I. Ansoff remarked that the primary goal of diversification was to attain the synergistic effect. The same point was emphasized by F. Trotwein, who used to say that the majority of practical recommendations found in various business administration literature regarding company acquisition held true only when the synergistic potential is fully realized.

Scientific investigation into the nature of synergistic effect is reflected in a number of papers by both Ukrainian and foreign researchers. A considerable contribution in developing separate theoretical and methodological foundations of the concept of synergistic effect was made by such scientists as: D. Aaker, I. Ansoff, E. Campbell, Druzhynin A. V., W. Gregor, Golovina G. P., H. Itami, Lyakhov A. V., Neil V. K. Harper, E. Struk, Tereshchenko O. O. and a great number of others.

The purpose of this paper is to unify the worldwide experience in implementing diversification, as well as to single out and justify the most influential factor in terms of determining the success of diversification.

The basic premise behind the synergistic effect states that producing multiple types of goods within a single well-integrated enterprise is much more profitable than creating the same goods separately in smaller-scale specialized enterprises – meaning that it integrally follows the process of their diversification. However, this is not a universally established correlation, although it can be applied to many enterprises of various types [1].

Those who study the synergistic effect say that, among the best business administration strategies utilized by successful companies, diversification is in the lead. Businesses that managed to undergo effective diversification do not only survive as a result, but also can

significantly increase the profits of their shareholders [2]. However, the questions of when and how this strategy should be deployed are left unanswered.

Conversely, unneeded diversification can inflict major financial damage on businesses. After numerous studies D. Aaker arrived at the conclusion that within the first months after a takeover was announced, the "target" company's share value increased by an average of 22 %. But in 60 % of cases such takeovers caused substantial diminishment of a company's net worth – most of the time for a term of up to 12 months [3].

E. Struk concluded that 70 % of mergers and takeovers couldn't actually achieve the synergistic effect intended [4].

Let us look more closely at the most famous occurrences of diversification gone wrong.

In 1994 p. Quaker Oats company purchased the rights to produce the "Snapple" soft drink for 1,6 billion dollars. Acquisition of The Learning Company – the developer of popular children development systems (such as "Reader Rabbit", "Learn to Speak" and "Oregon Trail") – by the Mattel corporation, a renowned manufacturer of children's toys (Barbie dolls in particular), was a perfectly logical step. However, only half a year after the 3,5-billion-dollar deal Mattel passed its ownership of The Learning Company, virtually giving it away, simply to rid itself of the expenses that were piling up.

Another example would be the conglomerate created by Sears through acquiring the Coldwell Bankers real estate agency and the Dean Witter broker company in order to add them to their insurance firm Allstate Insurance, Allstate Savings and Loan, as well as 25 million active users of the company's payment system. However, Sears never managed to utilize the synergistic effect properly: the merger caused all of the top experts on mortgages and banking at Dean Witter to quit, as they were dissatisfied with the company's corporate culture [3].

The experience of Italian Fiat Group is a textbook example of unsuccessful integration during the conglomerate diversification. Until the early 2000's Fiat held sway of the European market of automobiles and had an annual goal of 4 million vehicle sales well within its grasp. Market analysts name unsuccessful diversification as the primary reason behind the company's ensuing

failures, as the process was characterized by needless dispersion of its resources and assets. Its disjointed inconsistent investment activities (investing in Italy's banking, insurance, chemical and aerospace industries, media and telecommunications, as well as defense) prevented allocation of additional funding to the company's primary segment – automobile production. Logically, a decrease in the quality of vehicles followed, and as a result – a drastic downfall in sales [5].

The merger of Daimler-Benz and Chrysler was meant to result in a significant synergistic effect. However, the burden of accommodating two vastly different organizational structures, systems and cultures under unified management not only proved to be too impractical to carry out, but also produced additional problems. The following steep and rapid decrease in market value of the newly established company group exceeded 36 billion dollars that Daimler-Benz had paid for acquiring Chrysler.

There are many similar examples. For instance, Avon suffered a fortune in financial losses after acquiring Tiffany & Co and the perfume company by the name of Giorgio Beverly Hills, partly due to overpaying for both of them. The same can be said with regards to the acquisition of Snapple by the Quaker company and a plethora of other cases [3].

Financial giants, like American Express, BankAmerica Corp, Citicorp, Merrill Lunch, Prudential and Sears Roebuck reacted to the changes in economic environment of the 1970 s and 1980 s by undertaking a wide diversification of their activities. Achieving synergism through diversifying their range of services (from banking to insurance and credit card services) was their main purpose. Researchers state that the results attained by those six companies were quite humble and none of them managed to outperform their more specialized competitors during the period of 1977 – 1986. The companies that allocated the most resources and management efforts to achieving the synergistic effect failed as a result, proving themselves unprofitable and strategically inconsistent where the new areas of business were concerned.

Diversification undertaken by those companies through breaking into banking and investment spheres yielded profits that were below the average industry standard. For example, profits on the assets of those corporations that had undergone diversification averaged 10 % less than they were four years prior. Additionally, profits on investment capital decreased by 24 % [6].

Thus, the question arises as to the reasons behind unsuccessful diversification. The assumption that the management of the above-mentioned companies had simply acted baselessly, on intuition, with no reference to fundamental economic research done by in-company specialists and external consultants, would be shallow and inadmissible. It would also contradict the conventional practice of commissioning economic studies to various research groups based on several reliable methods of assessing diversification. Let us analyze the most widely used methods for evaluating the synergistic effect of diversification. It worth noting that they do, in fact, have one characteristic in common – that is, virtually all

scientists assert that these methods cannot reliably predict the synergistic effect.

For instance, A. Druzhynin remarked that the synergistic effect on enterprise level can be assessed only by using the data about its functioning, the result of interaction between four types of synergy: sales, investment, management and general efficiency, which define the structure of any company's economic activities [7]. We hold the view of synergy as an integral concept, capable of manifesting itself through different types of business activities. However, the impossibility of evaluating the synergistic effect preliminarily has been confirmed through both theory and practice.

M. Porter asserted in one of his articles that the only successful diversification strategy was the permitted generalization and unification of a company's practices, as well as a carryover of skills from sphere to sphere.

Economics researchers suggest different methods for quantifying the synergistic effect. The overall effect from carrying out the diversification strategy, which includes the synergistic effect that demonstrates itself in income increase and cutting of current costs due to the expansion of business activity, can be expressed with the following formula:

$$E_{3ard} = \sum_{t=1}^{T_d} \frac{[(\Delta\Pi_{dt} + K_{dt} + A_{dt}) - (B_{dt} + \Pi_{dt} + EB_{dt})]P_t}{(1+r)^t} - \left(1\right) - \sum_{t=1}^{T_d} \frac{\Pi K_{dt}}{(1+r)^t} + \sum_{t=1}^{T_d} \frac{EB_{dt}}{(1+r)^t},$$

wherein  $\Delta\Pi_{dt}$  is the increase in income (revenue) through the realization of the diversification strategy, received in the 1st-year due to the expansion of production, thousand hryvnias;

$T_d$  is the term of applying the diversification strategy (the impact of the diversification factor), years;

$K_{dt}$  is the bank credit opened in the 1st-year, which is necessary for diversification, thousand hryvnias;

$A_{dt}$  is the annual amortization cost for the 1st-year, due to installation of new equipment needed for diversification, thousand hryvnias;

$B_{dt}$  is the current expenses in the 1st-year on producing additional goods as a result of diversification, thousand hryvnias;

$\Pi_{dt}$  is the income tax on revenue from diversification, thousand hryvnias;

$EB_{dt}$  is the interest rate for the credit that was needed for diversification, paid in the t-year, thousand hryvnias;

r is the discount rate, adjusted for possible inflation, %;

$P_t$  is the amount of credit due in the 1st-year, thousand hryvnias;

$\Pi K_{dt}$  is the probability of selling the newly manufactured goods as a result of diversification (the probability of acquiring the revenue planned);

$EB_{dt}$  is the savings on current costs that arise due to lowering the share of quasi-fixed costs; possibly, the

new goods are created in the same facilities using the same equipment, kept in the same storage rooms and handled by the same personnel as the "usual" products, thousand hryvnias [8].

The revenue approach to assessing a company's value consists of several methods, discounted cash-flow, or DCF-method being the one that is most frequently used. The discounted cash-flow method is based on the concept of current value of the assessed company's future revenue stream, broken up in separate periods [9]. According to it, the value of any company can be calculated through applying the following ratio:

$$V = E + D = \sum_{i=1}^{\infty} \frac{FCF_i}{(1+r)^i}, \quad (2)$$

wherein V (Value) – the value of the enterprise in question;

E (Equity) is the current cumulative value of a company's shares;

D (Debt) is the short-term and long-term debt owed by a company;

i is the number of years;

FCF (Free Cash Flow) is the free revenue stream of the enterprise in the 1st-year;

r is the discount rate [10].

According to DCF, the actual value of a company equals the sum of all costs it will generate in the span of its existence. The discounting formula is as follows:

$$NPV = \sum_{i=1}^n \frac{CF_i}{(1+r)^i}, \quad (3)$$

wherein q is the discount rate;

CF is the cash flow in the 1st-year [11].

As to assessing a company's market worth, traditional approaches usually disregard the possibility of management taking flexible measures in the changing the indefinite internal and external environments. Those conventional ways have their particular limitations. For instance, when using the expense approach, it is common to face the following contradiction: if the assessment of net assets shows that company's value deteriorates into negative numbers, the market price of its shares can still remain very high in spite of this.

At the same time, income-orientated approaches are prone to underestimate the value of those enterprises that operate under very dynamic and uncertain market conditions. This leads to the objective necessity to formulate new methods of assessing the value of businesses – ones that would take the dynamic development and the investors' expectations into account. Real options valuation method, or ROV, is one of them.

The preferred models to use in the context of the real options valuation method are the binomial model and the Black-Scholes model. At the moment ROV has not yet been universally recognized, so its capabilities and possible application are a subject to heated debate.

It's worth noting, however, that the real options valuation method offers something that other methods don't – the ability to evaluate the relevance of various management strategies and the potential of a company to perform effectively under changeable economic conditions. This, in turn, facilitates in obtaining a more objective assessment of an enterprise. The amount of attention paid to ROV by experts on business analysis warrants the conclusion that it broadens the possible applications in business environment of the data obtained through such evaluation. According to the real options valuation model, the value of a company is represented by its call-option, which is in turn comprised of the company's assets and liabilities.

The Black-Scholes dynamic model is especially relevant when attempting to assess the market worth of a company with assets and liabilities that fluctuate in value and permit a quantitative comparison. The real options valuation method based on the Black-Scholes model can also be used for evaluating commercial banks, because their assets and liabilities are often virtually equal to the way such businesses operate – mainly, by taking in external capital. Under present conditions this particular model is often used for business evaluation.

Unlike many of the more traditional approaches, the options method is not as time-intensive: collecting and processing a great volume of financial data is not required. For this reason it becomes an instrument of choice for conducting express-analysis of banking activities, particularly when a shift in the financial market occurs or a typical management decisions are made. Obviously, if one can accurately monitor the dynamic of changes in the value of a bank, one can also draw conclusions about the results of its activities [12].

The majority of methods mentioned above are built on the use of discounting. However, this approach dictates that all variables are very time-dependent. Which means it's extremely difficult to assess how much time it is actually going to take for the synergistic effect to manifest itself. This period can take anywhere from a couple of months to several years – which means that these methods are very approximate and have limited predictive value. Moreover, various researchers have come to a unanimous conclusion that the synergistic effect cannot, in fact, be pre-calculated, and can only be identified post-hoc, after a considerable amount of time has passed. Thus, the famous formula by I. Ansoff can be interpreted as "x=5-(2+2)". Precisely because the synergistic effect is so resistant to preliminary assessment we can observe so many cases of diversification gone away.

Let us revisit the above-mentioned examples. Obviously, the methods we have described so far fail to take into account a substantial factor that it is important for achieving additional – beneficial – economic effect. In our opinion, this factor is the complementarity effect. Truly, not a single case of mergers and acquisitions described above occurred between enterprises producing complementary goods – such that would add to the value and function of one another. Moreover, the management systems of those companies proved impossible to unify

for the purpose of using their cumulative experience and know-how's. It would seem that combining Daimler-Benz and Chrysler under a single management was doable, but their products (automobiles) were substitutes of one another, and not complementary goods. Thus, we can assert that the complementarity factor is one of the defining elements that determine whether diversification process will end in success or failure. We don't necessarily mean the complementarity of products and services, but also supply and sales structures, as well as management models.

The idea of incorporating the concept of complementarity into diversification strategies was first suggested by the Japanese scientist H. Itami. He described the synergistic effect as consisting of two elements – the complementarity effect and the synergy itself. He maintains that the complementarity effect arises when material assets are used, and it strives to fully utilizing the resources available, whereas the synergistic effect uses the intangible resources and assets [13]. From our point of view, the concept of complementarity becomes too narrow if formulated like that, which can lead to grave mistakes when implementing diversification.

Diversification is, basically, a business survival strategy. When one industry is in crisis and the other is not, or when drastically different levels of industry profitability exist. Complementarity assumes something different – coherency in the final goal of production. Synthesizing these two approaches in the manner of integration (enterprise agglomeration) can yield a positive synergistic effect. Pure diversification that doesn't take complementarity into account may prove unprofitable. Of course, complementarity itself can have a very general interpretation, even in the "industry-banking" system. In other words, complementarity is the source of synergistic effect.

The most vivid example of the complementarity effect taking action (at least in the automobile industry) is that of Volkswagen Käfer model. Its sales didn't start off very well in USA until the company made an ingenious advertising move. Volkswagen Käfer was marketed as the second household car, or "the wives' car". Thus, the Volkswagen management made their car complementary to all the business-class vehicles of any other brand. Volkswagen became one of the most popular car brands, and the rest is history.

Let us look at another two closely related businesses that underwent an unsuccessful merger. General Foods, a canned goods manufacturer, bought Burger Chief – a fast-food chain comprising 700 restaurants. It would seem that the companies could find common ground, both of them operating in the food industry. However, the complementary connection simply wasn't there – canned goods and restaurant business didn't have a common link, save for using famous brand names. Therefore, the synergistic effect could not occur. Conversely, Yamaha provides an example of two radically different industries – motorcycles and musical instruments – synergizing exceptionally well; they do have a certain complementarity: many bike aficionados also feel

passionate about hard rock and heavy metal music.

Therefore we assert that the complementarity criterion is essential when determining the necessity of diversification of goods or services – and success thereof. Enterprises don't have to operate in similar industries: for instance, a car manufacturer can break into the market of motor oils or tires. In such case, in spite of many differences in production areas and technological aspects the complementarity effect will be achieved and such a conglomerate will prove sustainable.

For more reliable preliminary calculations of the synergistic effect that is expected from diversification, we suggest using a multiplier as our chief instrument. Multipliers are used primarily in macroeconomics and are almost never applied to microeconomics and strategic management. In our opinion, there are historical reasons for this; as I. Ansoff, the founder of strategic management, defined his attitude to macro- and microeconomics "Microeconomics as the primary part of economic theory that formulates the goal of profit-maximization – did not take on a more generalized interpretation for two reasons. Firstly, it is a stable theory that only holds true under the conditions of equilibrium, and therefore provides for no differentiation between short-term and long-term perspectives. Secondly, in the microeconomic theory there is no distinction between investments that yield current and future revenue" [14].

Such a negative position resulted in abandonment of the functional mathematical apparatus developed within this theory, as it was considered useless for the purposes of strategic management.

We suggest using the multiplier for preliminary assessment of the impact of diversification based on the indicator of cross-elasticity of goods X, Y.

$$E_{xy} = \frac{\Delta Q_X}{Q_X} \div \frac{\Delta P_Y}{P_Y}, \quad (4)$$

wherein  $Q_X$  is demand for product X;

$P_Y$  is a price of product Y.

It is impossible to use the elasticity coefficient directly. The problem, apart from its value becoming negative when evaluating complementary goods, is also its ability to equal less than one or more than one – regardless of the goods in question. Based on the elasticity coefficient, we suggest introducing the complementarity multiplier ( $M_k$ ) that would equal more than one for complementary goods, one – for goods independent of each other, and from zero to one – for substitute goods. With some degree approximation, it can be achieved as follows:

$$\text{if } E_{xy} < 0, \text{ then } M_k = 1 - E; \quad (5)$$

$$\text{if } E_{xy} > 0, \text{ then } M_k = 1/(1+E); \quad (6)$$

$$\text{if } E_{xy} = 0, \text{ then } M_k = 1. \quad (7)$$

Thus, in case of a company merger, a preliminary assessment can be conducted to find out if the demand for goods will increase: the existing demand is multiplied by the complementarity multiplier. However, an important nuance must be considered – cross-elasticity of demand is often asymmetrical. This means that oftentimes raising

the price of product Y will lead to product X decreasing in demand; on the other hand, upping the price of product X can have no effect on the demand for product Y, or affect it disproportionately. Cars and petrol are a good example: decrease in car prices automatically causes the demand on both vehicles and fuel to go up. Conversely, increasing the petrol prices may lead to compact, fuel-efficient cars becoming more popular. The Giffen paradox can also affect the formula.

The multiplier we suggested can be appropriately used to assess pairs of goods: every product or service of an existing business is compared to that of an enterprise, which is acquired or merged with it. Then the cumulative effect is analyzed and a synergy check is performed; it is estimated, whether the synergistic effect will occur as a result of a merger or acquisition. If the projections for possible profit exceed the combined value of two products sold by both enterprises, it means that synergy is possible. If not, then a further re-evaluation of the diversification strategy – its relevance and sustainability – is needed.

Of course, the approach suggested in this article can't give a 100 % accurate answer – simply because adequate statistical data for measuring cross-elasticity aren't always available. One often has to resort to the method of expert assessment. In addition, a number of nuances need to be considered in calculations that are related to cross-elasticity. Undoubtedly, the complementarity multiplier alone can't compensate for lack of standard financial analysis of all those indicators that are relevant for assessing diversification. If we account for the complications that come into play when using the complementarity multiplier, we can arrive to the conclusion: it were used for evaluating the above-mentioned cases of failed diversification, it would become abundantly clear that none of them could have achieved the synergistic effect, even in theory. The impending failure of diversification process in all of the previous real-life examples could have been identified well in advance.

Thus, we have offered a new criterion of evaluating the relevance of diversification for a company based on the complementarity multiplier. Utilizing it will enable businesses to avoid significant financial losses due to erroneous managerial decisions with regards to diversifying their enterprises.

This multiplier has been developed and tested for assessing concentric diversification. Nonetheless, from our point of view, it can be applied successfully to predict the economic effect of other types of diversification. We intend to make it the subject of our further studies. The complementarity multiplier can become an effective instrument of assessing the economic value and relevance of diversification for a company. In our opinion, for the purpose of predicting the synergistic effect, it provides the best and the most precise results to date.

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# PROBLEMS AND TERMS OF THE IMPLEMENTATION OF OPTIMAL FLOW PROCESSES MANAGEMENT

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The relevance of the logistics concept while dealing flow processes optimal control problems of industrial enterprises has been discussed in this article. The notion of "variability" has been proposed as the fundamental reason of inconsistency. The current management of an enterprise should take into consideration integration and innovation aspects of economy, as well as it should be based on consistency and compliance of flow processes of an enterprise. The conditions for implementation of optimal (logistics) management of flow processes have been outlined.

*Key words:* flow processes, management, logistics, logistics supply chain.

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## ПРОБЛЕМИ ТА УМОВИ РЕАЛІЗАЦІЇ ОПТИМАЛЬНОГО УПРАВЛІННЯ ПОТОКОВИМИ ПРОЦЕСАМИ

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Розглянуто актуальність використання концепції логістики при вирішенні проблем формування оптимального управління потоковими процесами промислових підприємств. Досліджено причини неузгодженості потокових процесів.

Запропоновано використання поняття варіабельності як фундаментальної причини неузгодженості процесів. Показано, що сучасне управління підприємством

повинно враховувати інтеграційно-інноваційний аспект економіки, базуватися на узгодженості та відповідності потокових процесів підприємства і носити попереджувачий характер. Окреслено умови реалізації оптимального (логістичного) управління потоковими процесами.

*Ключові слова:* потокові процеси, управління, логістика, логістичні ланцюги поставок.

## ПРОБЛЕМЫ И УСЛОВИЯ РЕАЛИЗАЦИИ ОПТИМАЛЬНОГО УПРАВЛЕНИЯ ПОТОКОВЫМИ ПРОЦЕССАМИ

УДК 658.71

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Рассмотрена актуальность использования концепции логистики при решении проблем формирования оптимального управления потоковыми процессами промышленных предприятий. Исследованы причины рассогласованности потоковых процессов. Предложено использование понятия вариабельности как фундаментальной причины несогласованности процессов. Показано, что современное управление предприятием должно учитывать

интеграционно-инновационный

аспект экономики, базироваться на согласованности и соответствии потоковых процессов предприятия и носить упреждающий характер. Очерчены условия реализации оптимального (логистического) управления потоковыми процессами.

*Ключевые слова:* потоковые процессы, управление, логистика, логистические цепи поставок.

Current integration tendencies in Ukrainian economy are defined by inner logic of market transformations combined with globalization of international economic relations. Readiness of a society for international cooperation forces each business entity to organize its activity so that to correspond to international standards and to ensure an appropriate level of competitive capacity.

Therefore the creation of Integration systems is becoming more and more acceptable. Integration of organizational, technological, economic, informational processes aiming at their optimization is known to be the key-note of logistics. Modern logistic tools make it possible to resolve existing contradictions in Ukrainian economy by means of consolidation of business structures into a unitary efficient system. S. Naglovsky, who had particularly described the practicability of integrated structures, emphasized their ability to smooth down contradictions, to solve problems that were impossible to sort out separately and to achieve new effects due to their consolidation.

In the course of development and transformations of economic terms a lot of enterprises face the need to improve their economic structures. Thus, the main goals they have to achieve are to increase efficiency of internal resources use as well as to adapt to variable external conditions.

Distribution and delivery of goods are becoming the weakest point in modern industrial society. The negative factors defining these processes are as follows: the uneven and inadequate level of transportation links in different regions and poor service level in the field of production goods and services automation.

Thereby, there is untapped economic potential concerning the advanced level of technics and production technology in comparison with the level of infrastructure development, where the distribution processes dominate.

Particularly, the final stage of goods' transferring from manufacturers to customers within mediation service (when profound transformations are impossible) appears to provide the main potential for saving time and money, what determines the expediency and relevance of logistics as a science.

When dealing with problems of optimal enterprise management as a scope of flow processes, logistics plays a significant role regulating relations between an enterprise and the raw material market on the one hand and an enterprise and the product market on the other hand. The possible way to reach the optimal (balanced) management of enterprise development is to allocate the flow processes movement design through the logistic system formation [1].

Considering the current stage of economic development Ukrainian enterprises are implementing new information management systems along with business

reorganization, introduction of specialized systems providing labour productivity and production management, etc. in order to ensure more efficient management of flow processes. However, these measures are half-hearted, and do not meet the demands of manufacturers, customers and suppliers' integration. As a result the enterprise cannot achieve its goals.

Using the basic integration idea of logistics, it is essential to consider any enterprise as a continuous flow of processes [2; 3]. Moreover, the effectiveness of such an enterprise will depend on well co-ordinated work of suppliers (servicing system) and mediators-consumers (served by the system) rather than its own system work. Thus, constant exchange (supply) of matter, energy and information between links of a continuous chain (supply chain) takes place [4; 5].

To develop an effective tool of enterprise management as a part of supply chain a more detailed analysis of these links should be conducted.

According to the dialectical approach in analysis, links of the supply chain can be replaced by simplified models, constructed from idealized units. In this case we apply two types of idealized sections comprising inputs and outputs: a perfect conversion system in the form of product manufacturers and distributors as well as a flawless distribution system in the form of mediators. In elementary examples a model of real supply chain product delivery can contain a pair of idealized sections, in more complicated examples, it is a combination of several pairs of idealized sections.

Intermediary organizations are referred to scattering – type distribution systems, that simultaneously accumulate and distribute products to customers.

Both heterogeneous systems (a manufacturer and intermediary), united by a material flow, together form a harmonized pair of supply chain. Each link of this pair performs a definite function, complementing functions of the other section rather than replacing it.

This system is based on the synergetic effect of smooth interaction of heterogeneous systems based on specialization. The harmonized pair of dissimilar parts is called a logistic unit.

Thus, a logistic unit formed within the process of self-development is argued to be a harmonized organizational and technical framework referring to the supply chain, that carries out effective manufacturing and distribution of finished commodity to numerous consumers on the basis of specialization of its constituent pair of elements.

A logistics supply chain, obtained from the original one, in the event of replacing of each original link by a simplified model, formed by idealized units, can be called a simulation. Further presentation and consideration of an

enterprise as a modeling logistics supply chain will enable the development of an effective tool for supply chain management, taking into account objectives of own, serving and served systems, as well as creation of a platform for further development of the enterprise.

Within the formation of flow processes optimal management it is essential to consider terms of this management implementation. Provided that an enterprise's activity is defined as a set of related flow processes it will be necessary to study the system integrity of these flows.

The system optimization position of logistics chain as a single system of flow processes, whose efficiency is determined by the coherence level of these processes, supposes application of the term "variability". The concept of variability is described as any deviation of results at input / output of processes from desired or ideal values. From that angle out the reduction of this variability can be interpreted as the fundamental way of system efficiency improvement.

This variability is the fundamental cause of inconsistency of processes regarding their timeliness, provision of the required level (quantity), quality of incoming and internal flows, as well as formation of 'weakest points'. The consequences of inconsistency are characterized by the category of 'losses from inconsistency of flows.' Reduction and elimination of losses can be interpreted as additional productive resources economic use.

So, a great amount of untapped resources can be referred to indirect (actual) losses which should be defined as mismatched flows. The mismatched flows are caused by transactions 'money – lack of equivalent exchange (goods)' and 'product – no equivalent of exchange (money)'. At the same time financial and information flows should be considered not only as the basic reflecting material flow, but as the possible way to regulate deviations in material flows and the whole logistic system.

The existence of inconsistencies induces the necessity of flow regulation organization, whose main target will be to achieve three aims: elimination of inconsistencies, acceleration of working capital turnover and profits increase, which define conditions for effective enterprise management implementation.

Unfortunately, nowadays management conducted only by local flows without clear identification of links between them. Flows in the circuit of operation cycle are the object of management without consideration of external environment flowing characteristics.

Thus, the current enterprise management should take into account integration and innovation aspects of economics, should be based on consistency and compliance of flow processes of an enterprise, as well as be predictive. Traditional activity of an enterprise has to be revised through the logistics concept, as shown in table.

Table

**Fundamental difference between traditional and logistics organization of an industrial enterprise activity**

|   |   |
|---|---|
| Traditional organization of an industrial enterprise activity | Logistics organization of an industrial enterprise activity |
|---|---|

| Resources  |   |
|--|---|
| The resources of enterprise are formed spontaneously due to the accepted technology and organization of production, internal company interrelation, formed at the enterprise, and external transactions  | Conscious formation of economic flows according to the criterion of optimality, which sometimes enables changes of traditional technologies and production organization   |
| Business contacts  |   |
| Business contacts in traditional organization often develop accidentally and are inflexible  | Business contacts are formed with consideration of cost optimization and interests of participants. In general, interaction is optimal if it provides achievement of company's aims with minimal costs                        |
| Flow of resources  |   |
| Flow of resources is relatively autonomous, because it is often accidental due to formation of certain types of resources  | Technologies of the resources flow should coincide within economical flows. In summary the logistics process is aimed at reduction of total and transaction costs, and profit increase as well                                |
| Production program   |   |
| While designing the production program, total costs spent on product manufacturing and selling should be taken into account. Thus, incurred costs of an enterprise regarding its turnover, are interpreted as overhead costs, and their influence on production price is difficult to estimate | The production plan is created considering not only production costs, but delivery and distribution costs too, because only coordinated activity of all enterprises structures provides an efficient performance of all tasks |

Table indicates that improvement of management efficiency requires working out practical mechanisms of logistic activity implementation, based on the process of logistics in management activity. Implementation of this approach will enable enterprises to reduce unnecessary costs, to find out latent resources and to achieve through optimization of flow processes.

Thus, the main conditions of optimal management implementation of flow processes are as follows:

- 1) focus on a specific phenomenon, processes, and within them on particular relationships of specific subjects;
- 2) targeted systemic integration of structures, components and flow processes concerning time, space, scale, and other institutional, economic and technological conditions of human activity so that to create fundamentally new positive characteristics of successful activities and to provide opportunities to achieve benefits;
- 3) sufficient adaptation, correlation and system hierarchy in space and time structures, elements, their flow processes and their mutual influence concerning environment activities;
- 4) optimization orientation, integration, timeliness, continuity, multiplicity;
- 5) optimal systemacy, frugality, and

appropriateness of potential spending involved in flow processes of an enterprise.

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# THE PURCHASER'S PERCEIVED RISKS IN DIFFERENT ECONOMIC SITUATIONS: IMPLICATIONS FOR B2B MARKETING MANAGEMENT

UDC 658.8

C. Stadlmann

The research of purchasing managers' behavior while the economic boom in 2007 and the following crisis in 2008 has been proposed. On the basis of the 84 respondents' interviews of B2B sphere, possible risks and counter methods have been investigated. The tried to enlarge the research in the field of customer organizational behavior by studying impact of the current economic situation on the procurement process organization. The results allow to assume that risk and selected preventive measures taken into account by customers are very different and are likely to becomers the starting point for the adaptation of marketing activities of suppliers.

*Key words:* organizational buyer behavior, perceptions of risk, economic crisis, boom, B2B-marketing.

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## УСВІДОМЛЕННЯ РИЗИКУ ПОКУПЦІВ У РІЗНИХ ЕКОНОМІЧНИХ СИТУАЦІЯХ: НАСЛІДКИ ДЛЯ В2В-МАРКЕТИНГ-МЕНЕДЖМЕНТУ

УДК 658.8

К. Стедлменн

Досліджено поведінку менеджерів закупівельної діяльності під час економічного буму 2007 року і подальшої кризи 2008 року. Спираючись на інтерв'ювання 84 респондентів сфери В2В, було досліджено можливі ризики та методи протидії їм. Зроблено спробу доповнити дослідження в області організаційної поведінки покупців, вивчаючи вплив економічної ситуації на організацію закупівельного процесу. Отримані результати дають підстави припускати, що ризики, які сприймаються покупцями, й обрані заходи протидії їм істотно відрізняються і можуть стати відправною точкою для адаптації маркетингової діяльності постачальників.

*Ключові слова:* організаційна поведінка покупця, сприйняття ризику, економічна криза, бум, В2В-маркетинг.

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## ОСОЗНАНИЕ ПОКУПАТЕЛЬСКОГО РИСКА В РАЗНЫХ ЭКОНОМИЧЕСКИХ СИТУАЦИЯХ: ПОСЛЕДСТВИЯ ДЛЯ В2В-МАРКЕТИНГ-МЕНЕДЖМЕНТА

УДК 658.8

К. Стедлменн

Исследовано поведение менеджеров по закупкам во время экономического бума 2007 года и последующего кризиса 2008 года. Основываясь на интервьюировании 84 респондентов сферы В2В, были рассмотрены возможные риски

методы противодействия им. Предпринята попытка дополнить исследования в области организационного поведения покупателей, изучая влияние сложившейся экономической ситуации на организацию закупочного процесса. Полученные результаты дают основания предположить, что воспринимаемые покупателями риски и выбранные меры противодействия им существенно отличаются и могут стать отправной точкой для адаптации маркетинговой деятельности поставщиков.

*Ключевые слова:* организационное поведение покупателя, восприятие риска, экономический кризис, бум, B2B-маркетинг.

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In mid 2008 the economic crisis hit many European companies (Reinhart and Rogoff 2009) [1], resulting in an increase in bankruptcies (Kantner 2009; Kantner 2010) and shrinking demand in numerous B to B-sectors (such as the machinery and construction industry or the automotive supplier industry (Wuchold 2009[29]; VDA 2009 [2])). Besides adapting production – for example, by reducing working hours (Statistisches Bundesamt 2009) – several companies tried to reduce costs throughout the value chain by increasing (price) pressure on their suppliers. Anderson (2009) [3] found out that the importance and status of procurement departments increased significantly in this period. Indeed, the purchasing function can be a leverage factor for cost reductions in many industries due to the fact that material costs represent a major or even sometimes the largest proportion of an enterprise's total costs. Bain & Company (2002) [4] published findings about the percentage of material costs in the total costs in well-known German firms (like BMW, Volkswagen, MAN, Linde, et al.) which was between 45 and 65 %. Müller (2004) [5] identified similar proportions for sectors like the steel, electronic, pharmaceutical and aircraft industries.

In 2007 and the first two quarters of 2008 the economy was characterized by an economic boom (Reinhart et al. 2009) [1] where even unemployment rates were at very low levels (Eurostat 2010) and many industries had all-time highs in their sales (Schnieder 2009) [6]. In some regions the level of unemployment was even below the 3 % rate (Statistik Austria 2009) [7] which in some cases forced companies to recruit abroad in order to meet the demand of the markets (Zehetner et al. 2009) [8].

This economic boom and the following dramatic fall were the starting point for the author's study about purchasers' perspective in different stages of the economic cycle. Therein the perceived risks and the strategies of procurement professionals are the major motivational factors for this paper.

This paper builds on the theory of organizational buying behavior with a major focus on the findings of Johnston and Lewin who investigated the influence of the situational context on purchasing behavior. Johnston and Lewin (1996) [9] examine the research status of organizational buying and develop a comprehensive synopsis out of the three models provided by Robinson, Faris and Wind (1967) [10], Webster and Wind (1972) [11], and Sheth (1973) [12].

They identify that very little empirical analysis of the environmental (or situative) characteristics as influencing variables on organizational buying behavior has been carried out. Furthermore, they postulate that buying behavior varies with the risk perceived by the purchasing organization. Based on their extensive analysis of literature they point out that among other things "as the risk associated with an organizational purchase increases"

- the buying center will become larger and more complex having in-creased decision making power.
- "participants in the purchase decision-making process [...] possess greater levels of experience in their particular area of expertise."
- "[...] proven products and solutions will be favored. Product quality and after-sale service will be of the utmost importance. [...] Only when [...] two or more sellers appear equally capable of satisfying purchase requirements, will price play a dominant role."
- "Information search will be active and a wide variety of information sources will be used."
- "[...] the negotiation strategy most likely to be used between the buying and selling firms is a collaborative or problem solving approach."
- Relationship and communication networks between buyer and seller gain importance.

Thompson, Mitchell and Knox (1998) [13] criticize Johnston and Lewin's risk continuum model, pointing out that in the last twenty years management style has also changed organizational purchasing behavior. Nevertheless, Backhaus and Voeth (2007) [14] argue that explorative examination of Thompson et al. based on eight companies tend to confirm rather than disprove the conclusions of Johnston and Lewin. Moreover, they emphasize that many of the links presented in Johnston and Lewin's model have been proven empirically by other researchers.

However, in their article, Johnston and Lewin describe the amount of risk associated with a particular purchase situation and do not specify the type of risk. Based upon an extensive literature review Mitchell (1996) [15] points out that there are many different kinds of risk, including losses of a financial, performance, physical, social, psychological or time nature. Furthermore these types of risk vary in their importance and probability which are perceived subjectively. On the other hand, Cooper et al. (2006) [16] argue that perceived risk associated with an organizational purchase can be separated into financial and performance risks. They stress that financial risk is

of critical importance for the organization, whereas performance risk is the primary but not the only concern of purchasers.

Spray (2009) [17] points out that the procurement leaders' responsibilities increased dramatically during the crisis. Anderson (2009) [3] supported this with her study underlining that the recognition given to procurement managers has also increased. Hence, the major interest of this paper is the perceived risk and the corresponding behavior of purchasing management to the circumstances of the economic boom and the following financial crisis. Other influencing factors in organizational buying behavior theory, i.e. the organization itself, the buying center, the product purchased, etc. are not the central focus. This leads to the following research objects: The economic situation is one of these situational variables.

As there is little empirical investigation into the influence of environmental characteristics on organizational buying behavior (Johnston and Lewin 1996) the goal of this paper is to evaluate the purchasers' perception of risks in exceptional economic situations and how they react in the various stages of the economic cycle.

In Johnston and Lewin's approach (1996) [9] organizational buying behavior varies with the perceived risk. This leads to the question of how risk perception of purchasing managers – if at all – changes in different economic situations. However, as it is difficult to measure personal and organizational risks separately (Mitchell 1996) [15] only the personal perceptions of the purchasing managers are of interest.

Finally, the reactions of the procurement managers are investigated, i.e. which measures they take to counter the identified risks and what their implications for marketing and sales managers of B to B-suppliers are.

In order to find answers to these research questions a survey was conducted at the end of 2009 and beginning of 2010, taking advantage of these unique economic situations, which were at that time still present in the minds of the interviewed purchasing managers. Based upon literature a questionnaire was developed and pre-tested with purchasing experts. 53 interviews were done by telephone or in person. The interviews took between 30 and 90 minutes. When direct interviews were not possible, the interviewees were asked to at least send back the completed questionnaire by email. 31 purchasing managers used this opportunity. Due to the structure of the questionnaire the quality of these answers was suitable for the final analysis and interpretation. The structured questionnaire consisted of both open and closed questions.

Due to the importance of procurement in manufacturing, the survey was conducted within this industry, namely in the automotive, machinery, metal, construction, household appliance and electrical, wood, plastics, sport industry and technical sectors. Finally, 84 mainly Austrian and some Bavarian companies were focused on. The focus was placed on enterprises with professional purchasing departments. In total,

63 % belong to the top 500 Austrian companies in terms of turnover (Millonig 2010) [18] or to an international group of at least the same dimension. In some sectors, the interviewed enterprises actually represent the very largest ones, i.e. belonging to the top 10 companies in Austria. For instance, according to Millonig's ranking (2010) [9] of the 10 biggest Austrian companies operating in the automotive industry are represented in the survey. All interviewees were responsible for operative purchasing in a managerial capacity.

Perceived risk in a situation of economic boom and of economic depression. The analysis of all the data is reported on in this section. The interviewees were asked to describe the most important risks they perceive within a situation of economic boom and of economic depression. Eight different clusters of perceived risk were identified. The most important risks are the risk of price increases and the risk of difficulties or failure of supply. Some interviewees explained that in times of economic boom price increases are not only a "result of less competition between suppliers" and therefore an "increase in the power" wielded by the suppliers, but are also caused by the "decreased access to detailed suppliers' calculations" and to "price agreements between competing suppliers". In times of economic depression price increases are an "effect of less demand from the buying companies" which means that they "cannot obtain bulk discounts" and are hence "less important for their suppliers". This risk does not affect major multinational corporations such as Case New Holland or BMW in times of recession.

The risk of difficulties with supply is the dominant risk as perceived by the procurement managers in both economic situations and it is primarily the risk of difficulties in supply. In times of excellent economic circumstances the risk of supply problems is also expressed through "longer delivery times", "less flexibility if additional material is needed", "capacity bottle necks with suppliers" and even fewer buying possibilities in the "absence of offers from suppliers". In an economic recession, the interviewees explain the supply related risk as being caused by "bankruptcies", "shorter working hours", "reduction of production capacities" or even "closure of suppliers' plants".

As emphasized by Cooper et al. (2005) [16] performance risks are not the only concerns of purchasing managers, but their primary ones. The empirical findings support this statement because beside the risk of supply, the remaining risk clusters all affect the performance of either the procurement department or other linked departments, such as logistics or production. This means, the interviewees additionally perceive the following risk groups: a) the risk of mismanagement of stock affecting "inventory and warehousing costs", "inventory devaluation" and "loss of liquidity and equity capital"; b) quality loss; c) strategic risks like wrong strategic decisions – for example, "concerning contracts or innovation" – based on "false scenarios", "slow reaction time" or "deterioration of the strategic purchasing power position"; d) risk of losing important



suppliers due to "discrepant price expectations", "insourcing", "break-up of contracts" or "insufficient quantities ordered"; e) risk of social loss or personnel losses (e.g. "negative image", "higher fluctuation", "loss of job", "decreased motivation" due to "enormous time" and "performance pressure") and finally f) efficiency losses due to "bad processes", "sole concentration on short-term tasks" and "lack of time for suppliers, their selection" and "coordination with linked internal departments" (e.g. production etc). Interestingly, the risk of efficiency losses is not mentioned in times of economic recession. Table 1 and 2 summarize the responses of the purchasing managers concerning the type of risk they perceived in different economic situations.

Table 1

**Types of risk perceived by purchasing managers in times of economic boom (percentage of all interviewees; multiple responses possible)**

| Type of risk                      | Economic boom |
|-----------------------------------|---------------|
| Price increases                   | 83 %          |
| Difficulties or failure of supply | 70 %          |
| Efficiency losses                 | 14 %          |
| Social and personnel loss         | 12 %          |
| False strategic decisions         | 11 %          |
| Loss of important suppliers       | 8 %           |
| Quality loss                      | 7 %           |

Table 2

**Types of risk perceived by purchasing managers in times of economic recession (percentage of all interviewees; multiple responses possible)**

| Type of risk                      | Economic recession |
|-----------------------------------|--------------------|
| Difficulties or failure of supply | 96 %               |
| False strategic decisions         | 19 %               |
| Loss of important suppliers       | 12 %               |
| Price increases                   | 11 %               |
| Social and personnel loss         | 11 %               |
| Quality loss                      | 10 %               |
| Efficiency losses                 | 0 %                |

Summing up, extraordinary economic situations have an effect on the perceived type of risk. During economic booms the purchasing managers are much more aware of financial risks whereas in times of economic recession performance risks are perceived as more dominant.

Dynamics of buying behavior in situations of economic boom and of economic depression. A further finding of the survey is that 80 % of the interviewees consciously alter their instruments and behavior during the buying process if the economic situation also changes. However, those who do not change their behavior explain this with either there being "no possibilities of influence" and total transparency of market information (e.g. "purchasing of raw materials on the global stock exchanges") or that they always follow a transactional strategy due to their purchasing power (Svahn et al. 2009) [19]. In both cases, either the purchaser or the

seller is in an extremely powerful position (Schüpbach 2001) [20]. In Table 3 and 4 different measures used by the purchasing managers in two different economic situations are clustered and summarized.

The responses of the interviewees show that in good times (i.e. during an economic boom) a long-term, partnership-oriented approach dominates. They stress that their focus lies on a "co-operative", sometimes even on a "strategic relationship" with their suppliers with "intensified communication" and more frequent contact. However, in both economic situations the interviewees strictly distinguish between relationship and long-term activities. By the second they understand "long-term planning", "framework contracts" and "long-term payment conditions". Hence, from the buyer's perspective a long-term contract does not necessarily mean being loyal or partnership-oriented. Shet (1996) [12] forecasted this relationship oriented procurement practice as a consequence of changing paradigms of organizational buying behaviour. However, this shift of purchasing practices seems not to be dominant in an economic recession as the focus is put on both short-term as well as long-term benefits.

Table 3

**Percentage of measures used in purchasing management in times of economic boom (multiple responses possible)**

| Measures taken by purchasing managers          | Economic boom |
|--|---------------|
| Stressing partnership and loyalty              | 51 %          |
| Global/Multi sourcing activities               | 44 %          |
| Long term orientation / Continuance activities | 37 %          |
| Inventory and order management activities      | 26 %          |
| Analyzing markets and customers                | 21 %          |
| Risk management activities                     | 18 %          |
| Aggressive negotiation measures                | 10 %          |
| Bundling of demand                             | 8 %           |
| Focus on short term benefits                   | 6 %           |
| Procurement marketing activities               | 5 %           |
| Improvement of efficiency                      | 2 %           |
| Stock disposal                                 | 2 %           |
| Searching for alternative solutions            | 1 %           |

Table 4

**Types of risk perceived by purchasing managers in times of economic recession (percentage of all interviewees; multiple responses possible)**

| Measures taken by purchasing managers | Economic recession |
|---------------------------------------|--------------------|
| Analyzing markets and customers       | 37 %               |
| Risk management activities            | 30 %               |
| Stressing partnership and loyalty     | 26 %               |
| Aggressive negotiation measures       | 26 %               |
| Bundling of demand                    | 15 %               |
| Global/Multi sourcing activities      | 14 %               |
| Long term orientation / Continuance   |                    |

|   |      |
|---|------|
| activities                                | 13 % |
| Improvement of efficiency                 | 13 % |
| Inventory and order management activities | 12 % |
| Stock disposal                            | 12 % |
| Focus on short term benefits              | 8 %  |
| Searching for alternative solutions       | 7 %  |
| Procurement marketing activities          | 0 %  |

Short-term focused purchasers reported taking aggressive negotiation measures (26 %) reinforcing the use of "online auctions", "tenders" and "re- or additional negotiations", "reducing the frequency of meetings" or "requiring open books" from their suppliers. As further short-term activities, 8% of the interviewees intensify their "purchasing from spot-markets". Looking at different industries it is noticeable that especially procurement managers in the automotive supply industry stand out by preferring the short-term approach (70 %) and those in the machinery construction industry (83 %) by choosing the long-term concept during the economic recession. According to Perdue (1991) [21], the behavior in the machinery construction industry can possibly be explained by the uniqueness of the firms' specifications and a higher cooperative orientation compared with the automotive industry.

The analysis of markets and customers is an important method in both economic situations. During the economic boom, 21 % of the interviewees reported putting a major emphasis on the evaluation. However, their focus is on cost analysis, such as "total costs of ownership", "plausibility checks", "target costing" or "ABC-analyses". In economic recessions the analysis of markets and customers is used by even more companies (44 %) although they mainly examine suppliers' markets and financial situations.

To secure supply, the activities of the interviewed purchasing managers are manifold in the economic boom. First of all, nearly half of the companies "look for additional suppliers". They also change their strategy to "double or multi-sourcing", "split up their demand to more suppliers" and expand their "purchasing radius on a global scale" – sometimes with additional attention to "low-cost-countries". This, of course, helps them to increase competition among their suppliers. A further 26 % of the companies change their inventory management and order behavior to secure supply. Among other things, they therefore "establish safety stocks", "increase the order size", "order frequency" or the "minimum stock level", "control their inventories more often", "forecast more frequently" and "forward this information immediately" to their suppliers. Bundling demand is also a means of securing supply. The respondents report "bundling company-wide demands" to improve their importance for suppliers. In the economic recession, however, measures to ensure supply are mainly taken in the form of risk management activities (30 %), bundling demand and switching order quantities to stable (or cheaper) suppliers (15 %), multi-sourcing activities (14 %) and searching for alternative solutions (7 %), like "in-sourcing", "substitute goods" or "product innovations". Interestingly, different risk management measures are taken in both economic situations. During the latest boom, the interviewees put an emphasis on "earlier

and more accurate planning", "documentation" and "involvement of senior management". By contrast, in the economic recession the respondents focus on making "credit and solvency checks" and "risk evaluations of their suppliers" and "support selected suppliers with credits" or through "back-to-back agreements".

Moreover, just 2 % of the interviewed purchasing managers do little to improve efficiency during an economic boom. However, in an economic recession considerably more respondents (12 %) take clear measures to achieve "better processes through IT", "automation", "change management" and "platform (i.e. standardization) projects" or by "adapting resources or investments". A further 12 % of the interviewees also "reduce stock" during this phase. The purchasers explained that in an economic boom there is quite intense time pressure and a lot of operative work to do. Hence, it can be presumed that the lack of time deters them from fostering efficiency projects and therefore the risk of efficiency losses is also much higher than during an economic recession when they have more time for process improvement activities. Furthermore, it must be pointed out that very few purchasers (5 %) take marketing measures in order to strengthen their internal position and their importance with suppliers. Moreover, they take this action exclusively during an economic boom.

Finally, it can be stressed that in neither of the examined economic situations is the improvement or assurance of product or service quality mentioned by the interviewees. In addition, the push of innovation is also of little interest, i.e. it is neither mentioned as a possible risk nor do the respondents in all but two companies take action to foster innovations.

Summary of research findings. Summing up, the empirical findings support Johnston and Lewin's integrative framework by showing that the situative factor "economic characteristics" influence altered risk perception and in turn the behavior of purchasing managers in organizational buying.

Furthermore, the findings suggest that high risk per se, i.e. Johnston and Lewin's risk continuum, is not the only factor influencing organizational buying behavior but also the type of risk which is perceived. Johnston and Lewin identify different measures in organizational buying if perceived risk increases, among others that the buying center will gain decision making power, proven solutions (suppliers) will be favored, information search will be intensified and a collaborative negotiation strategy will be chosen (1996) [9]. The results of this study indicate that purchasing managers use these measures. However, in different economic situations the purchasers perceive diverse types of risk and adapt their measures accordingly. During the economic recession for instance, information search and analysis are very important. Conversely, in an economic boom, collaborative strategies are more likely to be used. The search for new unproven suppliers is also important and some purchasers lose decision making power by only

planning, documenting and forwarding the information to senior management.

As purchasing managers perceive risk differently it can be helpful for suppliers to understand the types of risk in order to better meet the needs of purchasers in diverse economic situations. Based on the examined types of perceived risk, sales and marketing managers of B to B companies could provide specific information and argumentation in negotiations to purchasing managers. They could support them in procurement marketing activities during an economic boom or to provide them data about internal production planning as well as non-confidential cost analysis. Conversely, during times of recession they could furnish financial information comparing competitors.

Further, it can be useful to question the opinion communicated by the purchasers, especially if the price issue alone is dominant. Based on the findings it can be proposed that even in difficult times (i.e. recession) the central risk perceived might not be financial risk, i.e. prices being too high, but rather performance risk, e.g. the assurance of supply.

The findings about the measures taken by the interviewed purchasing managers in different economic situations could possibly help to sharpen the alertness and prudence of marketing and sales teams when they plan and carry out activities. As the interviewed purchasers differentiate between long-term activities, e.g. long-term contracts, and partnership approaches – i.e. business relationships based on mutual trust and cooperation – a similar differentiation by the marketing management of suppliers could also be suitable in order to critically classify customer relationships and to consciously allocate resources. The findings further suggest that some companies pursue a co-operative policy during the times of economic boom only to change to aggressive buying behavior when recession afflicts business. Hence, a distinction between customers seems to be the most essential in B to B-marketing and strategic business relationships, e.g. in the form of careful selection of key account customers (see also Piercy et al. 2006) [22].

A further implication can be gleaned from the respondents' multi-sourcing activities. In the participating companies the search for new suppliers was an important measure taken by nearly half of the interviewed purchasers, but especially during the latest boom and not during the economic crisis. Hence, customer acquisition by B to B companies could be more successful in favorable economic conditions. The recent study of Belz et al. shows that industrial marketers evaluate the strengthening of sales activities such as customer acquisition as a very important marketing method in the current crisis (2010) [23]. The need to react in the crisis seems to be logical. However, it might also be deduced from the author's findings that customer acquisition activities should be intensified even in good times because purchasers' search for new suppliers tends to be a higher priority than in an economic recession.

Finally, the interviewed purchasing managers have taken more measures to improve processes – both internal and in the supply chain - during the latest recession in comparison to the previous economic boom. This can possibly be a hint for suppliers who work with their customers to improve supply chain processes to accelerate these kinds of projects when an economic downturn occurs.

As a limitation of the conducted study, the author recognizes that only a specific aspect of the organizational buying behavior has been examined, namely the economic situation as one particular situative factor. Hence, it should be noted that the industry, the type of purchase (new buy, modified rebuy and straight rebuy), the buying center structure, product characteristics, organization's performance and many more aspects may influence the perception of risk and ultimately buying behavior. As buying decisions are quite often influenced by diverse members of the buying center, in-depth research is needed on how risk perception differs among participants in the buying decision.

Moreover, the study was conducted mainly in Austria and Bavaria, where very similar cultures and attitudes prevail. In other countries where, for example, bargaining attitudes are more common, there may be differences in risk perception and measures taken by procurement. Additionally, the study focused on the very specific situations of an economic boom and economic recession. A longitudinal examination of the risk perception and behavior of purchasers, studied in various economic circumstances – e.g. economic downturn, upturn, etc., could provide further insights into this issue.

A possible limitation that must also be considered is that the interviews are open to subjectivity, as a single purchasing manager per enterprise was used. The reliability and validity of the results can, however, be considered sufficient as the examined companies were carefully chosen, and the data was diligently gathered and analyzed. Another restriction relates to a possibility of the research results being biased as a large number of companies were initially contacted but a limited number of those were willing to participate in the study and answer in a personal or telephone interview. The study was extended through the possibility to respond via email which made it impossible to further question the email respondents especially regarding open questions.

Finally, the limited number of interviews also restricts the possibility of making generalizations based on the research results. Therefore, further in-depth studies should analyze the issue using empirical data from different contexts and cultures.

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# THE PURCHASER'S PERCEIVED RISKS IN DIFFERENT ECONOMIC SITUATIONS: IMPLICATIONS FOR B2B MARKETING MANAGEMENT

UDC 658.8

C. Stadlmann

The research of purchasing managers' behavior while the economic boom in 2007 and the following crisis in 2008 has been proposed. On the basis of the 84 respondents' interviews of B2B sphere, possible risks and counter methods have been investigated. The tried to enlarge the research in the field of customer organizational behavior by studying impact of the current economic situation on the procurement process organization. The results allow to assume that risk and selected preventive measures taken into account by customers are very different and are likely to becomers the starting point for the adaptation of marketing activities of suppliers.

*Key words:* organizational buyer behavior, perceptions of risk, economic crisis, boom, B2B-marketing.

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## УСВІДОМЛЕННЯ РИЗИКУ ПОКУПЦІВ У РІЗНИХ ЕКОНОМІЧНИХ СИТУАЦІЯХ: НАСЛІДКИ ДЛЯ В2В-МАРКЕТИНГ-МЕНЕДЖМЕНТУ

УДК 658.8

К. Стедлменн

Досліджено поведінку менеджерів закупівельної діяльності під час економічного буму 2007 року і подальшої кризи 2008 року. Спираючись на інтерв'ювання 84 респондентів сфери В2В, було досліджено можливі ризики та методи протидії їм. Зроблено спробу доповнити дослідження в області організаційної поведінки покупців, вивчаючи вплив економічної ситуації на організацію закупівельного процесу. Отримані результати дають підстави припускати, що ризики, які сприймаються покупцями, й обрані заходи протидії їм істотно відрізняються і можуть стати відправною точкою для адаптації маркетингової діяльності постачальників.

*Ключові слова:* організаційна поведінка покупця, сприйняття ризику, економічна криза, бум, В2В-маркетинг.

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## ОСОЗНАНИЕ ПОКУПАТЕЛЬСКОГО РИСКА В РАЗНЫХ ЭКОНОМИЧЕСКИХ СИТУАЦИЯХ: ПОСЛЕДСТВИЯ ДЛЯ В2В-МАРКЕТИНГ-МЕНЕДЖМЕНТА

УДК 658.8

К. Стедлменн

Исследовано поведение менеджеров по закупкам во время экономического бума 2007 года и последующего кризиса 2008 года. Основываясь на интервьюировании 84 респондентов сферы В2В, были рассмотрены возможные риски

методы противодействия им. Предпринята попытка дополнить исследования в области организационного поведения покупателей, изучая влияние сложившейся экономической ситуации на организацию закупочного процесса. Полученные результаты дают основания предположить, что воспринимаемые покупателями риски и выбранные меры противодействия им существенно отличаются и могут стать отправной точкой для адаптации маркетинговой деятельности поставщиков.

*Ключевые слова:* организационное поведение покупателя, восприятие риска, экономический кризис, бум, B2B-маркетинг.

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In mid 2008 the economic crisis hit many European companies (Reinhart and Rogoff 2009) [1], resulting in an increase in bankruptcies (Kantner 2009; Kantner 2010) and shrinking demand in numerous B to B-sectors (such as the machinery and construction industry or the automotive supplier industry (Wuchold 2009[29]; VDA 2009 [2])). Besides adapting production – for example, by reducing working hours (Statistisches Bundesamt 2009) – several companies tried to reduce costs throughout the value chain by increasing (price) pressure on their suppliers. Anderson (2009) [3] found out that the importance and status of procurement departments increased significantly in this period. Indeed, the purchasing function can be a leverage factor for cost reductions in many industries due to the fact that material costs represent a major or even sometimes the largest proportion of an enterprise's total costs. Bain & Company (2002) [4] published findings about the percentage of material costs in the total costs in well-known German firms (like BMW, Volkswagen, MAN, Linde, et al.) which was between 45 and 65 %. Müller (2004) [5] identified similar proportions for sectors like the steel, electronic, pharmaceutical and aircraft industries.

In 2007 and the first two quarters of 2008 the economy was characterized by an economic boom (Reinhart et al. 2009) [1] where even unemployment rates were at very low levels (Eurostat 2010) and many industries had all-time highs in their sales (Schnieder 2009) [6]. In some regions the level of unemployment was even below the 3 % rate (Statistik Austria 2009) [7] which in some cases forced companies to recruit abroad in order to meet the demand of the markets (Zehetner et al. 2009) [8].

This economic boom and the following dramatic fall were the starting point for the author's study about purchasers' perspective in different stages of the economic cycle. Therein the perceived risks and the strategies of procurement professionals are the major motivational factors for this paper.

This paper builds on the theory of organizational buying behavior with a major focus on the findings of Johnston and Lewin who investigated the influence of the situational context on purchasing behavior. Johnston and Lewin (1996) [9] examine the research status of organizational buying and develop a comprehensive synopsis out of the three models provided by Robinson, Faris and Wind (1967) [10], Webster and Wind (1972) [11], and Sheth (1973) [12].

They identify that very little empirical analysis of the environmental (or situative) characteristics as influencing variables on organizational buying behavior has been carried out. Furthermore, they postulate that buying behavior varies with the risk perceived by the purchasing organization. Based on their extensive analysis of literature they point out that among other things "as the risk associated with an organizational purchase increases"

- the buying center will become larger and more complex having in-creased decision making power.
- "participants in the purchase decision-making process [...] possess greater levels of experience in their particular area of expertise."
- "[...] proven products and solutions will be favored. Product quality and after-sale service will be of the utmost importance. [...] Only when [...] two or more sellers appear equally capable of satisfying purchase requirements, will price play a dominant role."
- "Information search will be active and a wide variety of information sources will be used."
- "[...] the negotiation strategy most likely to be used between the buying and selling firms is a collaborative or problem solving approach."
- Relationship and communication networks between buyer and seller gain importance.

Thompson, Mitchell and Knox (1998) [13] criticize Johnston and Lewin's risk continuum model, pointing out that in the last twenty years management style has also changed organizational purchasing behavior. Nevertheless, Backhaus and Voeth (2007) [14] argue that explorative examination of Thompson et al. based on eight companies tend to confirm rather than disprove the conclusions of Johnston and Lewin. Moreover, they emphasize that many of the links presented in Johnston and Lewin's model have been proven empirically by other researchers.

However, in their article, Johnston and Lewin describe the amount of risk associated with a particular purchase situation and do not specify the type of risk. Based upon an extensive literature review Mitchell (1996) [15] points out that there are many different kinds of risk, including losses of a financial, performance, physical, social, psychological or time nature. Furthermore these types of risk vary in their importance and probability which are perceived subjectively. On the other hand, Cooper et al. (2006) [16] argue that perceived risk associated with an organizational purchase can be separated into financial and performance risks. They stress that financial risk is



of critical importance for the organization, whereas performance risk is the primary but not the only concern of purchasers.

Spray (2009) [17] points out that the procurement leaders' responsibilities increased dramatically during the crisis. Anderson (2009) [3] supported this with her study underlining that the recognition given to procurement managers has also increased. Hence, the major interest of this paper is the perceived risk and the corresponding behavior of purchasing management to the circumstances of the economic boom and the following financial crisis. Other influencing factors in organizational buying behavior theory, i.e. the organization itself, the buying center, the product purchased, etc. are not the central focus. This leads to the following research objects: The economic situation is one of these situational variables.

As there is little empirical investigation into the influence of environmental characteristics on organizational buying behavior (Johnston and Lewin 1996) the goal of this paper is to evaluate the purchasers' perception of risks in exceptional economic situations and how they react in the various stages of the economic cycle.

In Johnston and Lewin's approach (1996) [9] organizational buying behavior varies with the perceived risk. This leads to the question of how risk perception of purchasing managers – if at all – changes in different economic situations. However, as it is difficult to measure personal and organizational risks separately (Mitchell 1996) [15] only the personal perceptions of the purchasing managers are of interest.

Finally, the reactions of the procurement managers are investigated, i.e. which measures they take to counter the identified risks and what their implications for marketing and sales managers of B to B-suppliers are.

In order to find answers to these research questions a survey was conducted at the end of 2009 and beginning of 2010, taking advantage of these unique economic situations, which were at that time still present in the minds of the interviewed purchasing managers. Based upon literature a questionnaire was developed and pre-tested with purchasing experts. 53 interviews were done by telephone or in person. The interviews took between 30 and 90 minutes. When direct interviews were not possible, the interviewees were asked to at least send back the completed questionnaire by email. 31 purchasing managers used this opportunity. Due to the structure of the questionnaire the quality of these answers was suitable for the final analysis and interpretation. The structured questionnaire consisted of both open and closed questions.

Due to the importance of procurement in manufacturing, the survey was conducted within this industry, namely in the automotive, machinery, metal, construction, household appliance and electrical, wood, plastics, sport industry and technical sectors. Finally, 84 mainly Austrian and some Bavarian companies were focused on. The focus was placed on enterprises with professional purchasing departments. In total,

63 % belong to the top 500 Austrian companies in terms of turnover (Millonig 2010) [18] or to an international group of at least the same dimension. In some sectors, the interviewed enterprises actually represent the very largest ones, i.e. belonging to the top 10 companies in Austria. For instance, according to Millonig's ranking (2010) [9] of the 10 biggest Austrian companies operating in the automotive industry are represented in the survey. All interviewees were responsible for operative purchasing in a managerial capacity.

Perceived risk in a situation of economic boom and of economic depression. The analysis of all the data is reported on in this section. The interviewees were asked to describe the most important risks they perceive within a situation of economic boom and of economic depression. Eight different clusters of perceived risk were identified. The most important risks are the risk of price increases and the risk of difficulties or failure of supply. Some interviewees explained that in times of economic boom price increases are not only a "result of less competition between suppliers" and therefore an "increase in the power" wielded by the suppliers, but are also caused by the "decreased access to detailed suppliers' calculations" and to "price agreements between competing suppliers". In times of economic depression price increases are an "effect of less demand from the buying companies" which means that they "cannot obtain bulk discounts" and are hence "less important for their suppliers". This risk does not affect major multinational corporations such as Case New Holland or BMW in times of recession.

The risk of difficulties with supply is the dominant risk as perceived by the procurement managers in both economic situations and it is primarily the risk of difficulties in supply. In times of excellent economic circumstances the risk of supply problems is also expressed through "longer delivery times", "less flexibility if additional material is needed", "capacity bottle necks with suppliers" and even fewer buying possibilities in the "absence of offers from suppliers". In an economic recession, the interviewees explain the supply related risk as being caused by "bankruptcies", "shorter working hours", "reduction of production capacities" or even "closure of suppliers' plants".

As emphasized by Cooper et al. (2005) [16] performance risks are not the only concerns of purchasing managers, but their primary ones. The empirical findings support this statement because beside the risk of supply, the remaining risk clusters all affect the performance of either the procurement department or other linked departments, such as logistics or production. This means, the interviewees additionally perceive the following risk groups: a) the risk of mismanagement of stock affecting "inventory and warehousing costs", "inventory devaluation" and "loss of liquidity and equity capital"; b) quality loss; c) strategic risks like wrong strategic decisions – for example, "concerning contracts or innovation" – based on "false scenarios", "slow reaction time" or "deterioration of the strategic purchasing power position"; d) risk of losing important

suppliers due to "discrepant price expectations", "insourcing", "break-up of contracts" or "insufficient quantities ordered"; e) risk of social loss or personnel losses (e.g. "negative image", "higher fluctuation", "loss of job", "decreased motivation" due to "enormous time" and "performance pressure") and finally f) efficiency losses due to "bad processes", "sole concentration on short-term tasks" and "lack of time for suppliers, their selection" and "coordination with linked internal departments" (e.g. production etc). Interestingly, the risk of efficiency losses is not mentioned in times of economic recession. Table 1 and 2 summarize the responses of the purchasing managers concerning the type of risk they perceived in different economic situations.

Table 1

**Types of risk perceived by purchasing managers in times of economic boom (percentage of all interviewees; multiple responses possible)**

| Type of risk                      | Economic boom |
|-----------------------------------|---------------|
| Price increases                   | 83 %          |
| Difficulties or failure of supply | 70 %          |
| Efficiency losses                 | 14 %          |
| Social and personnel loss         | 12 %          |
| False strategic decisions         | 11 %          |
| Loss of important suppliers       | 8 %           |
| Quality loss                      | 7 %           |

Table 2

**Types of risk perceived by purchasing managers in times of economic recession (percentage of all interviewees; multiple responses possible)**

| Type of risk                      | Economic recession |
|-----------------------------------|--------------------|
| Difficulties or failure of supply | 96 %               |
| False strategic decisions         | 19 %               |
| Loss of important suppliers       | 12 %               |
| Price increases                   | 11 %               |
| Social and personnel loss         | 11 %               |
| Quality loss                      | 10 %               |
| Efficiency losses                 | 0 %                |

Summing up, extraordinary economic situations have an effect on the perceived type of risk. During economic booms the purchasing managers are much more aware of financial risks whereas in times of economic recession performance risks are perceived as more dominant.

Dynamics of buying behavior in situations of economic boom and of economic depression. A further finding of the survey is that 80 % of the interviewees consciously alter their instruments and behavior during the buying process if the economic situation also changes. However, those who do not change their behavior explain this with either there being "no possibilities of influence" and total transparency of market information (e.g. "purchasing of raw materials on the global stock exchanges") or that they always follow a transactional strategy due to their purchasing power (Svahn et al. 2009) [19]. In both cases, either the purchaser or the

seller is in an extremely powerful position (Schüpbach 2001) [20]. In Table 3 and 4 different measures used by the purchasing managers in two different economic situations are clustered and summarized.

The responses of the interviewees show that in good times (i.e. during an economic boom) a long-term, partnership-oriented approach dominates. They stress that their focus lies on a "co-operative", sometimes even on a "strategic relationship" with their suppliers with "intensified communication" and more frequent contact. However, in both economic situations the interviewees strictly distinguish between relationship and long-term activities. By the second they understand "long-term planning", "framework contracts" and "long-term payment conditions". Hence, from the buyer's perspective a long-term contract does not necessarily mean being loyal or partnership-oriented. Shet (1996) [12] forecasted this relationship oriented procurement practice as a consequence of changing paradigms of organizational buying behaviour. However, this shift of purchasing practices seems not to be dominant in an economic recession as the focus is put on both short-term as well as long-term benefits.

Table 3

**Percentage of measures used in purchasing management in times of economic boom (multiple responses possible)**

| Measures taken by purchasing managers          | Economic boom |
|--|---------------|
| Stressing partnership and loyalty              | 51 %          |
| Global/Multi sourcing activities               | 44 %          |
| Long term orientation / Continuance activities | 37 %          |
| Inventory and order management activities      | 26 %          |
| Analyzing markets and customers                | 21 %          |
| Risk management activities                     | 18 %          |
| Aggressive negotiation measures                | 10 %          |
| Bundling of demand                             | 8 %           |
| Focus on short term benefits                   | 6 %           |
| Procurement marketing activities               | 5 %           |
| Improvement of efficiency                      | 2 %           |
| Stock disposal                                 | 2 %           |
| Searching for alternative solutions            | 1 %           |

Table 4

**Types of risk perceived by purchasing managers in times of economic recession (percentage of all interviewees; multiple responses possible)**

| Measures taken by purchasing managers | Economic recession |
|---------------------------------------|--------------------|
| Analyzing markets and customers       | 37 %               |
| Risk management activities            | 30 %               |
| Stressing partnership and loyalty     | 26 %               |
| Aggressive negotiation measures       | 26 %               |
| Bundling of demand                    | 15 %               |
| Global/Multi sourcing activities      | 14 %               |
| Long term orientation / Continuance   |                    |

|   |      |
|---|------|
| activities                                | 13 % |
| Improvement of efficiency                 | 13 % |
| Inventory and order management activities | 12 % |
| Stock disposal                            | 12 % |
| Focus on short term benefits              | 8 %  |
| Searching for alternative solutions       | 7 %  |
| Procurement marketing activities          | 0 %  |

Short-term focused purchasers reported taking aggressive negotiation measures (26 %) reinforcing the use of "online auctions", "tenders" and "re- or additional negotiations", "reducing the frequency of meetings" or "requiring open books" from their suppliers. As further short-term activities, 8% of the interviewees intensify their "purchasing from spot-markets". Looking at different industries it is noticeable that especially procurement managers in the automotive supply industry stand out by preferring the short-term approach (70 %) and those in the machinery construction industry (83 %) by choosing the long-term concept during the economic recession. According to Perdue (1991) [21], the behavior in the machinery construction industry can possibly be explained by the uniqueness of the firms' specifications and a higher cooperative orientation compared with the automotive industry.

The analysis of markets and customers is an important method in both economic situations. During the economic boom, 21 % of the interviewees reported putting a major emphasis on the evaluation. However, their focus is on cost analysis, such as "total costs of ownership", "plausibility checks", "target costing" or "ABC-analyses". In economic recessions the analysis of markets and customers is used by even more companies (44 %) although they mainly examine suppliers' markets and financial situations.

To secure supply, the activities of the interviewed purchasing managers are manifold in the economic boom. First of all, nearly half of the companies "look for additional suppliers". They also change their strategy to "double or multi-sourcing", "split up their demand to more suppliers" and expand their "purchasing radius on a global scale" – sometimes with additional attention to "low-cost-countries". This, of course, helps them to increase competition among their suppliers. A further 26 % of the companies change their inventory management and order behavior to secure supply. Among other things, they therefore "establish safety stocks", "increase the order size", "order frequency" or the "minimum stock level", "control their inventories more often", "forecast more frequently" and "forward this information immediately" to their suppliers. Bundling demand is also a means of securing supply. The respondents report "bundling company-wide demands" to improve their importance for suppliers. In the economic recession, however, measures to ensure supply are mainly taken in the form of risk management activities (30 %), bundling demand and switching order quantities to stable (or cheaper) suppliers (15 %), multi-sourcing activities (14 %) and searching for alternative solutions (7 %), like "in-sourcing", "substitute goods" or "product innovations". Interestingly, different risk management measures are taken in both economic situations. During the latest boom, the interviewees put an emphasis on "earlier

and more accurate planning", "documentation" and "involvement of senior management". By contrast, in the economic recession the respondents focus on making "credit and solvency checks" and "risk evaluations of their suppliers" and "support selected suppliers with credits" or through "back-to-back agreements".

Moreover, just 2 % of the interviewed purchasing managers do little to improve efficiency during an economic boom. However, in an economic recession considerably more respondents (12 %) take clear measures to achieve "better processes through IT", "automation", "change management" and "platform (i.e. standardization) projects" or by "adapting resources or investments". A further 12 % of the interviewees also "reduce stock" during this phase. The purchasers explained that in an economic boom there is quite intense time pressure and a lot of operative work to do. Hence, it can be presumed that the lack of time deters them from fostering efficiency projects and therefore the risk of efficiency losses is also much higher than during an economic recession when they have more time for process improvement activities. Furthermore, it must be pointed out that very few purchasers (5 %) take marketing measures in order to strengthen their internal position and their importance with suppliers. Moreover, they take this action exclusively during an economic boom.

Finally, it can be stressed that in neither of the examined economic situations is the improvement or assurance of product or service quality mentioned by the interviewees. In addition, the push of innovation is also of little interest, i.e. it is neither mentioned as a possible risk nor do the respondents in all but two companies take action to foster innovations.

Summary of research findings. Summing up, the empirical findings support Johnston and Lewin's integrative framework by showing that the situative factor "economic characteristics" influence altered risk perception and in turn the behavior of purchasing managers in organizational buying.

Furthermore, the findings suggest that high risk per se, i.e. Johnston and Lewin's risk continuum, is not the only factor influencing organizational buying behavior but also the type of risk which is perceived. Johnston and Lewin identify different measures in organizational buying if perceived risk increases, among others that the buying center will gain decision making power, proven solutions (suppliers) will be favored, information search will be intensified and a collaborative negotiation strategy will be chosen (1996) [9]. The results of this study indicate that purchasing managers use these measures. However, in different economic situations the purchasers perceive diverse types of risk and adapt their measures accordingly. During the economic recession for instance, information search and analysis are very important. Conversely, in an economic boom, collaborative strategies are more likely to be used. The search for new unproven suppliers is also important and some purchasers lose decision making power by only

planning, documenting and forwarding the information to senior management.

As purchasing managers perceive risk differently it can be helpful for suppliers to understand the types of risk in order to better meet the needs of purchasers in diverse economic situations. Based on the examined types of perceived risk, sales and marketing managers of B to B companies could provide specific information and argumentation in negotiations to purchasing managers. They could support them in procurement marketing activities during an economic boom or to provide them data about internal production planning as well as non-confidential cost analysis. Conversely, during times of recession they could furnish financial information comparing competitors.

Further, it can be useful to question the opinion communicated by the purchasers, especially if the price issue alone is dominant. Based on the findings it can be proposed that even in difficult times (i.e. recession) the central risk perceived might not be financial risk, i.e. prices being too high, but rather performance risk, e.g. the assurance of supply.

The findings about the measures taken by the interviewed purchasing managers in different economic situations could possibly help to sharpen the alertness and prudence of marketing and sales teams when they plan and carry out activities. As the interviewed purchasers differentiate between long-term activities, e.g. long-term contracts, and partnership approaches – i.e. business relationships based on mutual trust and cooperation – a similar differentiation by the marketing management of suppliers could also be suitable in order to critically classify customer relationships and to consciously allocate resources. The findings further suggest that some companies pursue a co-operative policy during the times of economic boom only to change to aggressive buying behavior when recession afflicts business. Hence, a distinction between customers seems to be the most essential in B to B-marketing and strategic business relationships, e.g. in the form of careful selection of key account customers (see also Piercy et al. 2006) [22].

A further implication can be gleaned from the respondents' multi-sourcing activities. In the participating companies the search for new suppliers was an important measure taken by nearly half of the interviewed purchasers, but especially during the latest boom and not during the economic crisis. Hence, customer acquisition by B to B companies could be more successful in favorable economic conditions. The recent study of Belz et al. shows that industrial marketers evaluate the strengthening of sales activities such as customer acquisition as a very important marketing method in the current crisis (2010) [23]. The need to react in the crisis seems to be logical. However, it might also be deduced from the author's findings that customer acquisition activities should be intensified even in good times because purchasers' search for new suppliers tends to be a higher priority than in an economic recession.

Finally, the interviewed purchasing managers have taken more measures to improve processes – both internal and in the supply chain - during the latest recession in comparison to the previous economic boom. This can possibly be a hint for suppliers who work with their customers to improve supply chain processes to accelerate these kinds of projects when an economic downturn occurs.

As a limitation of the conducted study, the author recognizes that only a specific aspect of the organizational buying behavior has been examined, namely the economic situation as one particular situative factor. Hence, it should be noted that the industry, the type of purchase (new buy, modified rebuy and straight rebuy), the buying center structure, product characteristics, organization's performance and many more aspects may influence the perception of risk and ultimately buying behavior. As buying decisions are quite often influenced by diverse members of the buying center, in-depth research is needed on how risk perception differs among participants in the buying decision.

Moreover, the study was conducted mainly in Austria and Bavaria, where very similar cultures and attitudes prevail. In other countries where, for example, bargaining attitudes are more common, there may be differences in risk perception and measures taken by procurement. Additionally, the study focused on the very specific situations of an economic boom and economic recession. A longitudinal examination of the risk perception and behavior of purchasers, studied in various economic circumstances – e.g. economic downturn, upturn, etc., could provide further insights into this issue.

A possible limitation that must also be considered is that the interviews are open to subjectivity, as a single purchasing manager per enterprise was used. The reliability and validity of the results can, however, be considered sufficient as the examined companies were carefully chosen, and the data was diligently gathered and analyzed. Another restriction relates to a possibility of the research results being biased as a large number of companies were initially contacted but a limited number of those were willing to participate in the study and answer in a personal or telephone interview. The study was extended through the possibility to respond via email which made it impossible to further question the email respondents especially regarding open questions.

Finally, the limited number of interviews also restricts the possibility of making generalizations based on the research results. Therefore, further in-depth studies should analyze the issue using empirical data from different contexts and cultures.

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# **ANALYSIS OF THE MARKET OLIGOPOLISTIC MODEL (ON AN EXAMPLE OF AN ELECTRICITY MARKET IN MEXICO)**

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In this article, research of electricity market oligopolistic model, applied in Mexico, has been carried out and their results have been analyzed. Mexican electricity market is currently a monopoly regulated by the government (a competitive market has not been established yet). Thus, the given article can be evaluated as an empirical study of possible liberalization effects on Mexico. Analysis of the current electricity market has been conducted, the market structure (oligopolistic market), characterized not only by mutual influence on the market share price and government influence level, but a limited number of power suppliers on the market, has been explained. With the help of Cournot-Nash model electric companies maximize their profit and expand their market shares. For the comparison, we also introduce the notion of perfect competition, where each agent acts as a price taker equalizing prices and marginal costs in order to determine and maximize its profit has been introduced. The computational game theory, composed of mixed complementary problems (MCP), solved by the GAMS ([www.gams.com](http://www.gams.com)) with the application of PATH algorithm has been offered as a modeling tool. It has been applied to the primary data of the Mexican electricity market data to obtain Nash equilibrium and Cournot cases as well as development scenario of the USA international open trade market.

*Key words:* Mexican electricity market, liberalization effects, Cournot-Nash model, game theoretic, algorithm PATH, market scenario.

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## **АНАЛІЗ ОЛІГОПОЛІСТИЧНОЇ МОДЕЛІ РИНКУ (НА ПРИКЛАДІ РИНКУ ЕЛЕКТРОЕНЕРГІЇ В МЕКСИЦІ)**

УДК 332.1

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Проведено дослідження олігополістичної моделі ринку електроенергії, яка застосовується в Мексиці, і проаналізовано отримані результати. У даний час мексиканський ринок електроенергії є монополією, регульованою державою (конкурентний ринок ще не сформований). Таким чином, подана стаття є емпіричним дослідженням можливих наслідків лібералізації ринку електроенергії для Мексики. Проведено аналіз сформованого ринку електроенергії в Мексиці, пояснено структуру ринку (олігополістичний ринок), що характеризується не тільки загальним впливом на ціну частки ринку і рівнем державного впливу, а й обмеженою кількістю представлених на ринку фірм – виробників електроенергії. За допомогою моделі Курно-Неш багато фірм максимізують свій прибуток і збільшують свою частку на ринку. Для порівняння запропоновано поняття ринку ідеальної конкуренції, де кожен учасник діє як контролер цін, вирівнюючи їх і свої маржинальні витрати з метою правильного визначення прибутку та його максимізації. Як інструмент моделювання було запропоновано теорію ігор, що складається зі змішаних



взаємодоповнюючих завдань, які розв'язуються за допомогою The General Algebraic Modeling System (GAMS, [www.gams.com](http://www.gams.com)) за алгоритмом PATH (<http://www.gams.com/solvers/solvers.htm#PATH>). Запропонований інструмент був застосований до вихідних даних мексиканського ринку електроенергії для отримання "рівноваг Неша" і "випадків Курно", а також до сценарію розвитку міжнародного відкритого ринку торгівлі з США.

*Ключові слова:* ринок електроенергії Мексики, ефект лібералізації, модель Курно-Неша, теорії ігор, алгоритм PATH, сценарії розвитку ринку.

## АНАЛИЗ ОЛИГОПОЛИСТИЧЕСКОЙ МОДЕЛИ РЫНКА (НА ПРИМЕРЕ РЫНКА ЭЛЕКТРОЭНЕРГИИ В МЕКСИКЕ)

УДК 332.1

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Проведены исследования олигополистической модели рынка электроэнергии, применяемой в Мексике, и проанализированы их результаты. В настоящее время мексиканский рынок электроэнергии является монополией, регулируемой государством (конкурентный рынок еще не сформирован). Таким образом, представленная статья является эмпирическим исследованием возможных последствий либерализации рынка электроэнергии для Мексики. Проведен анализ сложившегося рынка электроэнергии в Мексике, объяснена структура рынка (олигополистический рынок), который характеризуется не только общим влиянием на цену доли рынка и уровнем государственного влияния, но и ограниченным количеством представленных на рынке фирм – производителей электроэнергии. С помощью модели Курно-Нэш многие фирмы максимизируют свою прибыль и увеличивают свою долю на рынке. Для сравнения предложено понятие рынка идеальной конкуренции, где каждый участник действует как контролер цен, выравнивая их и свои маржинальные издержки с целью правильного определения прибыли и ее максимизации. В качестве инструмента моделирования была предложена теория игр, состоящая из смешанных взаимодополняющих задач, разрешаемых с помощью The General Algebraic Modeling System (GAMS, [www.gams.com](http://www.gams.com)) по алгоритму PATH (<http://www.gams.com/solvers/solvers.htm#PATH>). Предложенный инструмент был применен к исходным данным мексиканского рынка электроэнергии для получения "равновесий Нэша" и "случаев Курно", а также к сценарию развития международного открытого рынка торговли с США.

*Ключевые слова:* рынок электроэнергии Мексики, эффект либерализации, модель Курно-Неша, теория игр, алгоритм PATH, сценарии развития рынка.

Electricity systems are currently being restructured, or are about to be restructured, in many parts of the world. The process does not follow a single paradigm, but some features are common to most situations. Competition is introduced in the generation of electricity while transmission and distribution remain regulated monopolies. A new function, namely supply, that matches loads and generation of variables of different types is introduced. It is undertaken by generators and/or by intermediaries commonly referred to as "power marketers".

Generators and/or power marketers need to have access to transmission and distribution services in order to reach their customers.

Thus, there also exists an organization in charge of supplying these services. A wide variety of institutions can be constructed on the basis of these few principles. Different paradigms of restructured electricity systems are already found in Europe and the United States today.

Within the liberalization process of the European energy market guaranteed territorial monopolies were canceled in the electricity production, resulting in a new structure of energy supply and technologies. An industrial and household consumer was granted free access to different electricity providers. In many cases we even get internal and external competition in the market due to foreign providers entering the market. The competition process on electricity markets provides for great changes and new challenges to all energy producers. Still, in order to provide a sufficient and long term cost-efficient energy policy by the former "natural monopolies", as well as for an undistorted competition, strong guidelines from state authorities must be implemented.

Different kinds of non-cooperative games within various and spatially distinct markets have been examined by diverse authors.

Murphy et al. demonstrate mathematical programming approach in order to determine oligopolistic market equilibria.

Salant and Shaffer illustrate the theoretical impacts on production and social welfare by two stage Cournot-Nash solutions including investments due to learning by doing and R&D determining marginal costs of identical agents differently.

On the way to perfect competition in the electricity market, strategic behavior (i.e. cooperation, refusal of collaboration, of refusal of net access) will determine the development of energy suppliers market structure and the composition of technologies employed. Energy suppliers will optimize their production gains and their strategic behavior by maximizing market shares, increasing electricity prices, and lowering demand or consumption surplus. New energy products – such as energy services, and new market actors – such as electricity brokers, will be established.

In particular, maximizing market shares could lead to higher electricity prices, increasing production and decreasing consumption surplus, while perfect competition warrants lower prices and market gains, and an apparent increase in demand for electricity.

The principal aim of the given analysis was to investigate different strategic behaviour opportunities of Mexican market agent.

The paper is organized in the following way: the next section contains a brief description of main ideas and links of the game theoretic modeling tool, and describes the conjectural Nash equilibrium framework. The last section summarizes numerical test results and completes the paper with conclusions.

This section is based mainly on the paper by Kemfert and Kalashnikov (2002) [1], which specifies that the current Germany electricity market supply structure is characterized by natural oligopolies. Principal market agents are spatially separated in their current regional territories in Germany. Similarly, regional producers of the electricity, which now belong to Commission Federal de Electricidad (CFE), are allowed to act independently and offer their service not only to the regional, but also to neighboring regions' customers.

Electricity supply and demand by aggregated households and industries determine regional equilibrium price. In order to investigate the effects of a liberalized electricity market in Europe/Germany, and the authors are going to apply it now for Mexico, a computational analysis tool EMELIE has been developed. It includes strategic behavior of firms and market agents.

EMELIE can be characterized as a computational game theoretic modeling tool in order to investigate strategic behavior of firms in Europe. The EMELIE model is a static year-based model and not an hour-based model, because we are interested in economic and environmental consequences of market producer behavior at the aggregate level. It was not our primary interest to address the economic consequences of the daily electricity trade at the electricity exchanges. The process of liberalization may have serious consequences for the market structure of the European electricity market. From the economic theory of industrial organization, known that there is a range of possible market structures, it is known which could become applicable to the liberalized electricity market. There are two extreme possible market structures, namely monopoly and perfect competition. In the monopoly case, there is one large and dominant company (monopolist), as is the case of EdF in France. Due to its position, EdF could affect the market price of electricity in France in a liberalized market. In perfect competition, there are a substantial number of electricity producers with small market shares. None of the firms can execute any dominancy in the electricity market, and therefore, they cannot affect market prices. Between these two extreme market structures, there is a wide range of other possibilities, which are the so-called oligopolies. In the case of oligopolies, there are a limited number of medium-sized or large firms, and these firms dominate the supply of electricity.

Due to the size of these firms, they can affect market prices. In Germany, for instance, the initial number of 30 small companies has reduced to four large firms over a time span of a few years due to the process of liberalisation. In order to reduce market power on the national markets, governments introduce maximum allowable market shares. Although these limitations apply to domestic markets, there is no restriction on acquiring market shares in adjoining markets.

In this paper we have examined the case when, at the starting and the finishing stages of the game, electricity suppliers realize a Cournot-Nash equilibrium with their profits maximized.

Profits are calculated upon marginal production costs and price dependent demand, the latter relationship being represented by an inverse demand function, which is twice continuously differentiable.

At the intermediate stage of the game, firms maximize their profits given the strategic behavior of the other agents. Profits are computed on the basis of variable production costs, maximum net power, net access costs and transportation costs.

Market shares, which may change with merges or cooperation, also play an important role. In the oligopolistic market structure, prices can be dependent upon the market shares and market powers. Prices are also influenced by the price elasticity of demand, and it is exactly here that the influence coefficients arise. In a situation of perfect competition, that we calculate for the purpose of comparison reason, that is not the case.

The main scientific goal of this paper is to evaluate possible liberalization processes of the Mexican electricity market with the application of a game theoretic modeling tool at the Mexican level, which uses data and information from key Mexican energy suppliers and their market behaviour. The output of the model is used to analyze the implications on trade, economic change, technology choices and the environment. The main emphasis of this project is on the liberalization process from a monopolistic or imperfect market towards a fully competitive electricity market in Mexico.

When solving optimization problems, it is often useful to remember that each problem of this kind can be reduced to a complementarity problem. Generally speaking, in the complementarity framework, either a nonnegative variable is zero or the corresponding inequality constraint is active, i.e. is in fact equality. Primarily, by solving a mixed complementarity problem (MCP), the Karush-Kuhn-Tucker (KKT) optimality conditions are determined and solved for a decision variable. The MCP format and the KKT conditions are equivalent. Therefore, each MCP can be transformed to the classical optimality conditions and vice versa. The idea behind the MCP formulation is to develop a program that permits the classical decomposition method to be obsolete, instead ascertaining the MCP conditions directly. The main advantages of MCP are: (1) simultaneous and parallel determination of decision variables and side constraints, and (2) solution of complex mathematical programs without an explicit formulation of the objective function. Specially developed solvers detect the MCP format directly and point out, if necessary, if side constraints are defined incorrectly. Present day computer technologies allow an uncomplicated and fast solution of MCPs by mathematical algorithms. At this moment, for instance, GAMS provides MILES and PATH as major solvers. cf. Rutherford (1993) and Ferris and Sinaoiromsaran (1998) [2; 3], respectively. In addition, applying the MCP method, one avoids the intricacy of finding a solution by a standard nonlinear programming (NLP) solver when the starting values are distant from the optimum point.

Transforming an optimization problem into a MCP formulation requires specification of the first-order optimality conditions taking into account all upper and lower bounds of the decision variables.

The MCP format allows a quite simple characterization of simultaneously processed decision variables (as in Games Theory) and a fast solution procedure. GAMS provides this highly efficient formulation mainly to realize reciprocal modeling approaches arising, for

example, in game theoretic or applied general equilibrium concepts, cf. Ferris and Pang (1995) [2].

The Cournot-Nash game is characterized by mutual strategic reactions of individual market agents. This results in Nash equilibrium where all strategies of market agents are the best replies (optimal responses) to the same of the other market participants.

In MEMM (Mexican Electricity Market Model), we have divided the country into 3 parts: Mexico North, DF+Central Part and Mexico South. 32 energy suppliers or market agents have been distinguished, corresponding to their natural areas: Baja California, Baja California Sur, Coahuila, Chihuahua, Durango, Nuevo Leon, Sonora, Tamaulipas, Aguascalientes, Colima, Distrito Federal, Guanajuato, Guerrero, Hidalgo, Jalisco, Mexico, Mechiocan, Morelos, Nayarit, Puebla, Queretaro, San Luis Potosí, Sinaloa, Tlaxcala, Veracruz, Zacatecas, Campeche, Chiapas, Oaxaca, Quintana, Roo, Tabasco, Yucatán.

Each individual energy supplier reacts as a market player that observes the quantity strategy within a non-cooperative oligopolistic game and maximizes his/her individual profit assuming that all other players also apply the gain maximization strategy. They are allowed to supply electricity to their part, as well as to a neighboring part ( e.g. Mexico North supplier can trade within his own region and with DF+Central Part, DF+Central Part agents can trade with both North and South, as well as within their own region, South can trade within its own region and with the Center). Electricity produced by one competitive player affects the sales and trade volumes of other producers. Within the classical Cournot model, each producer assumes that it is only himself/herself who varies his/her output, not other producers. At last, on the perfect competition market, agents behave as price takers, equalizing market prices to marginal production costs.

As well, we include the open trade scenario, in which free electricity trade is established between Mexico and USA.

MEMM can be characterized as a game theoretic model for the electricity market assuming perfect information, constant price elasticity within all regions, linear cost functions and a regional electricity production linked by trade flows. Each producer renders his/her supply only in one region.

Apart from input parameters of electricity production, price elasticity of demand, transportation costs and transmission grid capacities are exogenous. MEMM determines regional electricity prices, marginal electricity production costs, produced and traded electricity per technology per firm. Principal outcomes are the optimal market shares of each electricity producer in terms of the Hirschmann-Herfindal index (HHI) to measure market concentration, regional prices and interregional trade flows.

With

F – set of firms

R – set of regions

I – set of technologies

and

$l : F \rightarrow R$  – location mapping such as that  $l(f) = r$

only in case firm

f is located mainly in region r

$t(l(f), r)$  – net access for electricity  $l(f)$  to regions including taxes

$c(i)$  – variable production costs for technology i

$de_0(r)$  – reference demand for electricity in region r

$pe_0(r)$  – reference price for electricity in region r

$\sigma(f, r)$  – regional price elasticity of electricity

demand in region r conjectured by firm f

$capaco(r, r^*)$  – interregional net capacity

$xlim(i, f)$  – maximum capacity of technology i in

firm f

$pe(r)$  – demand price for electricity in region r

$mc(f)$  – marginal costs of electricity production

by firm f

$\tau(l(f), r)$  – shadow price of electricity transportation from region  $l(f)$  to region r

$u(f, r)$  – market share of firm f in region r

$s(f, r)$  – supply of firm f to region r

$x(i, f)$  – production by firm f with technology i

$netx(r, r^*)$  – net export of electricity from region r

to region  $r^*$

The Nash equilibrium is determined by the optimality conditions for profit maximization, equalizing marginal production plus transportation costs and prices corrected for monopoly markup and price elasticity of demand. The MCP expression applies the optimality conditions of non-linear programs as KKT conditions and obtains the optimal value of the decision variable due to their upper and lower bounds (see Ferris and Sinoiromsaran, 1998). Following the Kemfert and Kalashnikov (2002) [1] framework, we can write the equilibrium conditions as follows.

$$mc(f) + \tau(l(f), r) + t(l(f), r) \leq pe(r) \left(1 - \frac{u(f, r)}{\sigma(f, r)} \cdot \text{nash}\right), \forall r \in R, \forall f \in F \quad (1)$$

with  $\tau(l(f), r) = t(l(f), r) = 0$  if  $l(f) = r$ , which means that the willingness for an electricity supplier to pay extra charge for net access is zero if the network is not exhausted, and we also assume, that within the regions our network connection is well developed, so we do not run into intra regional energy transfer problems.

Coefficient  $\text{nash} = 0$  for perfect competition,  $\text{nash} = 1$  for Nash-Cournot equilibrium.

Electricity is transported and traded from region  $l(f)$  to region r if  $l(f) \neq r$ . Marginal production costs may increase together with the shadow prices of the

capacity constraints. Net access may include taxes (which aren't in our current version of the model).

In the Nash equilibrium, prices are presented by the inverse demand function which includes price elasticity of demand and the market share of firms.

The individual demand share is determined by

$$u(f, r) = \frac{s(f, r)}{\sum_{g \in F} s(g, r)} \quad \forall r \in R, \forall f, g \in F \quad (2)$$

An upper bound of marginal costs is given by

$$mc(f) \leq c(i) \quad \forall i \in I, \forall f \in F \quad (3)$$

Note that this inequality constraint is formulated this way because the lower bound of mc is zero.

The total supply is equal to the total production (that is, the market is cleared completely):

$$\sum_{i \in I} x(i, f) = \sum_{r \in R} s(f, r) \quad \forall f \in F \quad (4)$$

Aggregate supply of firms in region r equals the corrected total demand in that region, i.e.

$$\sum_{f \in F} s(f, r) = de_0(r) \left( \frac{pe(r)}{pe_0(r)} \right)^{-\sigma} \quad \forall r \in R \quad (5)$$

where  $\sigma(r) > 0$  is a parameter based upon the elasticity conjectured by firms-producers in region r. We assume that the elasticity parameters are 0.4 for North and Central Mexico, which is standard for the electricity markets and 0.29 for South, where we have underdeveloped inter-regional network capacities.

Net exports of region r to region  $r^*$  with  $r \neq r^*$  is established by

$$netx(r, r^*) = \sum_{f \in M} s(f, r^*) - \sum_{f \in M^*} s(f, r) \quad \forall r, r^* \in R \text{ and } r \neq r^*, \quad (6)$$

where  $M = \{f \in F \mid l(f) = r\}$  and  $M^* = \{f \in F \mid l(f) = r^*\}$ .

Exports and imports are limited by net capacity:

$$netx(r, r^*) \leq capaco(r, r^*) \quad \forall r, r^* \in R \text{ and } r \neq r^*. \quad (7)$$

The maximum net production of each individual technology i bounds net production or supply of electricity by firm f:

$$x(i, f) \leq xlim(i, f) \quad \forall i \in I \text{ and } \forall f \in F. \quad (8)$$

Nonnegative constraints are valid for the variables below:

$$s(r), x(f), p_e, m_c, r \geq 0. \quad (9)-(14)$$

These models relationships are programmed in the language GAMS as a MCP solved by the algorithm PATH. An optimal solution is found by maximizing regional profits under all the constraints.

Table 1 and Table 2 display, respectively, perfect competition and Cournot-Nash equilibrium optimal prices, demands, exports and imports.

Table 1

**Regional Model Results: Perfect Competition**

| Region   | Prices in Pesos/KWh | Demand in TWh/year | Export in TWh/year | Import in TWh/year |
|----------|---------------------|--------------------|--------------------|--------------------|
| Region 1 | 0.450               | 74.051             | 62.906             | 60.286             |
| Region 2 | 0.450               | 126.728            | 133.799            | 57.113             |
| Region 3 | 0.500               | 31.430             | 16.947             | 29.783             |

Table 2

**Regional Model Results: Cournot-Nash Equilibrium**

| Region   | Prices in EURO/KWh | Demand in TWh/year | Export in TWh/year | Import in TWh/year |
|----------|--------------------|--------------------|--------------------|--------------------|
| Region 1 | 0.466              | 72.993             | 60.286             | 51.287             |
| Region 2 | 0.534              | 118.396            | 119.041            | 53.880             |
| Region 3 | 0.096              | 26.087             | 20.596             | 20.792             |

Tables 3 and table 4 display, respectively, perfect competition and Cournot-Nash equilibrium optimal prices, demands, exports and imports in case of the open market, e.g. the United States exporters are able to sell electricity on the domestic Mexican market.

Table 3

**Regional Model Results with Open Trade: Perfect Competition**

| Region   | Prices in Pesos/KWh | Demand in TWh/year | Export in TWh/year | Import in TWh/year |
|----------|---------------------|--------------------|--------------------|--------------------|
| Region 1 | 0.378               | 76.220             | 64.555             | 64.357             |
| Region 2 | 0.423               | 126.98             | 134.044            | 57.640             |
| Region 3 | 0.499               | 31.432             | 16.946             | 29.788             |

Table 4

**Regional Model Results with Open Trade: Cournot-Nash Equilibrium**

| Region   | Prices in EURO/KWh | Demand in TWh/year | Export in TWh/year | Import in TWh/year |
|----------|--------------------|--------------------|--------------------|--------------------|
| Region 1 | 0.453              | 78.270             | 64.361             | 54.033             |
| Region 2 | 0.512              | 119.504            | 121.88             | 53.344             |
| Region 3 | 0.096              | 26.23              | 21.0               | 20.792             |

|          |       |         |        |        |
|----------|-------|---------|--------|--------|
| Region 1 | 0.453 | 78.270  | 64.361 | 54.033 |
| Region 2 | 0.512 | 119.504 | 121.88 | 53.344 |
| Region 3 | 0.096 | 26.23   | 21.0   | 20.792 |

Presently, the Mexican electricity market can be represented as a monopolistic market structure characterized by highly increased prices. But, if we give regional representatives of CFE some degree of freedom (we still can have all the production and network centralized and owned by the state corporation – CFE), like the possibility to offer their electricity to neighboring regions, and some net access, we obtain the oligopolistic market with competition of the participants. Computationally, this oligopolistic market structure can be realized as a Cournot-Nash equilibrium game in which the firms maximize their profits. This model is composed in GAMS as a mixed complementarity problem (MCP) solved by nonlinear complementarity and equation system solvers.

The test calculations show that the switch from the monopoly to the classical Cournot-Nash equilibrium may lead to lower consumer prices combined with higher demand, which means higher level of public wealth. It seems to be more efficient to allow the domestic supply authorities to trade with neighboring regions by offering their services to customers. The degree of achieved competition can be noticeably high – the comparison with the perfect competition model shows that the price difference is very small for northern Mexico, making more difference to the Center and especially South, though. That can be explained by the underdeveloped network connection between central and southern regions of Mexico.

As well, the possibility of international trade shows positive effect on prices and demand growth, but this effect is not crucial due to underdevelopment of the transportation capacities.

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# РОЗВИТОК НАУКОВО-МЕТОДИЧНИХ ПІДХОДІВ ДО РОЗУМІННЯ ПОТЕНЦІАЛУ ЯК ЕКОНОМІЧНОЇ КАТЕГОРІЇ

УДК 658.5:33

Касьяненко В. О.

Узагальнено існуючі, а також виокремлено цілий ряд нових науково-методичних підходів до визначення поняття "потенціал": ресурсний – у вузькому та широкому розумінні, ймовірнісний, результатний, структурний, цільовий, результатно-ймовірнісний, що здійснювалося за критерієм урахування у визначеннях основних характеристик досліджуваної категорії, зокрема: ресурси – наявні або потенційні, можливості досягнення ефекту, фактори формування потенціалу, здатність до розвитку, ступінь потужності ресурсів та можливостей.

*Ключові слова:* потенціал, ресурси, можливості, запаси, джерела.

## РАЗВИТИЕ НАУЧНО-МЕТОДИЧЕСКИХ ПОДХОДОВ К ПОНИМАНИЮ ПОТЕНЦИАЛА КАК ЭКОНОМИЧЕСКОЙ КАТЕГОРИИ

УДК 658.5:33

Касьяненко В. А.

Обобщены существующие, а также выделен ряд новых научно-методических подходов к определению понятия "потенциал": ресурсный – в узком и широком смысле, вероятностный, результатный, структурный, целевой, исходно-вероятностный, что осуществлялось по критерию учета в определениях основных характеристик исследуемой категории, в частности: ресурсы – имеющиеся или потенциальные, возможности достижения эффекта, факторы формирования потенциала, способность к развитию, степень мощности ресурсов и возможностей.

*Ключові слова:* потенциал, ресурсы, возможности, запасы, источники.

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## DEVELOPMENT OF THE SCIENTIFIC AND METHODOLOGICAL APPROACHES TO UNDERSTANDING OF POTENTIAL AS AN ECONOMIC CATEGORY

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V. Kasianenko

The existing approaches to the definition of the term "potential" have been summarized and the new scientific and methodological approaches have been singled out: resource (in the narrow and broad sense), probabilistic, resulting, structural, target-oriented, initially probabilistic, which was carried out taking into account main characteristics of the studied categories, including: resources (available or potential), possibilities to produce effect, factors of potential formation, the ability to develop the capacity of resources and opportunities.

*Key words:* potential, resources, opportunities, deposits, sources.

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У сучасних умовах господарювання ефективність роботи будь-якого економічного суб'єкта прямо залежить від його здатності швидко адаптуватися до мінливих умов зовнішнього



середовища. За таких умов особливої уваги набуває формування адекватного уявлення про співвіднесення поточних і перспективних можливостей господарюючого суб'єкта, тобто про його потенціал. Варто зазначити, що поняття "потенціал" на сьогодні не має однозначного трактування, дослідники по-різному визначають його сутність, різновиди, межі доцільності використання під час розв'язання проблем економічного розвитку. Зазначене вносить неузгодженість у теоретичні дослідження, значно обмежує наукові розробки в напрямку встановлення місця даної економічної категорії в загальній системі понять теорії потенціалів, обумовлює невизначеність щодо застосування відповідних методів і прийомів наукових досліджень тощо.

Дослідження проблем, пов'язаних з визначенням сутності та змісту поняття "потенціал", а також особливостей формування його структуроутворюючих елементів на різних рівнях теоретичного узагальнення знайшло відображення у багатьох наукових працях як зарубіжних вчених – І. Ансоффа, Г. Маркузе, К. Миско, Дж. Мора, О.

Тоффлера, так і вітчизняних дослідників – Л. Абалкіна, В. Архангельського, Г. Добра, К. Воблого, Гришиної Л. О., Єфімової Г. В., Є. Лапіна, А. Люкшинова, Л. Мельника, Б. Молчанова, Н. Краснокутської, Т. Храмцової та ін. Разом з тим проведені дослідження показали, що до сьогодні в економічній науковій думці не існує одностайності щодо визначення сутності, різновидів потенціалу, оцінки ролі та меж доцільності використання цього терміна під час розв'язання проблем економічного розвитку. Це зумовлює потребу у поглибленні наукових досліджень у напрямку з'ясування сутнісних ознак цього поняття для того, щоб у подальшому віднайти їй адекватне функціональне призначення.

Мета роботи полягає в розвитку науково-методичних підходів до розуміння сутності потенціалу як економічної категорії.

Проведені дослідження літературних джерел та їх теоретичне узагальнення дозволяють зробити висновок, що у наукових працях з економіки потенціал традиційно розглядається відносно країни, регіону, галузі та підприємства (рисунок).

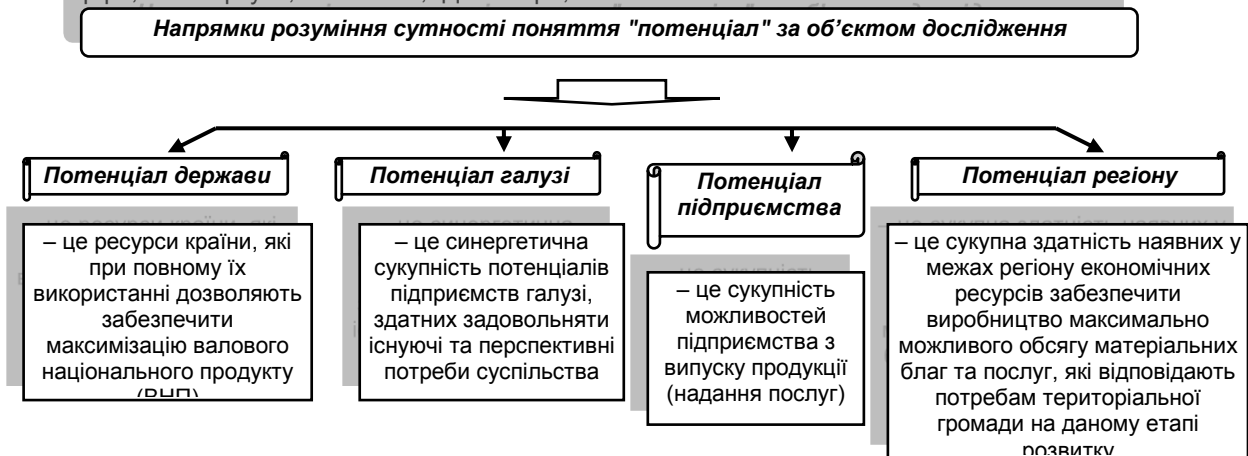


Рис. Напрямки розуміння сутності поняття "потенціал" залежно від об'єкта дослідження

Разом з тим зміст поняття "потенціал" незалежно від об'єкта дослідження суттєво не змінюється. Так, наприклад, у роботі Люкшинова А. М. [1], потенціал підприємства розглядається як сукупність його можливостей з випуску продукції (надання послуг). Подібне визначення, однак відносно потенціалу регіону, наводять у своїх дослідженнях Гришина Л. О. та Єфімова Г. В., які пропонують під ним розуміти сукупну здатність наявних у межах регіону економічних ресурсів забезпечити виробництво максимально можливого обсягу матеріальних благ та послуг, які відповідають потребам суспільства на даному етапі розвитку [2].

Крім того, доволі часто в літературі описуються не лише економічний, але й виробничий, науково-технічний, підприємницький, інтелектуальний, інноваційний і навіть креативний потенціали. Як наслідок, відсутність концептуалізації у заданому напрямку дослідження породжує плутанину не лише

щодо визначення потенціалу як економічної категорії, але і щодо наповнення його змісту, тобто формування складових частин.

Перш за все, слід зазначити, що у ході дослідження було встановлено, що поняття "потенціал" активно почало використовуватися в науковій літературі з кінця 1970-х – початку 1980-х рр., що обумовлено активізацією досліджень у заданому науковому напрямку. Варто зазначити, що визначене поняття латинського походження та у перекладі означає "міць, силу". Однак більшість науковців, які досліджують це питання, трактують його як ступінь потужності в якому-небудь відношенні, сукупність засобів, необхідних для реалізації поставленої мети.

У ході проведеного дослідження було встановлено, що підходи до розуміння поняття "потенціал" змінювалися в міру розвитку суспільства та пройшли у своєму формуванні кілька етапів. Еволюція наукової думки щодо змісту поняття "потенціал" відображена в

табл. 1.

Таблица 1

## Хронологія розвитку економічного змісту поняття "потенціал"

| Рік  | Автор                                  | Трактування терміна "потенціал"   |
|------|--|---|
| 1    | 2                                      | 3   |
| 927  | Вейц В. [3]                            | Потенціал – потенційна можливість країни виробляти матеріальні блага для задоволення потреб населення   |
| 950  | Велика радянська енциклопедія [4]      | Потенціал – джерело, що є в наявності, яке здатне здійснювати певну дію або використовується для досягнення певної мети   |
| 967  | Нємчинов В. С. [5]                     | Потенціал – ресурсні можливості національної економіки для здійснення економічного зростання  |
| 981  | Абалкін Л. І. [6]                      | Потенціал – це узагальнена збірна характеристика ресурсів, прив'язана до місця й часу   |
| 983  | Архангельський В. М. [7]               | Потенціал – це засоби, запаси, джерела, які є в наявності і можуть бути мобілізовані для досягнення певної мети або розв'язання певного завдання  |
| 1989 | Радянський енциклопедичний словник [8] | Потенціал – це засоби, запаси, джерела, що є в наявності та що можуть бути мобілізовані, приведені в дію, використані для досягнення певної мети, здійснення плану, вирішення якого-небудь завдання   |
| 998  | Рєпіна І. М. [9]                       | Потенціал – сукупність ресурсів (трудових, матеріальних, технічних, фінансових, інноваційних тощо), навичок і можливостей керівників, спеціалістів та інших категорій персоналу щодо виробництва товарів, здійснення послуг (робіт), отримання максимального доходу (прибутку) і забезпечення сталого функціонування та розвитку підприємства |

Закінчення табл. 1

| 1   | 2                                  | 3   |
|-----|------------------------------------|---|
| 001 | Олексюк О. І. [10]                 | Потенціал підприємства – максимально можлива сукупність активних і пасивних, явних і прихованих альтернатив (можливостей) якісного розвитку соціально-економічної системи у певному середовищі з урахуванням ресурсних, структурно-функціональних, часових, соціокультурних та інших обмежень |
| 004 | Краснокутська Н. С. [11]           | Потенціал – це можливості системи ресурсів і компетенції підприємства створювати результат для зацікавлених осіб за допомогою реалізації бізнес-процесів  |
| 007 | Хомяков В. І.,<br>Бакум І. В. [12] | Потенціал – це джерела, можливості, засоби, запаси, які можуть бути приведені в дію, використані для вирішення якого завдання, досягнення певної цілі, можливості окремої особи, суспільства, держави, підприємства в певній галузі   |

Як видно з табл. 1, на сьогодні в економічній науковій літературі спостерігається розмитість предметного поля дослідження, оскільки існує декілька підходів до розуміння сутності потенціалу. Так, зокрема, автор пропонує виділити ресурсний, ймовірнісний, результатний, результатно-ймовірнісний, структурний, цільовий, емнісний та системний підходи. Стисло розглянемо зміст кожного з них.

Прихильники ресурсного підходу до розумінні сутності поняття "потенціал" розглядають його виключно як деяку критичну масу ресурсів, необхідних для розвитку системи. При цьому варто акцентувати увагу на тому, що в літературі склалося дві ресурсні позиції. Згідно з першою позицією потенціал – це сукупність наявних ресурсів, інша – наголошує на тому, що під потенціалом варто розуміти наявні та потенційно можливі ресурси.

Варто зазначити, що поданий підхід є найпоширенішим у науково-методичній літературі, що, насамперед, обумовлено ресурсною сутністю потенціалу (наявні ресурси, які в перспективі

можуть бути використані та за певних діючих умов можуть сприяти вирішенню поставленої мети). Однак, на думку автора, таке трактування досліджуваної категорії є досить широким, відповідно його використання доволі обмежене при вирішенні окремих прикладних та теоретичних завдань. На переконання автора, окрім кількісних характеристик потенціалу, важливо враховувати та оцінювати можливості його ефективного використання, які залежать від раціональності розміщення ресурсів. Подібної точки зору, зокрема, дотримується Храмцова Т. Г., яка у своїх працях наголошує на тому, що потенціал – це не тільки й не просто кількість ресурсів, але й укладена в них можливість розвитку системи в заданому напрямку, причому можливості повинні бути реалізованими [13].

При цьому акцентуємо увагу на тому, що в спеціалізованій літературі поняття "потенціал" трактується як "засоби, запаси, джерела, що є в наявності і здатні бути мобілізовані, введені в дію, використані для досягнення певної мети, здійснення

плану, вирішення якого-небудь завдання, можливості окремої особи, суспільства, держави в певній області". Така точка зору викладена у Великій радянській енциклопедії [13], а також у словнику А. Азріліяна [14]. Проте згідно з Великим енциклопедичним словником "ресурси" (від фр. ressource – допоміжний засіб) – це грошові кошти, цінності, запаси, можливості, джерела засобів, доходів [8], тобто ресурси, власне, і є сукупністю засобів, запасів, джерел та ін. Крім того, на думку автора, сама по собі наявність ресурсів не є гарантом досягнення будь-яких цілей. Досить вагомою при цьому є здатність суб'єкта сприйняти ці ресурси та мобілізувати їх у подальшому для досягнення поставлених цілей. Разом з тим, на думку Абалкіна Л. І. [6], з яким автор повністю погоджується, поняття "потенціал" та "ресурси" не варто протиставляти, оскільки потенціал становить "узагальнену, збірну характеристику ресурсів", прив'язану до місця та часу.

Таким чином, у межах визначеного підходу під потенціалом розуміється сукупність наявних та потенційно можливих сил, запасів, засобів, які можуть бути використані, або рівень потужності у будь-якому відношенні, сукупність засобів, необхідних для чого-небудь.

Ймовірнісний підхід розглядає потенціал як сукупність можливостей у якій-небудь сфері для досягнення певної мети. Так, наприклад, на думку Люкшинова А. М. [1], потенціал підприємства – це сукупність його можливостей з випуску продукції (надання послуг). Відповідно до визначення, наведеного в роботі [15], потенціал визначається як сукупність можливостей у певній сфері для досягнення поставленої мети. Такий підхід до визначення потенціалу, на думку автора, виглядає дещо звуженим, оскільки відображає лише одну з його граней.

Результатний підхід враховує лише наявні ресурси та можливості їх використання. Так, у Великій радянській енциклопедії зазначається, що потенціал – це наявні у розпорядженні системи ресурси, які здатні забезпечити випуск високоякісних товарів та послуг, необхідних для задоволення всебічного попиту широких верств населення. Разом з тим потенціал – це не лише кількість наявних ресурсів, але й можливості, що містяться в них, які забезпечують необхідні умови розвитку системи в певній галузі [4].

На думку автора, такий підхід є досить обмеженим, оскільки не враховує істотних характеристик потенціалу, базується на врахуванні лише наявної його величини, що практично виключає подальший розвиток потенціалу.

Прихильники структурного підходу розглядають потенціал як єдність структури та функцій об'єкта, виходячи з чого ефективність використання потенціалу прямо залежить від єдності структурних та функціональних складових елементів потенціалу. Вадюю визначеного підходу є той факт, що він залишає поза увагою суб'єктно-об'єктну залежність елементів системи, визначаючи

при цьому управління переважно як наслідок чи спосіб комбінації складових потенціалу.

Іншим, не менш поширеним, та на погляд автора, недостатньо обґрунтованим є визначення потенціалу з точки зору цільового підходу, в межах якого потенціал розуміється як потенційна можлива здатність об'єкта дослідження трансформувати наявні та потенційно можливі вхідні ресурси у вихідні. Такий підхід поданий у роботах Воблого К. Г.,

В. Вейца, Лапіна Є. В. Прихильники даного підходу розглядають потенціал як здатність до досягнення певної віддачі від вкладених ресурсів незалежно від їх виду; його оцінка зводиться до оцінки максимального результату, який можна отримати при наявній кількості, якості та структурі ресурсів.

Окремі автори в межах визначеного підходу акцентують також увагу на необхідності врахування можливостей суб'єктів ринку спеціалізуватися в тих видах економічної діяльності, за якими вони на певний проміжок часу мають абсолютні чи відносні переваги.

Таким чином, у межах визначеного підходу потенціал розглядається лише через спроможність системи виконувати поставлені перед нею завдання.

Дещо ширше сутність потенціалу визначають прихильники результатно-ймовірнісного підходу, які наголошують на тому, що з метою забезпечення ефективного розвитку мають урахуватися не лише реальні та потенційні ресурси, але й можливості їх використання. Тобто в межах визначеного підходу потенціал розглядається як деяка гранична величина реальних та потенційно залучених ресурсів. Отже, потенціал характеризує максимально можливий об'єм використовуваних ресурсів. Таким чином, прихильники даного підходу вживають поняття "потенціал" як синонім поняття "можливість" стосовно будь-якої сфери, "ступінь потужності" у будь-якому відношенні. Тобто в межах визначеного підходу, на відміну від попередніх, розглядаються не лише наявні та потенційні ресурси, а й можливості щодо їх використання.

Крім того, зазначений підхід, на відміну від попередніх, розглядає потенціал не як статичну величину, а в динаміці, оскільки базується на врахуванні факторів ринкового середовища, шляхом визначення бажаних, раціональних чи потенційних можливостей його використання. Разом з тим обмеженість визначеного підходу полягає в тому, що він зосереджується на простому виявленні альтернатив використання наявних у розпорядженні системи ресурсів або пошуку можливостей їх нагромадження.

На переконання автора, саме визначений підхід до трактування поняття "потенціал" найбільш повною мірою відображає всі його ключові характеристики, оскільки враховує як наявні та потенційно можливі ресурси, так і можливість їх використання, а також здатність об'єкта дослідження досягати поставлених цілей.

Результати порівняння підходів до визначення економічного змісту поняття "потенціал" наведено в табл. 2.

На основі аналізу наукових праць, логіки,

власних досліджень автора було визначено та класифікації потенціалу, які наведено в табл. 3. систематизовано науково-методичні підходи до

Таблиця 2

**Порівняння підходів до визначення економічного змісту поняття "потенціал"**

| Підхід до розуміння сутності категорії | Складові елементи досліджуваної категорії |            |                              |                               |                       |  |
|--|---|------------|------------------------------|-------------------------------|-----------------------|--|
|  | Ресурси                                   |            | Можливості досягнення ефекту | Фактори формування потенціалу | Здатність до розвитку | Ступінь потужності ресурсів та можливостей |
|  | наявні                                    | потенційні |                              |                               |                       |  |
| <i>Ресурсний підхід:</i>               |   |            |                              |                               |                       |  |
| <i>у вузькому розумінні</i>            | +   | -          | -                            | -                             | -                     | -  |
| <i>у широкому розумінні</i>            | +   | +          | -                            | -                             | -                     | -  |
| <i>Імовірнісний підхід</i>             | -   | -          | +                            | -                             | -                     | -  |
| <i>Результатний підхід</i>             | +   | -          | +                            | -                             | -                     | -  |
| <i>Структурний підхід</i>              | -   | -          | -                            | +                             | +                     | -  |
| <i>Цільовий підхід</i>                 | +   | -          | -                            | -                             | +                     | -  |
| <i>Результатно-імовірнісний підхід</i> | +   | +          | +                            | -                             | +                     | -  |

Таблиця 3

**Систематизація науково-методичних підходів до класифікації потенціалу**  
(складено автором на основі робіт [9; 17 – 20])

| Класифікаційні ознаки            | Автор, джерело  | Види потенціалу   |
|----------------------------------|---|---|
| 1                                | 2   | 3   |
| <i>За рівнем абстрагованості</i> | Федонін О. С., Рєпіна І. М., Олексюк О. І. [9]          | <ul style="list-style-type: none"> <li>• потенціал людства;</li> <li>• природний потенціал;</li> <li>• економічний потенціал</li> </ul> |
|                                  | Добров Г. М., Тонкаль В. Е., Савельєв А. А. та ін. [17] | <ul style="list-style-type: none"> <li>• людиноорієнтований потенціал;</li> <li>• технікоорієнтований потенціал</li> </ul>              |

Закінчення табл. 3

| 1   | 2  | 3   |
|---|--|---|
| <i>За ієрархічним положенням у структурі господарства</i>               | Карпенко Ю. В. [18]                            | <ul style="list-style-type: none"> <li>• соціокультурний потенціал;</li> <li>• психофізіологічний потенціал</li> </ul>  |
| <i>За рівнем абстрагованості оцінки</i>                                 | Федонін О. С., Рєпіна І. М., Олексюк О. І. [9] | <ul style="list-style-type: none"> <li>• потенціал світового господарства;</li> <li>• потенціал національної економіки;</li> <li>• галузевий потенціал;</li> <li>• регіональний потенціал;</li> <li>• потенціал підприємства, структурних підрозділів;</li> <li>• потенціал виробничих одиниць;</li> <li>• потенціал робочого місця</li> </ul>  |
| <i>За галузевою ознакою</i>   | Яцкова О. М. [20]                              | <ul style="list-style-type: none"> <li>• промисловий потенціал;</li> <li>• сільськогосподарський потенціал;</li> <li>• будівельний потенціал;</li> <li>• інфраструктурний потенціал;</li> <li>• транспортний потенціал;</li> <li>• військовий потенціал</li> </ul>  |
| <i>За формою задоволення суспільних потреб</i>                          | Карпенко Ю. В. [11]                            | <ul style="list-style-type: none"> <li>• економічний потенціал;</li> <li>• духовний потенціал</li> </ul>  |
| <i>За спектром урахованих можливостей</i>                               | Таранюк Л. М. [19]                             | <ul style="list-style-type: none"> <li>• внутрішньосистемний потенціал;</li> <li>• зовнішній (ринковий) потенціал</li> </ul>  |
| <i>За елементним складом (господарсько-функціональним призначенням)</i> | Федонін О. С., Рєпіна І. М., Олексюк О. І. [9] | <ul style="list-style-type: none"> <li>• потенціал основних виробничих фондів;</li> <li>• потенціал оборотних фондів;</li> <li>• потенціал землі;</li> <li>• організаційно-управлінський;</li> <li>• трудовий, кадровий та освітній;</li> <li>• фінансовий потенціал;</li> <li>• інвестиційний потенціал;</li> <li>• ресурсний потенціал;</li> <li>• науковий, технологічний, технічний потенціал;</li> <li>• інтелектуальний потенціал;</li> </ul> |

|  |  |   |
|--|--|---|
|  |  | <ul style="list-style-type: none"> <li>• інноваційний потенціал;</li> <li>• інформаційний потенціал;</li> <li>• експортний потенціал;</li> <li>• природно-ресурсний, екологічний потенціал</li> </ul> |
|--|--|---|

Таким чином, у результаті здійсненої деталізації видових проявів потенціалу можна зробити висновок, що визначення поняття "потенціал" може застосовуватися відносно країни, а також на рівні окремих галузей народного господарства та з огляду на окремі господарсько-функціональні призначення, а також у фізиці, хімії, психології тощо.

Результати проведеного дослідження науково-методичних підходів до розуміння сутності поняття "потенціал" дозволяють стверджувати не лише про їх значну кількість, але й про розпорошеність, несистемність та наявність значних сутнісних протиріч у визначеннях. Виходячи з визначеного вище можна зробити висновок, що поняття "потенціал", застосований до суб'єкта дослідження, повинно характеризувати не тільки комплекс наявних та потенційних ресурсів, але й можливості їх використання, а також інтегральні здатності цього суб'єкта ефективно вирішувати поставлені перед ним завдання, раціонально використовуючи при цьому ресурси, враховуючи та узгоджуючи різні інтереси.

Таким чином, слід зазначити, що у ході проведеного дослідження автором узагальнено існуючі, а також виокремлено цілий ряд нових науково-методичних підходів до визначення поняття "потенціал": ресурсний – у вузькому та широкому розумінні, ймовірнісний, результатний, структурний, цільовий, результатно-ймовірнісний. Виокремлення цих підходів здійснювалося за критерієм урахування у визначеннях основних характеристик досліджуваної категорії, зокрема: ресурси – наявні або потенційні, можливості досягнення ефекту, фактори формування потенціалу, здатність до розвитку, ступінь потужності ресурсів та можливостей. Автором виділено переваги та недоліки виокремлених підходів, що дозволило більш ґрунтовно дослідити сутність та виокремити найбільш змістовний підхід до трактування потенціалу.

Результати даної роботи будуть використані автором у подальших дослідженнях, присвячених розгляду інноваційного потенціалу національної економіки.

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# МОНОПОЛІЯ ЗНАНЬ ЯК ОСНОВНИЙ ЧИННИК ЕКОНОМІЧНОГО ЗРОСТАННЯ В УМОВАХ РОЗВИТКУ ГЛОБАЛІЗАЦІЇ

УДК 330. 341.424

Шевчук О. А.

Розглянуто посилення взаємозалежності елементів цивілізаційного процесу – структурних змін в економіці, що пов'язані з наявністю різних форм власності та систем зайнятості, глобалізації економіки, що впливає на міжнародний перелив людського капіталу, формування нової системи освіти як основного фактора розвитку людського капіталу та екології, що визначає рівень здоров'я людини, які привели до переосмислення чинників економічного зростання, основу якого становлять знання. Досліджено проблеми формування суспільства знань України як головного конкурентоспроможного механізму в умовах розвитку глобалізації.

*Ключові слова:* глобалізація, праця, знання, монополія, інтелектуальна власність, інноваційна економіка.

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## МОНОПОЛИЯ ЗНАНИЙ КАК ОСНОВНОЙ ФАКТОР ЭКОНОМИЧЕСКОГО РОСТА В УСЛОВИЯХ ГЛОБАЛИЗАЦИИ

УДК 330. 341.424

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Рассмотрено усиление взаимозависимости элементов цивилизационного процесса – структурных изменений в экономике, связанных с наличием различных форм собственности и систем занятости, глобализации экономики, влияющей на международный перелив человеческого капитала, формирования новой системы образования как основного фактора развития человеческого капитала и экологии, определяющей уровень здоровья человека, которые привели к переосмыслению факторов экономического роста, основу которого составляют знания. Исследованы рассмотрены проблемы формирования общества знаний Украины как главного конкурентоспособного механизма в условиях развития глобализации.

*Ключевые слова:* глобализация, труд, знания, монополия, интеллектуальная собственность, инновационная экономика.

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## THE MONOPOLY OF KNOWLEDGE AS THE MAIN FACTOR OF ECONOMIC GROWTH IN THE CONDITIONS OF GLOBALIZATION

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O. Shevchuk

Today's strengthening of interdependence between elements of the civilisation process – structural changes in the economy, associated with the presence of different



forms of ownership and employment systems; the globalization of the economy, which affected the international mobility of human capital; the formation of a new education system, as the main factor of human capital development and the environment, which determines the level of human health have led to a rethinking of the factors of economic growth, the basis of which is constituted by knowledge. The problems of formation of a knowledge society of Ukraine as the main competitive mechanism in the conditions of globalization have been studied in the article.

*Key words:* globalization, labour, knowledge, monopoly, intellectual property, innovative economy.

Сьогодні глобалізацію слід розглядати як розширення, інтенсифікацію та поглиблення світової взаємозалежності і взаємозв'язків, що проявляються у всіх аспектах сучасного життя, й особливо у її соціальній складовій – людському капіталі. Оскільки сучасна економічна система характеризується переходом до нового типу суспільно-економічного розвитку, що базується на знаннях, то саме завдяки людському капіталу відбувається взаємодія інтелекту різної національної належності.

Це пов'язано з тим, що господарська діяльність перетворюється в процес створення, поширення й використання знань, які виступають з одного боку, як ресурс, а з іншого – як кінцевий продукт діяльності. Саме знання стають безпосередньою виробничою силою, рушійною силою розвитку та основним чинником підвищення конкурентоспроможності. Тому виникає необхідність у висвітленні проблем формування суспільства знань як основного чинника для економічного розвитку нашої країни.

Сьогоднішні тенденції розвитку нових інформаційних та комунікаційних технологій сприяють розширенню глобалізації й покликані, на думку автора, перш за все, розповсюджувати нові знання, що знайшли своє відображення у теорії Knowledge Societies (суспільство, що функціонує на основі використання знань та бере безпосередню участь у формуванні нових знань). Ця теорія була розроблена канадським соціологом-теоретиком Н. Стером та знайшла подальшу оцінку в роботах іноземних авторів – Р. Лейна, П. Друкера [1], Д. Белла, Р. Арона та наших співвітчизників – М. Згуровського, В. Гейця [2], В. Кушерця [3], М. Ведмедева, О. Кортунова, А. Чугунова [4] та інших науковців.

Водночас недостатність висвітлення проблем формування суспільства знань як основи для розвитку інноваційної економіки в умовах розповсюдження глобалізації з позиції класичної економічної теорії визначило мету написання роботи.

З одного боку, глобалізацію можна

розглядати як конкурентний процес співробітництва на глобальному, міждержавному та національному рівнях, кінцевим результатом якого може з'явитися нарощування внутрішніх конкурентних переваг, а з іншого – через відносини монополізму, де основним монопольним ресурсом виступають знання.

Роль знань у сучасному світовому розвитку добре простежується в теорії "інформаційної глобалізації", більш відомої як "теорія золотого мільярда" [5].

Згідно з цією теорією, весь світ поділяється на три основні складові:

- постіндустріальне суспільство інтелектуальний, інформаційний світ, основу якого складає еліта, що забезпечує виробництво інформацією, науковими знаннями та створює наукомісткі технології;

- індустріальне суспільство, основною метою діяльності якого стає матеріальне виробництво, яке засновано на використанні інформації, що вже існує;

- сировинне суспільство, що характеризується низьким рівнем розвитку продуктивних сил, науково-технічною відсталістю та залежністю у системі світового господарства.

Альтернативою зазначеної теорії є інший підхід – концепція "стійкого розвитку" [6]. Ця теорія передбачає розвиток і піднесення в кожній людині інтелектуальної основи при задоволенні розумних матеріальних потреб, тобто за рахунок випереджального розвитку освіти.

Щодо України, то слід зазначити, що сьогодні ми перебуваємо на стадії переходу від індустріального до постіндустріального суспільства, де людина виступає активним суб'єктом на ринку праці, який вільно розпоряджається своїм інтелектуальним капіталом – кваліфікацією, знаннями та навичками.

Це пояснюється тим, що в умовах розвитку глобальної ринкової економіки, з огляду на надзвичайно високу рухливість її кон'юнктури, кожній людині доводиться змінювати як місце роботи, так і професію, особливо у зв'язку зі структурними змінами в економіці.

Розвиток науки, створення нових технологій і наукомістких виробництв неминуче підвищує вимоги до загальноосвітнього рівня та професійної кваліфікації кожного окремого працівника.

Оскільки в сучасних умовах частка розумової праці збільшується, а фізичної, навпаки, зменшується, то, відповідно, на перший план виступає здатність людини до навчання та її можливість правильно застосовувати особливий вид монополії – монополії на знання.

Для доведення зазначеної парадигми звернемось спочатку до класифікації праці.

В економічній літературі залежно від змісту праці розрізняють декілька її видів:

- просту – некваліфіковану працю, що не потребує спеціальних знань та навичок, і складну – кваліфіковану працю, що вимагає тривалої спеціальної підготовки;

- репродуктивну (від фрц. reproduction – відтворення), що передбачає виконання тих або інших дій за зразком та творчу (креативну) працю, що характеризується новизною знань;

- продуктивну працю, куди належать ті, хто зайнятий безпосередньо в процесі виробництва продукції. Це виробничий персонал та ті, хто зайнятий у виробництві, – допоміжний та технічний персонал, безпосереднім та основним результатом якого є конкретне благо. Крім продуктивної праці, окремо необхідно виділити управлінську працю, безпосереднім результатом якої є ідея. Це люди, які займаються проблемами управління діяльністю інших членів колективу та функціонально спеціалізованих структурних підрозділів підприємства і створюють умови для ефективної роботи як організації (на мікрорівні), так і економіки держави в цілому (на макрорівні).

Водночас незалежно від класифікації, як правило, праця розглядається з позиції розподілу останньої на фізичну та розумову.

Зазначимо, що визначені класифікації не враховують той факт, що будь-яка праця містить у собі елементи інтелектуальної праці. Незалежно від виду діяльності будь-яка людина використовує в процесі роботи свій інтелектуальний капітал. Це пояснюється, перш за все, тим, що сьогодні будь-яке виробництво починається з ідеї. Ці ідеї пов'язані з досягнутим рівнем економіки та характером виробничих відносин і генеруються на основі знань та існуючої інформації. Тобто ідеї, знання та інформація є основою для розвитку продуктивних сил, а в умовах розвитку інформаційних технологій безпосередньою виробничою силою стають набуті знання – інтелектуальний капітал, від правильного застосування якого залежить продуктивність як окремого товаровиробника, так і держави в цілому.

Оскільки ключовим елементом сучасного виробництва є висока частка розумової праці,

досягнення НТП, то можна констатувати, що першочергове значення в сучасному виробництві має не минула праця, а жива творча праця. Ця праця визначається рівнем знань, наукових відкриттів та нових технологій і систем управління, які визначають ступінь інтенсивності адаптації до технічних, технологічних та організаційних відкриттів і досягнень у виробництві.

Іншими словами, знання та інформація виступають основним системоутворюючим механізмом формування соціально-економічних відносин нового постіндустріального суспільства.

Це знаходить своє відображення у трансформації факторів виробництва, якісні зміні факторів праці, де головною складовою стають інформація, освіта, наука і технологія.

Таким чином, інтелектуальний капітал – це одна з основних складових людського капіталу, що є цілеспрямованим процесом конвертації знань у вартість за рахунок набутого досвіду та інформації, творчих здібностей людини і прав інтелектуальної власності, або інвестована суспільна праця, що створює нову вартість.

Сьогодні ефективність виробництва залежить від правильного застосування знань та інновацій. Це означає, що мінова вартість економічних благ, у першу чергу, залежить від вмісту в них знань, інформації та інтелекту, які стають основним джерелом прибутку, оскільки саме інтелектуалізація економіки сприяє підвищенню продуктивності праці.

Такий висновок надає можливість розглядати працю як креативну діяльність, специфічна роль якої полягає в отриманні знань про об'єктивну дійсність та шляхи і засоби її перетворення.

Щодо важливості знань на розвиток економіки, то корені цього постулату можна знайти ще в роботах Платона, який визначив статичність знань, що активізуються за рахунок активуючої дії людського розуму; у класичній політичній економії –

в роботах А. Сміта, який зазначив необхідність вузькоспеціалізованих навичок у процесі розподілу праці.

Сучасна економічна теорія трактує знання з різних позицій – як стратегічний економічний ресурс [7], як джерело влади [8], як інформацію, що надає можливість для здійснення ефективних дій [1], як вартість активів [9].

Зазначимо, що знання є особливим видом блага, яке може виступати у трьох основних формах – як фактор виробництва; як особисте, так і суспільне благо; як продукт праці, і як товар.

В основу цього дослідження покладена ресурсна концепція знань, аксіомою якої є системні відносини між суб'єктами господарської діяльності щодо ступеню контролю над знаннями. Оскільки, головним принципом вищезазначеної концепції є

залежність успіху від наявності унікальних ресурсів (у цьому випадку знань) та компетенцій (досвіду), то, відповідно, джерелом отримання додаткових доходів є саме інтелектуальна монополія – монополія на знання.

Такий підхід дозволяє розглянути знання з різних позицій – як особливий вид товару та як капітал, що надають можливості отримувати монополію на становище на ринку.

З метою обґрунтування визначеної позиції звернемось до класичної економічної теорії.

Фізично, за своєю природою, знання є необмеженими ресурсами, використання яких не призводить до їхніх якісних змін. Водночас необхідно підкреслити, що як фактор виробництва знання мають ряд специфічних рис, серед яких можна виділити такі:

- знання, незважаючи на їхню властивість безмежно розповсюджуватись, – є унікальними для кожного окремого індивіда;

- цінність знань обумовлена їхньою необхідністю для кожного окремого індивіда, що на відміну від інших факторів виробництва є суб'єктивною характеристикою;

- знання можуть не тільки використовуватись у необмеженій кількості відтворювальних циклів у процесі виробництва та мають довгостроковий характер, а й здатні до самозростання, що повністю відрізняє їх від інших класичних факторів виробництва.

В основі знань як суспільного блага лежать три основні принципи:

- неконкурентоспроможність, яка передбачає неможливість суперництва при споживанні цього блага;

- невичерпність та акумулятивність, які полягають у збільшенні обсягу знань у міру їхнього виробництва та споживання.

Крім колективного блага, знання можна розглядати як специфічне приватне благо, що виступає у формі товару та має певні характеристики:

- неосяжність, оскільки знання мають неречовинний характер;

- невіддільність від джерела та нерозривність виробництва й споживання знань;

- необхідність безпосередньої участі споживача у виробництві визначеного товару;

- необмеженість кількості часу споживання.

Загальновідомо, що будь-який товар має дві основні властивості – споживчу вартість (корисність, здатність задовольняти яку-небудь людську потребу) та мінову вартість (здатність товару у визначених кількісних співвідношеннях обмінюватися на інші товари).

Ці дві властивості знань як товару обумовлені двоїстим характером втіленої в ньому праці: конкретною працею – працею, що створює споживчу

вартість, та абстрактною працею як специфічною історичною формою вираження суспільної праці, що створює вартість і визначається витратами людського капіталу, що міститься у всіх товарах.

Якщо йдеться про знання, то їх споживча вартість реалізується в процесі отримання, а сама вартість знань повністю залежить від їх практичного застосування. Слід зазначити, що співвідношення споживчої вартості та вартості у знань є значно вищим за всі інші товари, оскільки ефект від їхнього застосування набагато більший, а отже, і вища частка прибутку, що отримується за їх рахунок.

Щодо знань, то зазначимо, що самі знання є продуктом досить специфічним, який важко назвати товаром – вони не є повністю відчужуваними від їхнього виробника, не існує еквівалентності між формами і змістом знань, тобто одне знання неможливо замінити іншим.

Відповідно існує монополія на знання, яка пов'язана як з індивідуальними здібностями носія, так і зі спеціальною термінологією, що надійно охороняє знання від витоку в загальне середовище, та посиленнями на джерело знань.

Зазначимо, що до середини ХХ сторіччя, коли швидкість розповсюдження знань була нижчою порівняно зі швидкістю зміни поколінь, монополія на знання була більш спадкоємною.

З другої половини ХХ сторіччя значний крок уперед у розвитку інформаційних та комунікаційних технологій, перетворення науки в безпосередню продуктивну силу та залежність від науково-технічного прогресу всіх сфер громадського життя призвели до значного збільшення швидкості відновлення соціально значущих знань і навичок.

Це надало можливість тим, хто самостійно здатний розробити або освоїти нові знання та навички, безпосередньо їх реалізувати в процесі виробництва, отримати статус економічної еліти суспільства за рахунок монополії на інтелектуальну власність (знання та інформацію), оскільки дозволяє здійснювати контроль над результатами інтелектуальної праці й отримувати додаткову ренту від створених інтелектуальних продуктів.

Водночас необхідно зазначити тісний взаємозв'язок між монополією на знання та часом. Якщо спочатку знання стають джерелом конкурентних переваг та дозволяють здійснити перерозподіл і приріст капіталу, то з часом знання автоматично перетворюються в суспільне благо, стають доступними всім, тобто втрачають здатність створювати та перерозподіляти капітал.

Під впливом новітніх досягнень науки відбувається старіння знань, яке подібне до морального зносу основних фондів. Цікавою з цієї позиції є теорія А. Шапіро [10], який запропонував гіпотезу напіврозпаду знань. Згідно з цією теорією,

період напіврозпаду знань визначається як час після завершення навчання, протягом якого професіонали втрачають половину первісної компетентності за рахунок природного витиснення з пам'яті частини знань, що не використовуються, та морального їх зносу, що відбувається внаслідок НТП. Сьогодні вважається, що цей період становить близько п'яти років.

Можна виділити два основних види напіврозпаду знань – знання з довгим періодом напіврозпаду та знання з коротким періодом напіврозпаду. До першого виду належать базові теоретичні знання, що формуються протягом тривалого часу за рахунок державних інвестицій в освіту, мають високі соціальні ефекти, оскільки є базою для отримання нових знань та використовуються як основа для професійної діяльності. До знань з коротким періодом напіврозпаду належать специфічні професійні знання, що вимагають меншого терміну навчання, фінансуються за рахунок самої людини або її роботодавця та мають швидкий економічний ефект від їх використання.

Такий висновок надає можливості розглядати знання і як капітал, а унікальність знань кожного окремого індивіда дає змогу розглядати останні як інтелектуальну монополію, основу якої складають інтелектуальна власність, професійний досвід, інформація та знання.

Зазначимо, що з позиції мікроекономіки (неокласична теорія) монополія становить результат дії одного продавця на ринку, причинами чого є відсутність товарів-замінників, наявність певних бар'єрів для входження на ринок інших суб'єктів та недосконалість ринкової інформації.

Сьогодні не існує загальноприйнятої класифікації монополії. Як правило, виділяються:

- природна (технологічна) монополія;
- адміністративна (державна) монополія;
- економічна монополія.

Водночас швидке розповсюдження інформаційно-комунікаційних технологій в усіх галузях економіки, поглиблення інноваційних процесів призводить до необхідності виділення нового виду монополії – монополії на інтелектуальні продукти – знання, ідеї, інформацію.

У цьому контексті слід звернути увагу на чотири домінуючі принципи, що пов'язані з монополізмом знань:

- раціональність поведінки, основою якої є припущення про природну властивість людей до раціональності, згідно з якою кожен індивід прагне до збільшення власних матеріальних можливостей;

- безперервність освіти, що становить процес самовідновлення та подальше зростання досвіду в процесі навчання,

- транзитивність та комунікативність, що є змістовним контекстом переносу досвіду й обміну інформацією.

Саме монополія на знання надає можливості встановити монополію високої ціни на продукти своєї праці та породжує соціальну несправедливість, що виражається, перш за все, в можливостях придбання нових знань.

Слід підкреслити, що інтелектуальна монополія (монополія на знання) – це єдиний вид монополії у світовому бізнесі, що визначається та заохочується як на національному, так і на міжнародному рівнях, оскільки створення максимально сприятливих умов для розвитку інтелектуальної еліти в країні надає можливості розвитку інноваційної економіки.

Усе зазначене вище надає можливості зробити висновок про те, що на сьогоднішній день, в умовах розвитку глобалізації, що формується в рамках інтегрованої світової економіки, нових інформаційних і комунікаційних технологій (ІКТ), основною рушійною силою інноваційної держави стають знання.

Якщо раніше конкурентоспроможність держави значною мірою залежала від трьох основних факторів виробництва – природних, трудових ресурсів та капіталу, то сьогодні рівень конкурентоспроможності стали визначати фактори вищого рівня:

- людський капітал – як домінуючий фактор, що визначає вектор економічного розвитку;
- інновації, що сприяють розвитку високотехнологічного виробництва;
- ринкова інфраструктура, що визначає умови для ведення бізнесу.

Сукупність цих факторів характеризує спрямованість розвитку національного виробництва, що в сучасних умовах виступає як інноваційна модель, що заснована на принципах технологічних і інноваційних нововведень, розвитку міжнародної інтеграції, поширення малого і середнього бізнесу, які здатні до гнучкості виробництва, соціальної переорієнтації та перепрофілювання.

Ця модель формування економіки, що заснована на знаннях, є базою для суспільного відтворення та надає можливості для подальшого суспільного просування.

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# FUZZY MODEL FOR SWOT-ANALYSIS OF PHARMACEUTICAL ENTERPRISE'S FUNCTIONING

UDC 338.46

**O. Dorokhov  
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Application of the approach on the basis of fuzzy sets for carrying out the SWOT-analysis of industrial commercial activity, position and prospects in the competitive market for the pharmaceutical enterprises has been described. The method is based on receipt and processing of soft expert's estimations of strengths and weaknesses of the pharmaceutical enterprises' functioning. These estimations also consider potential opportunities and threats of commercial activity in a market under competitive and crisis conditions. The technique of practical fuzzy modeling has been developed. The corresponding computer model in Fuzicalc has been constructed. The example of numerical calculations has been given. The interpretation technique for the obtained results of modeling and further obtaining of accurate generalized estimations of conditions and development prospects of the pharmaceutical enterprises and firms functioning has been offered.

*Key words:* fuzzy sets, fuzzy modeling, SWOT-analysis, drugs distribution, information systems in pharmacy, pharmaceutical market, pharmaceutical enterprises.

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## ФАЗИ МОДЕЛЬ SWOT-АНАЛІЗУ ФУНКЦІОНУВАННЯ ФАРМАЦЕВТИЧНОГО ПІДПРИЄМСТВА

УДК 338.46

**Дорохов О. В.  
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Описано застосування підходу, що базується на використанні теорії нечітких множин, для проведення SWOT-аналізу виробничо-комерційної діяльності фармацевтичних підприємств, аналізу їх положення й перспектив існування в конкурентному ринковому середовищі. Запропоновано модель, що передбачає отримання й представлення в нечіткій формі та подальшу відповідну обробку експертних оцінок сильних і слабких сторін функціонування фармацевтичних підприємств. Також одночасно розглянуто оцінки потенційних можливостей і загроз для підприємства в процесі комерційної діяльності на ринку в умовах конкуренції та кризи. Розроблено методику практичного застосування нечіткого моделювання для цих цілей. Побудовано відповідну комп'ютерну модель у середовищі спеціалізованого програмного забезпечення Fuzicalc. Наведено приклад числових розрахунків у нечітко-множинній постановці та їх результати. Подано інтерпретацію отриманих результатів моделювання та подальшої побудови чітких узагальнених оцінок стану та перспектив розвитку фармацевтичного підприємства.

*Ключові слова:* нечіткі множини, нечітке моделювання, SWOT-аналіз, дистрибуція лікарських засобів, фармацевтичний ринок, фармацевтичні підприємства, інформаційні системи у фармації.

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## ФАЗЗИ МОДЕЛЬ SWOT-АНАЛИЗА ФУНКЦИОНИРОВАНИЯ ФАРМАЦЕВТИЧЕСКОГО ПРЕДПРИЯТИЯ

УДК 338.46

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Описано применение подхода, основывающегося на использовании теории нечетких множеств, для проведения SWOT-анализа производственно-коммерческой деятельности фармацевтических предприятий, анализа их положения и перспектив существования в конкурентной рыночной среде. Предложена модель, предусматривающая представление в нечеткой форме и последующую соответствующую обработку экспертных оценок сильных и слабых сторон функционирования фармацевтических предприятий. Также одновременно рассмотрены оценки потенциальных возможностей и угроз для предприятия в процессе коммерческой деятельности на рынке в условиях конкуренции и кризиса. Разработана методика практического применения нечеткого моделирования для этих целей. Построена соответствующая компьютерная модель в среде специализированного программного обеспечения Fuzicalc. Приведен пример численных расчетов в нечетко-множественной постановке и их результаты. Представлена интерпретация полученных результатов моделирования и последующего получения четких обобщенных оценок состояния и перспектив развития фармацевтического предприятия.

*Ключевые слова:* нечеткие множества, нечеткое моделирование, SWOT-анализ, дистрибуция лекарственных средств, фармацевтический рынок, фармацевтические предприятия, информационные системы в фармации.

.....

It is obvious that in modern conditions, mathematical and computer modeling of industrial-commercial component's activity of the pharmaceutical enterprises (as well as the interaction processes for subjects of pharmaceutical products and medical goods distribution purposes) is the important management tool for the pharmaceutical enterprises [1].

Computer modelling is applied in a pharmaceutical firm's management of the proved administrative decisions, which are directed at strengthening the enterprise's position in the competitive pharmaceutical market, and on the solution of the important public and social problems of the population's maintenance improvement with the help of pharmaceutical and medical products [2; 3].

Review of the literature on computer modeling of business processes has shown the following.

One of the well-known and widespread modelling methods of this kind is the SWOT-analysis (Strength, Weakness, Opportunity, Threat – analysis) [4; 5]. The significant amount of research works and publications are devoted to application of the SWOT-analysis to studying the pharmaceutical enterprise's work and business activity. Thus we have considered the industrial pharmaceutical enterprises and wholesale pharmaceutical firms, as well as pharmacies (drugstores) [1; 6].

It should be emphasized that, in general,

SWOT-analysis has been widely and successfully applied to the analysis of business processes in various sectors of the economy [7; 8].

It is used to study the situation in a competitive market and opportunities for enterprises of different ownership forms in a variety of socio-economic conditions. Specific parameters (criteria) of such analysis are also different.

This is determined by the investigator in each case depending on the industry, size and location of the enterprise, the nature of its activities and so on.

However, the traditional approach to the use of SWOT analysis (and the corresponding formulation of the problem) has a number of common features.

They limit its adequate using and are sufficient to obtain reliable results in the conditions, in fact existing under competitive market environment uncertainty conditions.

The main one is that in all analyzed cases, in all these works the technique of the SWOT-analysis is applied in classical, well known formulation.

In case of classical formulation, the authentic, proved results and the account of pharmaceutical branch's specificity are provided due to correct definition and selection of components, parameters for the analysis, as well as careful search, accumulation, processing great amounts of statistical information [9 – 14].

However, in competitive market conditions, receipt of such information is not always possible. Sometimes,



considering a significant amount of the material, time and human resources (needed for its collecting and processing), it is economically inexpedient and unjustified.

Besides, the significant part of such information due to the origin mechanism cannot be exact, absolute and precise. This information contains and reflects various uncertainty and illegibility, which is generated by direct sources of information (interrogation of experts, auditors, population etc.), environments and various external factors (the market situation, condition of the economy and the population, forecasts and so forth).

Thus, there is a new scientific problem, which can be formulated as follows. It is necessary to develop and offer a new model of SWOT-analysis.

The model should be able to take into account uncertainties of various origins and have the necessary theoretical and mathematical basis.

Finally, the model should be realizable using appropriate information technologies and modern computer simulation tools.

It is the main purpose of our study as well as the article.

Accordingly, the aim of the research is to develop the fuzzy approach and corresponding indistinct plural model for the SWOT-analysis of a pharmaceutical enterprise, which gives an opportunity to account illegibility in entrance data estimations to analyse influences of various business factors.

Also the study of methodical approaches to compare the final modelling results for total negative and positive estimation summaries of the enterprise's activity components has also been provided.

And, as finally, the substantiation of an opportunity of development for incorporated conclusions concerning

pharmaceutical firm's position and prospects.

At the first investigation phase, via expert interrogation of heads, leading specialists, managers of some industrial and wholesale pharmaceutical enterprises in Kharkiv (Ukraine), mark estimations of strengths and weaknesses, opportunities and threats for their enterprises were received. These were the necessary input data for the next step – fuzzy SWOT-analysis calculation.

The list and values of the corresponding criteria are given in Table.

Thus, direct estimations of components were given by each separate interrogated expert in borders from 1 up to 4 points and competences of experts were estimated from 1 up to 5 points.

Total general estimations have been received by averaging, in the view of experts competence, on the algorithm resulting from the previous papers of the authors.

The final estimation for each of the four criteria making SWOT-analysis has been calculated as the sum of multiplying corresponding parameter estimations from separate experts by their rank, divided by the quantity of experts.

Such approach is standard, well-known, and widely applied to receive generalized estimations.

One of the features of the given research was that the experts were offered to determine not only ball estimations, but also to define approximate intervals of their fluctuation. It has enabled to establish fuzzy borders for the estimations.

This is the true way to consider and analyze the uncertainty, which is always inherent in estimations of everyone concretely and separately interrogated.

Table

**Mark estimations of the SWOT-analysis components for the pharmaceutical enterprises**

| Parameter of estimation |   | general point | Parameter of estimation |                                     | general point |
|-------------------------|---|---------------|-------------------------|-------------------------------------|---------------|
| Strengths               | 1. Reliable marketing network               | 16,2          | Weaknesses              | 13. Low share in the market         | 12,6          |
|                         | 2. Increase in working capital              | 9,8           |                         | 14. Lack of advertising policy      | 11,8          |
|                         | 3. Sufficient popularity                    | 14,0          |                         | 15. Average level of the prices     | 12,2          |
|                         | 4. Wide assortment of output                | 17,6          |                         | 16. Low level of marketing control  | 13,8          |
|                         | 5. High quality assurance                   | 16,2          |                         | 17. Deficiency of marketing experts | 13,4          |
|                         | 6. High motivation of the personnel         | 8,6           |                         | 18. Growth of inflation             | 7,8           |
|                         | 7. Presence of exclusive drugs              | 11,2          |                         | 19. Strengthening of competition    | 15,8          |
| Opportunities           | 8. Change in advertising technologies       | 9,4           | Threats                 | 20. Decrease in standards of living | 5,6           |
|                         | 9. Reduction of prices on raw materials     | 10,6          |                         | 21. Fluctuations of exchange rate   | 6,2           |
|                         | 10. Occurrence of new suppliers             | 12,4          |                         | 22. Change in consumer preferences  | 9,8           |
|                         | 11. Development of information technologies | 12,8          |                         | 23. Occurrence of similar drugs     | 12,0          |
|                         | 12. Increase in market share                | 14,2          |                         |                                     |               |

Further for each separate estimation parameter, the kind of membership functions has been certain: triangular (when the intervals of fluctuation specified by experts, have appeared relative) and trapezoid (when the specified intervals essentially differed).

Thus, membership functions for each model parameter were constructed. Corresponding graphic view is shown in Fig. 1 (input estimations) and Fig. 2 (summary results for each of the four SWOT-components).

Parameters presented in the initial data table (Table) have the same numbers in Fig. 1.

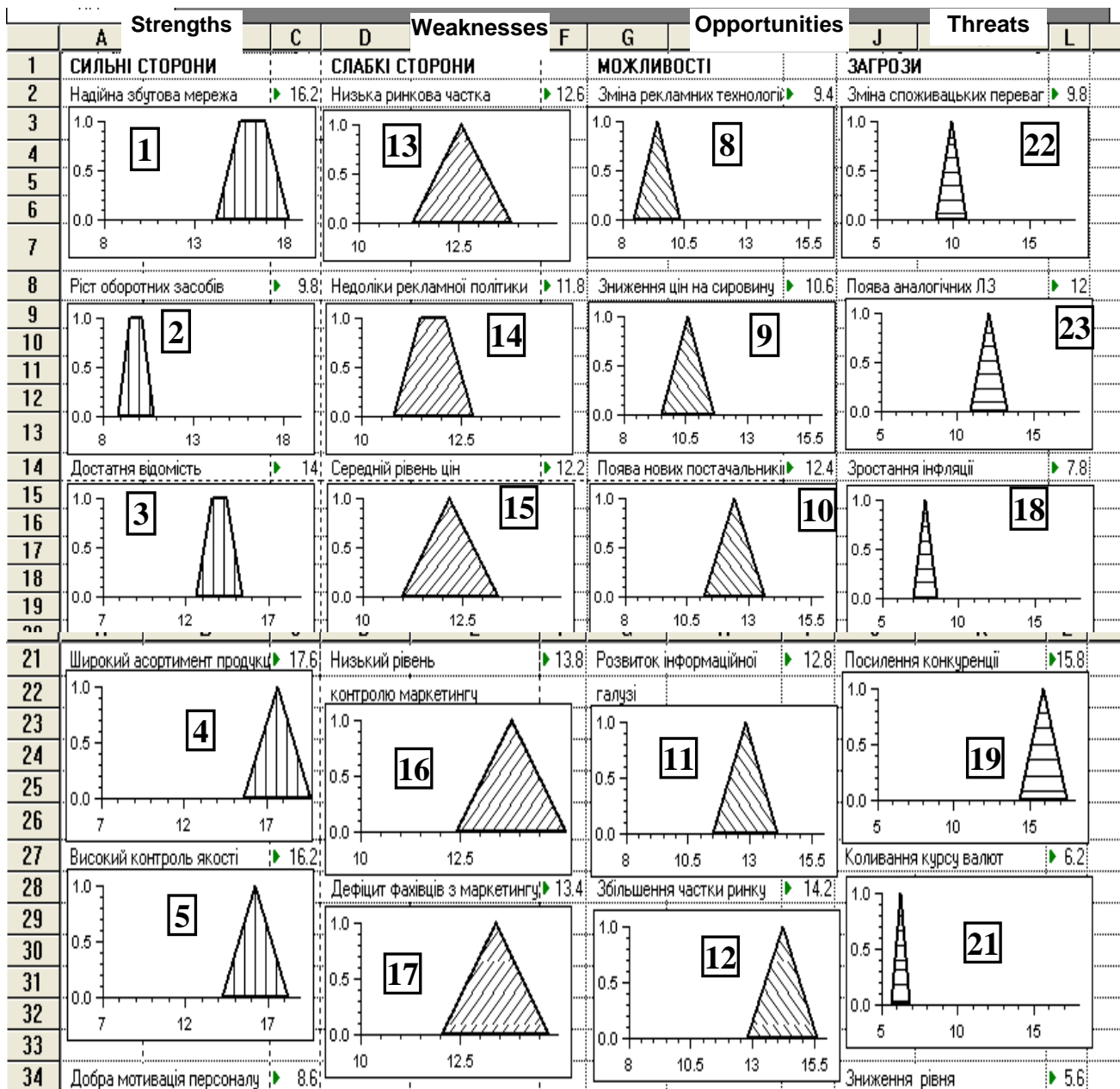


Fig. 1. Graphic representation for separate input parameters of the fuzzy SWOT-analysis

Having associated separate components, we have obtained final estimations of strengths (13,55), weaknesses (12,81), opportunities (12,02) and threats (10,97) for the pharmaceutical enterprise, which was considered.

On the basis of the expert interrogation results (given above) the computer model in the Fuzicalc tool of modeling has been created.

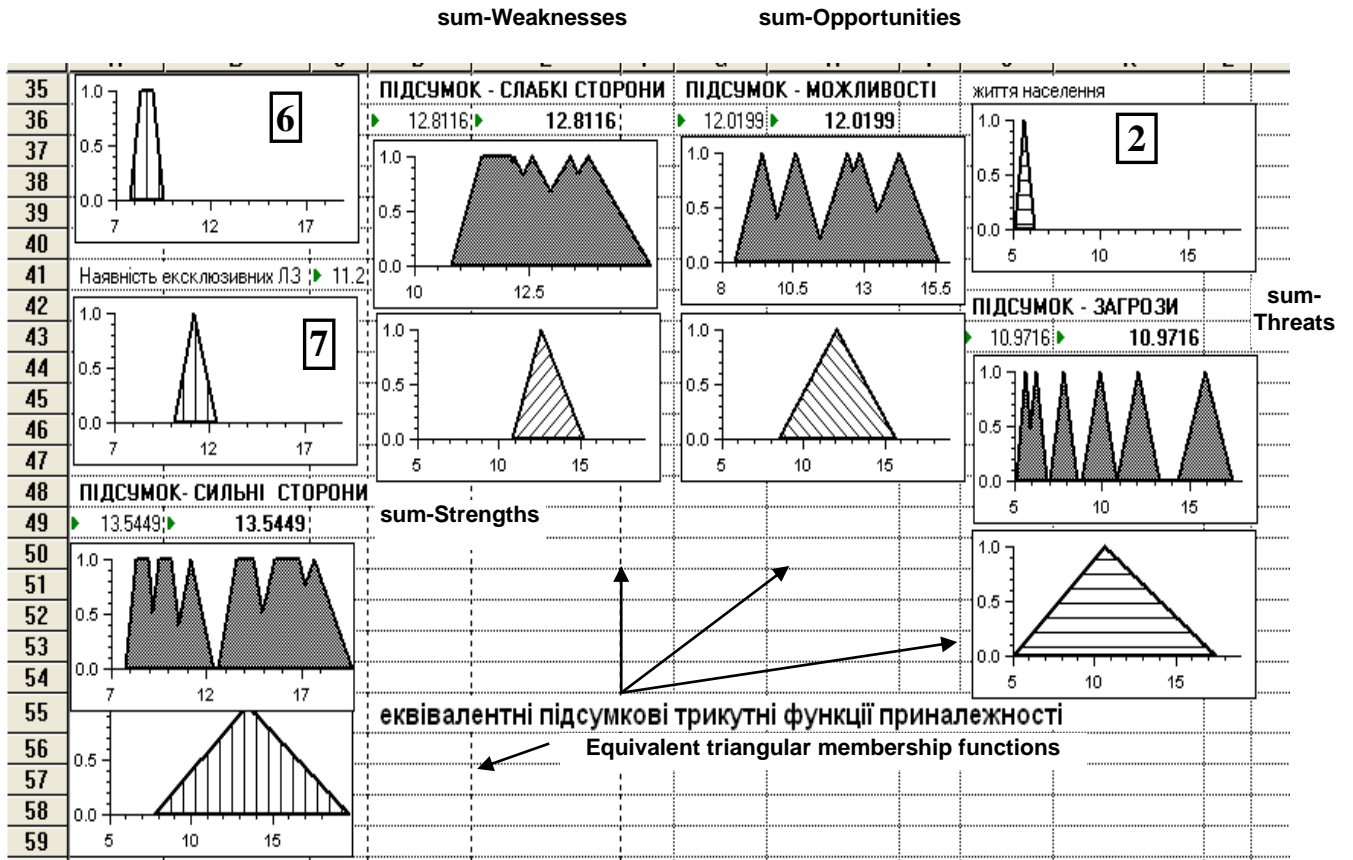


Fig. 2. Graphic representation of summary results for each of four SWOT-components

Further, the calculations of optimistic and pessimistic variants for pharmaceutical firm in indistinct market environment have been made.

The presented (see Fig. 2) equivalent triangular membership functions have the same area and average value, as well as actual functions on the basis of it's summary.

Thus their width displays a degree of uncertainty of results, i. e. expectancy and opportunities of deviation from average values.

For the final estimation of the condition at the enterprise on the basis of the chosen parameters it is expedient to compare the incorporated strengths and opportunities on the one hand, and both the incorporated weaknesses and threats – on the other.

The results of the comparison are presented in Fig. 3

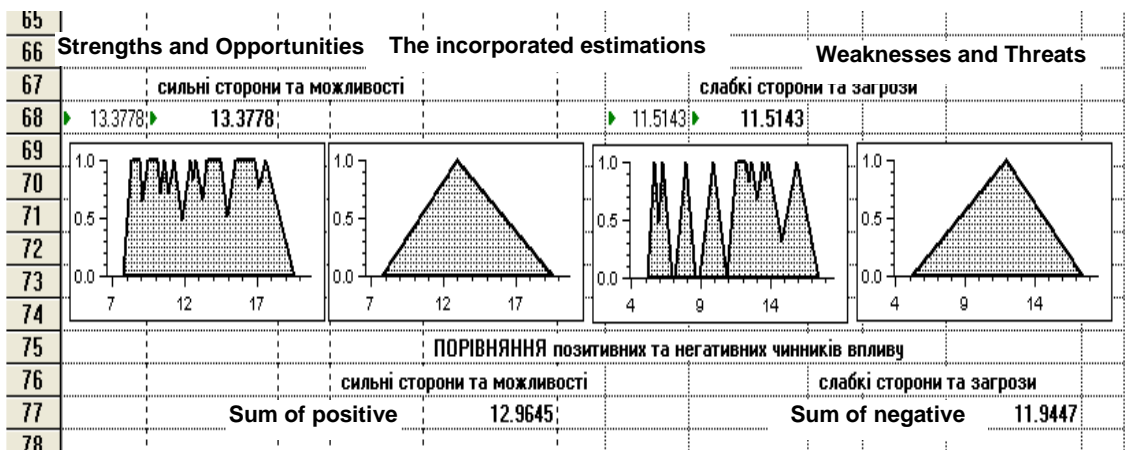


Fig. 3. Final results of the fuzzy SWOT-analysis

In this case (see Fig. 3) positive components (estimated at 12,96) prevail negative factors (estimated at 11,94), which testifies to the presence of insignificant (but with tendencies favorable for the enterprise) conditions of internal and external business environment.

The developed computer model allows to estimate operatively results of change in separate factors, their influence on the final results of the fuzzy SWOT-analysis for pharmaceutical enterprises. It can also be applied to the comparison and definition of prospects of commercial-industrial activity for several pharmaceutical enterprises, middle and short-term forecast and so forth.

It also allows regular monitoring of a pharmaceutical firm's market position and its opportunities to change a competitive business environment. It enables making necessary management decisions for the improvement of commercial position and increase in competitiveness of drug producers, drug-distributors, wholesalers and pharmacies in the pharmaceutical market.

The offered approach can be used to research the condition of various enterprises of the pharmaceutical branch – manufacturers of medicines, wholesale firms-intermediaries, other suppliers, retail chemists institutions, as well as enterprises, firms and organizations of other branches of the economy.

Thus, the model for realization of the fuzzy SWOT-analysis of pharmaceutical enterprises industrial-commercial activity (on the basis of uncertain expert' estimations of strengths and weaknesses, opportunities and threats, which are available, presented and operate in market competitive conditions) has been developed.

The practical analysis technique and the way of modeling results interpretation have also been offered. In particular, final estimations for pharmaceutical enterprise's position in the market and prospects of its functioning, obtained on the basis of fuzzy SWOT-analysis have been described.

Principles, approaches and features of computer modeling and techniques of practical calculations with the use of computer means in processing fuzzy numbers and functions in the environment Fuzicalc have been investigated.

The results of the corresponding calculations for one of the pharmaceutical firms of Kharkiv Region (Ukraine) have been presented and analyzed.

The directions of the subsequent research are to develop the methodology of fuzzy SWOT-analysis modeling in order to improve position and functioning of the pharmaceutical enterprises in difficult conditions of the drug market.

Thus, the results of studies, which have been conducted and presented in this paper, enable us to make the following conclusions. Firstly, formulation and solution of the described SWOT-analysis problem in a fuzzy logic setting have been presented, validated and implemented with the use of specialized software,. It allows to receive adequate and informative simulation results, which reflect the real state of the pharmaceutical company and its potential.

Moreover, the proposed approach is quite general by nature. It can be successfully applied not only to analyze functioning of enterprises and organizations of the pharmaceutical profile, but also for other subjects of business, operating under market conditions.

It is possible and necessary to further develop the presented approach in the directions of constructing and using a more complex form for membership functions for a more accurate simulation of the considered parameters of fuzzy SWOT-analysis in practical terms.

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# **SPECIFIC TASKS OF ACCOUNTING AS THE SUBSYSTEM OF ECONOMIC SAFETY MANAGEMENT OF AN ENTERPRISE'S INNOVATION ACTIVITY**

UDC 657:341

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The paper substantiates the interrelation between an enterprise's economic safety and its innovation activity. It is stated that while making managerial decision for innovations it is reasonable to estimate the level of its economic safety. In order to ensure the target level of economic safety of innovation activity there was proposed the complex of specific requirements to management. Based on the monograph analysis as well as on the case-method some imperfections of national accounting approach to innovation expenses are revealed and discussed. In conclusion the paper proposes specific features, tasks and techniques for accounting, implementation of which can assist in economic safety management of an enterprise's innovation activity.

*Key words:* economic safety of an enterprise, innovation activity, accounting.

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## **СПЕЦИФІЧНІ ЗАДАЧІ ОБЛІКУ В СИСТЕМІ УПРАВЛІННЯ ЕКОНОМІЧНОЮ БЕЗПЕКОЮ ІННОВАЦІЙНОЇ ДІЯЛЬНОСТІ ПІДПРИЄМСТВА**

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Науково обґрунтовано взаємозв'язок між економічною безпекою та інноваційною діяльністю підприємства. Встановлено, що з метою обґрунтування управлінських рішень в інноваційній діяльності доцільно визначати рівень її економічної безпеки. Для забезпечення цільового рівня економічної безпеки інноваційної діяльності запропоновано комплекс вимог до системи управління підприємством. Виявлено недоліки існуючих стандартів відображення в обліку витрат інноваційної діяльності та запропоновано шляхи їх усунення. Сформульовано специфічні задачі, які повинні вирішуватися управлінським та фінансовим обліком у системі управління економічною безпекою інноваційної діяльності підприємства.

*Ключові слова:* економічна безпека підприємства, інноваційна діяльність, облік.

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## **СПЕЦИФИЧЕСКИЕ ЗАДАЧИ УЧЕТА В СИСТЕМЕ УПРАВЛЕНИЯ ЭКОНОМИЧЕСКОЙ БЕЗОПАСНОСТЬЮ ИННОВАЦИОННОЙ ДЕЯТЕЛЬНОСТИ ПРЕДПРИЯТИЯ**

УДК 657:341

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Научно обосновано взаимосвязь между экономической безопасностью инновационной деятельностью предприятия. Установлено, что в целях обоснования управленческих решений в инновационной деятельности целесообразно определять уровень ее экономической безопасности. Для обеспечения целевого

уровня экономической безопасности инновационной деятельности предложен комплекс требований к системе управления предприятием. Выявлены недостатки существующих стандартов отражения в учете расходов инновационной деятельности и предложены направления их усовершенствования. Сформулированы специфические задачи, которые должны решаться управленческим и финансовым учетом в системе управления экономическим безопасностью инновационной деятельности предприятия.

**Ключевые слова:** экономическая безопасность предприятия; инновационная деятельность, учет.

In the period 2000 – 2008 the increase in Ukraine's economy was registred: average annual GDP growth was around 4.5 %, nominal GDP for 2008 amounted to UAH 949.9 billion and increased by 31.8 % over the previous year [1]. However, this growth was mainly in line with extensive processes, it was based on previously generated facilities' use, conserved outdated industrial structure and was reinforcing Ukraine's economy as a raw materials supplier for more developed economies. Involved foreign financial resources were primarily intended not for the development of domestic production, but for imported goods consumption and this reinforced structural imbalances. Withal, Ukraine's economy became more integrated into the global economy and, therefore, dependent on its dynamics. The consequence of the accumulation of global contradictions between the development of the real economy and financial sector of global economy was the deployment of the global financial crisis.

In Ukraine, global crisis led to a sharp drop in GDP in comparison with developed economies (Fig. 1) and was primarily pictured by the balance of payments crisis. The rapid decrease in exports, especially of metallurgy and chemical industry, significantly worsened current accounts and the need for substantial payments on debt obligations of banks and other sectors – the state of the financial accounts balance.

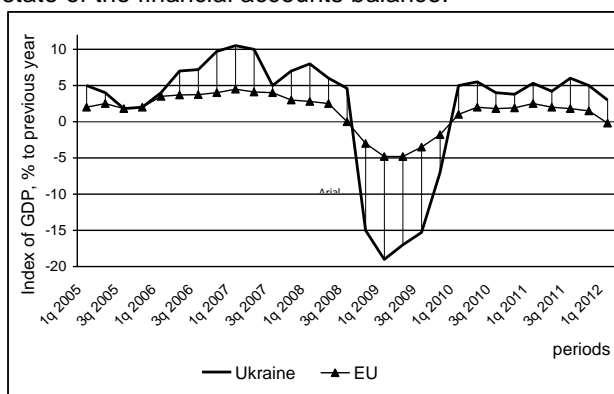


Fig. 1. Changes in GDP of Ukraine and European Union [1; 2]

Financial performance of companies has degraded critically: from UAH 135.9 billion in 2007 to UAH 8.95 billion in the next year; in 2009 45.6 % of business entities suffered a loss [1; 2]. This situation

required active anti-crisis measures to overcome negative factors and to create new bases of development.

Global crisis led to the formation of awareness at all management levels that priority lies in sustainable development, that is the development under which satisfaction of current demands will not limit the operation of socio-economic systems in the future.

The achievement of this development path for economic entities is based on the principles of economic security and innovative financial and economic activity. This economic security is the result of harmonizing the interests of businesses and all entities of their internal and external environment, while the successful implementation of innovative strategies is determined by and at the same time is the key to achieving the optimal level of economic security.

The importance of innovation processes for an enterprise's survival is emphasized by Porter [3], who underlined that the only way to retain competitive advantages is to improve them uninterruptedly. For Porter the competitiveness of any economic system is determined not just by the maximum effectiveness of management but by the ability to modernize and successfully commercialize new knowledge.

Innovation is the main source of economic growth and the key source of new employment opportunities as well as providing potential for realizing environmental benefits [4]. One of the most important arguments is that in the global economy, where economic actions can be carried out more cheaply in the low wage economies such as China, the main way in which other economies can compete and survive, is to find new and better products and processes [5], in other words, to innovate.

Along with the recognition of the necessity of innovations for enterprises' sustainable development practitioners should constantly be aware of risk and uncertainty which is inherent in innovation processes, so the comprehensive management system for ensuring safety and sustainability of innovations should be implemented.

Due to its significance innovation has been a rather frequent theme in managerial studies over the past decades and a great deal of work has been done in order to understand how risk and uncertainty influence the decision making in innovation [6; 7]. Nonetheless, it seems that there is a lack of research

that focuses exclusively and in detail on informational and analytical support of managerial decisions upon the economic safety of an enterprise's innovation activities.

So, the purpose of this paper is to disclose the specific task of accounting as the informational base for managerial decisions in innovation activities and to ground requirements to accounting as the subsystem of managing enterprise's innovation activities.

According to the Oxford Dictionary of Economics 'innovation refers to the economic application of a new idea'. Many scholars, among which [8; 9] consider the essence of innovation as the set of organizational and economic changes in the production system. According to Tidd [10] innovation is a general activity associated with growth and survival and a common fundamental process that can be seen in all firms, which involve searching, selecting, implementing and learning. Oslo Manual [11] defines innovation as the implementation of a new or significantly improved product (good or service), or a process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations. Also a number of researchers [12; 13] interpret innovation as the final result of introducing new technology, developing new markets, implementing new organizational forms.

Thus, among scholars at least two main positions can be distinguished: innovation as the process of generation and commercialization of novelty and innovation as the result of these processes.

The review of modern conceptual vision of innovation can lead to the following conclusions. Firstly, the criterion separating innovation from novelty is commercialization. Secondly, the distinguishing feature of innovation is that the principal means for progress is the commercialization of knowledge. Thirdly, innovation has implications both in dynamics (innovation as the process), and in statics (innovation as the result). So, while evaluating innovation it is reasonable to assess enterprise performance in dynamics (before and after innovation) and to determine the impact of discrete innovation on the whole innovation activity of an enterprise. Innovation may be considered successful if not only target enterprise performance is achieved but also during the process of innovation the fund necessary to start (and probably successfully finish) the process of subsequent innovation is accumulated. Only systematic implementation of successful innovations is pledge of enterprises' wellbeing and success. As innovation at the most abstracted level can be regarded as an attempt to a better change, the only way for an enterprise to survive and succeed in a constantly changing environment is to change for the better. But every change entails uncertainty and risk.

Due to the lack of comprehensive, unambiguous, consistent and stable set of values, perfect and complete information, and constraints imposed

by historicity, most, if not all, decisions in organizations are made in uncertainty [14]. Instability, risk and uncertainty of environment call the concept of enterprise safety into being.

For today there is no strong agreement upon the definition "enterprise safety" among scholars. Frequently it is regarded as ability to withstand adverse external factors, as capacity to provide stability and adaptability of an enterprise in unfavorable environment and marketing conditions [15; 16].

In the most general sense, safety is a condition without threats. Threat is often regarded as the cause of undesirable state. If we define threat as an objectively existing possibility of negative impact on a social organism, which results in loss, damage, worsening of performance or development, the rationality of distinguishing two aspects of safety seems to be grounded. In our opinion, it is important to distinguish between economic safety of enterprise state (the security against negative influence of external and internal environmental factors) and economic safety of enterprise activity (the ability to realize its economic interests), i.e. the concept of "economic safety" of an enterprise should be defined on the basis of distinguishing the dynamic and static components.

In a narrow sense economic safety of an enterprise is the absence of significant threats to its economic goals. Such a narrow interpretation limits applied research, as assumes a situation of complete absence of threats. However, the absence of threats is the only idealistic assumption, the theoretical abstraction from the realities which may be used to reveal the deep essence of the phenomenon being studied. In order to develop a mechanism of economic safety management that can be employed in practice a researcher should proceed from the fact that the interaction of an enterprise with entities of internal and external environment always causes contradictions which lead to immediate threats.

Based on this, it may be proposed to consider economic safety of an enterprise in a wide sense as the economic position of an enterprise, characterized firstly by certainty, existence, integrity and security of businesses against negative influence of external and internal environment (economic safety of enterprise state) and, secondly, by the possibility to realize its economic interests (economic safety of enterprise activity). Using this approach the unity of static and dynamic components of the concept "economic safety of an enterprise" that are interconnected and interdependent is achieved.

Economic safety of enterprise state may be defined as the internal conditions of an enterprise, which are characterized by integrity and security of an enterprise against negative impact of internal factors and changes in external business environment. Sustainability, integrity, independence and safety against undesirable external and internal changes



characterize economic safety of enterprise state (ESES), so ESES is the basis for the achievement of goals, and therefore – embodies direct interest of an enterprise and has a significant impact on economic safety of enterprise activity.

Economic safety of enterprise activity (ESEA) may be defined as the market conditions, in which opportunities to realize economic interests of an enterprise objectively exist and are apprehended by the management of this enterprise. While taking opportunities an enterprise interacts with various entities of external and internal environment, thus ESEA also characterizes safety of relationships between an enterprise and numerous stakeholders in business environment.

We consider it necessary to emphasize that the static component of economic safety, ESES, is not immutable since the factors that determine enterprise position are dynamic. The assessment of ESES characterizes the situation at a particular time point. The assessment of the dynamic component of economic safety, ESEA, represents the economic safety in a period of assessment and for a subsequent period and reflects expectation of changes on behalf of stakeholders, which may have impact on the enterprises' ability to realize its own economic interests.

In practice for creating effective economic safety management it is essential to formulate interests of the enterprise, to determine the set of stakeholders and to reveal contradictions and primary deep-rooted causes of possible threats.

Entrepreneurial activity is inherently associated with innovation and the foundation of business success in successful innovation. Innovation has three main features: the scientific and technical novelty, industrial applicability and commercial feasibility. Commercialization recasts invention into economic necessity, thus performs innovation as a source of income. Dukhov [17] emphasizes that it is receiving additional income from an enterprise and that in turn forces its competitors to use legal, semi-legal and illegal methods of economic intelligence. These actions are aimed at obtaining information on innovation – the source of super profits – which are trade secrets and is subject to protection. Diffusion of innovations leads to loss of competitive advantages, thus threatens interests of an enterprise. So it seems that the existence of innovation is one of the main causes of threats. But it should be noted that despite the above, the absence of innovation is also a great threat to enterprise economic safety.

Under crisis both in local and in global market, the problem of increasing business profitability gains especial relevancy; rational and effective employment of business resources ensures survival and maintenance of economic potential of any enterprise, which can be considered as the ground for enterprises' resistance against external and internal threats.

Following the approach of distinguishing between static and dynamic components of economic security, it seems that evaluation of ESES is more developed by scholars, and thus different assessment procedures and techniques are proposed [16].

The common feature of such proposals is that the level of economic safety is characterized by the set of indices; the majority of these indices reflect efficiency of employing material and finance resources. This is really justified by the idea that the financial result of any business significantly influences the position of an enterprise. However, the financial result also depends on the positive and negative changes in internal and external environments, is influenced by potential and real threats, and this is not considered in existing methods.

Thus, while evaluating economic safety it is necessary to supplement calculating the effective employment of resources by identifying opportunities for businesses, i.e. to measure the level of economic safety of enterprise activity. Comprehensive assessment of economic safety of an enterprise enables to create and implement the management system, which will ensure not only good results of financial and economic activity but also continuous improvement of its effectiveness by developing and implementing management measures to solve the problems (based on ESES's estimates) and to prevent their occurrence (based on ESEA's estimates).

Certainty about the existence, integrity and security of an enterprise against negative influence of external and internal environmental factors is based on the availability of necessary business resources in case of their effective employment, therefore, assessment of ESES should be carried out per financial, material, labor and information resources.

The stages of current assessment of ESES level can be the following [18]:

- 1) computing the selected indices of financial, material, labor and information resources efficiency;
- 2) calculating the ratio of selected indices;
- 3) determining the level of ESES per each type of resources;
- 4) determining the integrated level of ESES.

In order to increase the efficiency of diagnosis, it is advisable to select the factors that determine the impact of certain economic threats on the enterprise's economic safety. Thus, the impact of threats from suppliers of resources and services may depend on: a supplier's share in total resources and services employed by an enterprise to achieve its target performance, the degree of substitutability of resources or services obtained from a supplier, the additional costs of replacement, etc. Specifying factors are considered by the expert group in the process of diagnosing the economic safety of the enterprise. The set of stockholders may include consumers, suppliers, competitors, public authorities, mass media and other contact parties.

While reasoning managerial decision on innovation activity it is rational and useful to assess economic safety of an enterprise from the following angles:

1) the level of economic safety of enterprise initial state (which in general is assessed by the level of selected financial and economic indices before starting the innovation process and the level of potential threats in case of rejecting to innovate);

2) the level of economic safety when adopting innovation (which in general is characterized by the ability to resist negative external factors (including uninformed customers) and rejection of personnel to innovation)

3) the level of economic safety of enterprise final state (which in general is assessed by the level of ESES adjusted by potential threats arisen in case of failing to obtain proper innovative product for specific market or to introduce obtained innovative product to specific market appropriately).

To resist factors that restrain foreign economic operations the management of an enterprise should contain the special subsystem dealing with foreign markets' threats and ensuring the proper level of economic safety of innovations. The construction of economic safety management of innovation activity should be based on the following:

1) innovation cost management should be built on the one hand as a subsystem of cost management and on the other hand as an informational subsystem of strategic accounting management;

2) clear sustainable links between all elements of the innovation activity's system of economic safety management should be established and employed in order to perform all functions of the management;

3) the system should be featured by the ability to self-development and continuous monitoring of threats from external and internal environment of an enterprise;

4) the system should dispose of response means in order to optimize the resources' potential of an enterprise and in this way to ensure systematic innovation activity on the basis of target level of economic safety of an enterprise.

The crucial object of enterprise economic safety management is costs incurred in innovation activity. Innovation activity of an enterprise may purpose cash outflows into research and development; new technology acquisition and purchase of new outside knowledge; machinery, equipment and software acquisition; preproduction for innovations and miscellaneous expenses. During the last years the structure of innovation expenses was far from the optimal (Fig. 2): as research and development expenses did not exceed even 15% of total, enterprises mainly acquired modern equipment and did not invest into their development. This way for innovation activity can ensure neither competitive advantages on global market nor sustainable development of enterprises.

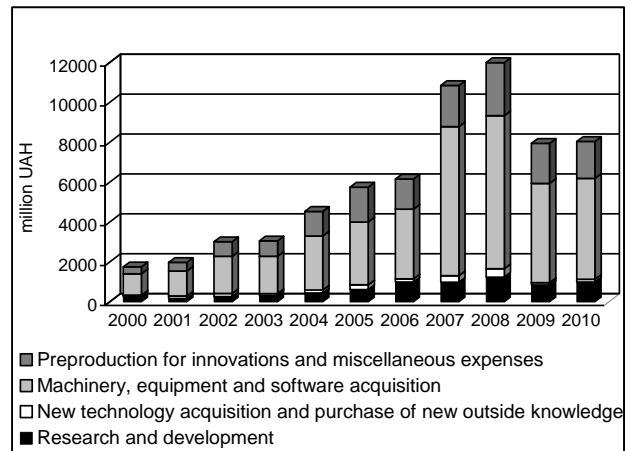


Fig. 2. Changes in innovation expenses of enterprises in Ukraine [1]

One of the numerous reasons for low research and development activity of enterprises in Ukraine lies in the sphere of accounting. According to National Standards of Accounting research and development expenses are not capitalized but are recorded as expenses of a period, and thus these expenses should be posted to decrease income. So, the amount of research and development expenses seems to influence negatively on the level of enterprises' profitability according to the accounts. In case this approach is followed in management accounting research and development expenses may be equated with administrative expenses, selling, etc., that should be kept on minimum in order to make the bottom-line look better. The management accounting attitude is indication of "company culture" related to innovations; managers who treat innovations as investments usually have a more strategic view of innovation activities.

Moreover, it should be noted that the crucial requirement for cost management of innovation activity as a part of economic safety management system is ensuring innovation's decision making on the criterion that total cost of creation, selection, incubation and implementation of innovation may be less than total cost of an innovative product, as an asset generated during innovation process. This is the main but not the only limitation in the construction of cost management's optimization model.

Another limitation is the resource limitation, which is the requirement for employing material, finance, labour and information resources in the process of innovations' commercialization. Resources' utilization entails expenses (accrued in the period of consumption and which cause decrease in income) and costs (recognized as assets and reported in balance sheet).

In order to elaborate the model of optimizing innovation activity expenses it may be proposed to find out solutions for the following tasks:

1) scientifically grounded selection of integral index to economic effect gained from the implementation of innovation in static and dynamic components;

2) formulating the system of limitations, selected during the innovation budgeting regarding possibilities of employing material, finance, labour and information resources on the ground of criterion function of effect index maximization;

3) completing the system of limitations by requirements on possible employment of resources for effective response to external and internal threats which may occur during the innovation implementation.

The target function in the model of optimizing innovation activity cost is defined in accordance with enterprises' strategic goals by the level of economic safety of innovation's adoption or by the level of economic safety of enterprise final state.

To ensure efficient and effective management of innovation activity which meets target level of enterprises' economic safety it is necessary:

1) to introduce special method assessing economic safety of an enterprise and managerial subsystem that is able to prevent internal and external threats and create opportunities for systematic innovations;

2) to create innovation cost management within the overall system of economic safety management;

3) to consolidate general management and accounting system into one flexible management information system;

4) to develop an adequate system of strategic management accounting, that provides internal decision makers with appropriate operational information relevant for implementing innovations.

In practice following the proposed approach requires establishing the adequate information base which would support prompt decision-making in frameworks of innovation activity's economic safety management.

To follow the path of sustainable development of management every enterprise should contain the special subsystem dealing with threats and ensuring the proper level of innovation activities' economic safety. The development and scientific justification of the structure, components, goals and procedures of this subsystem begin with disclosing the nature of links between safety and innovations.

Innovations and economic safety are closely interrelated: systematic successful innovation activity ensures economic safety of an enterprise, while economic safety provides an enterprise with opportunities for further innovations. To ground managerial decision upon launching a new product it is reasonable to assess the level of economic safety of enterprise state and the level of economic safety of enterprise activity. While the first index reflects the achieved position of an enterprise, the second one gives ground to forecast changes in interests of numerous stakeholders (among them consumers, suppliers, competitors, public authorities and mass media are of high priority) and to prevent potential threats.

Accounting is an essential element in the system of economic safety management of innovation

activities. Among specific tasks of accounting to ensure successful managerial decisions upon innovation the most relevant are:

1) for financial accounting: analytical accounting for accounts payable and accounts receivable, preparing statements on economic safety of an enterprise by material, labor, information and financial recourses and performing it to senior management; control of calculation's accuracy, completeness and timeliness of payments, control of correctness of primary documents that accompany the innovation activity of an enterprise;

2) for managerial accounting: planning of innovation activity and evaluation of plans, development and implementation of assessment workflow of economic safety, setting the frequency of assessment and analysis of economic safety, development and implementation of the detailed schemes of evaluating and analysing of economic safety, reporting to the appropriate governing body, improvement of the current system for evaluating economic safety of an enterprise's innovation activity.

Assessment of economic safety of an enterprise's innovation activity should employ not only special techniques, but should also consider the differences among industries and unique features of internal and external environments of different businesses. Discovering these features and scientific grounding of its consideration by economic safety management are among the essential tasks for future research.

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# OPTIMIZATION OF REGULATORY MECHANISMS AS A CONDITION OF COMPETITIVE TRANSPORT COMPLEX

UDC 338.47+330.5221

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The article deals with approaches, principles, directions and mechanisms, concerning construction and effective introduction of strategy and programs of development of Ukrainian transport complex. Programs of regional development of the country are analysed, thus the attention is concentrated on the most important questions and problems connected first of all, with levelling of essential disproportions in the development of transport networks, and as a consequence of this process, a security status of the state, level of national output and standards of living in the county.

*Key words:* transport complex, development strategy, transport infrastructure.

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## ОПТИМІЗАЦІЯ РЕГУЛЯТОРНИХ МЕХАНІЗМІВ ЯК УМОВА КОНКУРЕНТОСПРОМОЖНОГО ТРАНСПОРТНОГО КОМПЛЕКСУ

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Запропоновано підходи, визначено принципи, напрями та механізми щодо побудови та ефективного впровадження стратегій та програм розвитку транспортного комплексу України. Проаналізовано програми розвитку регіонів країни, увагу сконцентровано на найбільш важливих питаннях та проблемах, пов'язаних, у першу чергу, з нівелюванням суттєвих диспропорцій у розвитку транспортних мереж, а також, що є наслідком цього процесу, станом безпеки держави, рівня національного виробництва та якості життя населення.

*Ключові слова:* транспортний комплекс, стратегії розвитку, транспортна інфраструктура.

## ОПТИМИЗАЦИЯ РЕГУЛЯТОРНЫХ МЕХАНИЗМОВ КАК УСЛОВИЕ КОНКУРЕНТОСПОСОБНОГО ТРАНСПОРТНОГО КОМПЛЕКСА

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Предложены подходы, определены принципы, направления и механизмы относительно построения и эффективного внедрения стратегий и программ развития транспортного комплекса Украины. Проанализированы программы развития регионов страны, внимание сконцентрировано на наиболее важных вопросах и проблемах, связанных, в первую очередь, с нивелированием существенных диспропорций в развитии транспортных сетей, а также, что является следствием этого процесса, состоянием безопасности государства, уровня национального производства и качества жизни населения.

*Ключевые слова:* транспортный комплекс, стратегии развития, транспортная инфраструктура.

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Nowadays in order to enter European transport system with its standards, technical, organizational and ecological norms, the transport complex of regions and the whole Ukraine needs constant

qualitative updating. Several important actions in this direction have been carried out already, for the maintenance of effective use of the international transport corridors in new conditions, it is important to reach the maximum coordination of actions of all participants in this system.

Realisation of actions in this direction occurs both on the national [1], and regional level. Scientists and experts of transport branch [2 – 6] were engaged in rationalisation and optimisation processes. Implementation of regional Programs of development [7 – 9] in which one of the key factors is modernisation of the existing and building of a new transport infrastructure, is the major component in the economy and and the key factor of rational, and effective use of essential and favourable geostrategic potential.

Works of many Ukrainian scientists and experienced transport executives – Vinnikov V. V., Kotlubay M. I., Kotlubay A. M., Makhurenko G. S., Nikulin S. G., Primachev N. T., V. Chekalovets which in different years have introduced their experience and knowledge in the improvement of transport complex of Ukraine have conducted research in this field.

Complexity and scale of the problems connected with modernisation of transport system management, leads to the necessity of a complex solution of the problem of balanced transport system with multimodal transport development as basic element of internal potential development of the state. Maintenance of these processes should be carried out through Programs of national transport system development and regional programs of development in this direction. Therefore the aim of the research is to work out recommendations and methodical approach to the implementation of the above-mentioned programs and development strategy.

Formation of adequate system for the balanced dynamic development of the country is one of the basic administrative functions of the state policy. The key factor of effective realisation of this development is optimisation of spatial structure of the economy on the principles of rational use of available resource potential (natural, industrial, scientific and technical, human, financial) and advantages of geopolitical position.

Formation of effective state policy in the field of transport needs an all-round substantiation of priority directions and ways of achievement of the dynamic, balanced social and economic development of Ukraine, increase of the population living standards, maintenance of the social standards guaranteed by the state for each citizen [10].

First of all there is a requirement to increase in number and improve the technical condition of all types of transport, service quality, maintenance of

profitability, comfort and safety of passengers and cargoes transportations by development of a road network and transport system, the greatest possible coverage by motor transport of all settlements, development of port potential of cargo handling, system of aviation flights, including small distances flights, upgrading of a transport infrastructure as a whole.

Let's outline the basic problems of transport modernization:

- insufficient updating of all types of transport and road sector, discrepancy of their technical condition and current problems.

- low level of transport process information and information interaction of transport with other branches of economy.

- ineffective use of the state geopolitical position and its transport communications opportunity for the international transit of cargoes across the territory of Ukraine.

- unsatisfactory conditions of road sector enterprises, unsolved problems of full indemnification of income losses connected with the existing practice of state tariffs regulation;

  - insufficiency of budgetary financing;

  - problems connected with the maintenance of unprofitable social infrastructure facilities and non-productive expenses;

  - the lowest indicators of investments into technological modernization and branch development along with the minimum state support for renewal of transport;

  - inefficiency of organizational structure and control system;

  - uncertainty in issues of transport activity regulation and legal maintenance, the slow solution of transport legislation unification issues in compliance with the international law requirements;

  - unsolved institutional transformation issues.

While building up development programmes it is necessary to formulate principles which will be basic and which will be certainly necessary to adhere:

  - lawfulness and supremacy of law;

  - publicity in preparation and decision-making;

  - implementation of international standards and the recommended practice principle, the use of other countries' experience;

  - safety of providing services;

  - conformity to national and international ecological standards;

  - availability of all population levels and enterprises of all forms of ownership.

Thus the ways of the set tasks have been realized appropriately through the performance of the following actions:

carrying out the effective control over transport safety with the help of inspection and implementation of modern means;

working out of national regulatory-legal acts in accordance with European and other international legislation and standards;

constant improvement of the certification process of transport companies, enterprises personnel;

the development of the international contract-legal base to expand the access of Ukrainian companies to international markets of transportations and jobs;

stimulation of home transport service market development;

the development of state employees' training, retraining and improvement of professional skills system;

methodological recommendations for subordinate enterprises in order to observe requirements of national legislation and international contracts and arrangements;

implementation of safety control, quality, optimization of organizational structure, improvement of administrative services quality and improvement of work organization systems.

One of the global tasks demanding a solution is essential territorial distinction in the level of a transport infrastructure provision, a number of available transport different regions. Therefore those projects which contain both the ways of global strategic tasks solution, and short-term and medium-term ones are of great importance. These programmes should include particular measures not only regarding a cargo transportation, but also regarding passengers transportation, i.e. directed at realization of separate positions in the development and improvement of a shuttle mini-bus network and infrastructure, a network of bus stations and terminals, quality of passengers transportation, improvements in economic, innovative and personnel policies, transportation safety and ecologic practice implementation. Thus it is necessary to appoint particular executives, responsible persons, who will set schedule times, sources, volumes and terms of financing.

One of the most important economic characteristics is profitability. Effective economic functioning of carriers and bus stations is probably possible if that structure and income level optimization, and also structure and expenses level of different kinds of resources within the established regulations is provided on their part, and tariff and compensatory policy optimization is provided on the transportation provider part. It is clear that investments into the technological transportation process differ substantially depending on types of routes and movements.

For example, the city and the overwhelming majority of suburban movement routes investments at the expense of the means received from the service of these routes, even provided that there is high level of indemnification of losses are practically impossible. Therefore, the basic investment recoupment source (including credit or leasing conditions) is the investment component, i.e. a part of profit from work city and suburban routes. The important factor of investment activity in these cases is also the target use of depreciation charges which as operational expenditure have a 'virtual' character.

The motor transport tariff policy should ensure fulfilment of motor transport social function, satisfy entrepreneurial interest, ensure motor transport development, stimulate implementation of the newest transportation technologies, use of modern types of vehicles, and also promote solution of particular range of tasks. As a whole the tariff policy is a component of the general economic and social policy which on the one hand, provides free pricing in competitive market sectors, and on the other hand – regulation of services cost [11].

Taking into account the social function of general use transport, which is generally available for all population groups, the state cost regulation of socially significant motor transport services is completely grounded. Proceeding from the aforesaid, interregional transportation tariffs are one of the most important factors, which provide constant carriers functioning, stability of their economic situation, transportation quality and safety, and also investment attraction. On the other hand, it is necessary to consider that the tariff level is an important social factor, and while defining it, it is necessary to take into consideration population real solvency. It follows from this that an objective solution of a tariff level problem is probably exceptionally possible provided that there is an effective tariff policy.

Gradual transition to economically grounded tariffs (fares) for each of the routes in all modes of movement, and also for bus station services has to be a tariff policy purpose [12]. Tariffs which will provide economically grounded expenses compensation (within operating regulations) and profit formation in accordance with the co-ordinated profitability level (if necessary – taking into account the investment component) should be understood as economically grounded tariffs.

While setting usual movement mode transportation tariffs, both real population solvency and real possibilities of compensatory budgetary funds should be considered. Thus, optimization of regional economic policy with balance creation between necessary volumes and passenger motor transport services quality, (including socially signifi-



cant ones), and also the fares, taking into account an effective budgetary sources use of indemnification, should be considered as a strategic task.

Realization of such strategy will provide creation of a necessary investment attraction and, accordingly, a competition in this market segment that, in turn, will provide volumes and quality growth of passenger transport services.

It is necessary to notice that research results have shown that according to the profitability indicators the routes which work in different movement modes, differ considerably. For example, almost all city bus routes are unprofitable. In addition, the losses are caused by both preferential transportations, and the established tariffs level. The overwhelming majority of suburban bus routes are also unprofitable, but approximately 50 – 60 % of this unprofitability is caused by only preferential transportations. On the other hand, the overwhelming majority of coach service is profitable, but profitability level fluctuation for them makes from 5 to 30 %. Bus transportations in 'express' and 'shuttle mini bus' modes are almost completely profitable, but profitability level fluctuation for them also makes 10 – 40 %.

Investments (and their recoupage) in coach service auto-transportations technological process, and also at all 'express' and 'shuttle mini bus' modes, in most cases can be carried out at the expense of the means received from these routes service.

The investments structure is also an important factor. The practice is that almost all investment means of the majority of carriers go exceptionally on rolling stock renewal. Infrastructural investments are first of all very important in development, modernization and reconstruction of carriers and bus stations facilities for the effective functioning of passenger transportations system.

While working out tactical steps, emphasis should be put on the compensatory policy. It should provide a complex solution of the problem of financing necessary indemnifications for preferential transportation of citizens whose list of categories is established by the corresponding acts and the Law of Ukraine 'About the State budget of Ukraine' for the corresponding year for passenger transportations. It concerns unprofitable adjustable tariffs indemnification, creation of conditions for comprehensive development and improvement of the quality of socially significant motor transport services, and also distribution, maintenance and use of the budgetary funds for indemnification.

Legislative and regulatory basis of indemnifications realisation is the Budgetary code of Ukraine, Laws of Ukraine 'About motor transport', Cabinet Ministers of Ukraine regulations from 12/25/1996 № 1548 'About the establishment of executive powers

of city councils concerning (tariffs) price control' with the changes and additions, from 04.03.2002 № 256 'About the order of local budgets expenditure financing approval for measures on realisation of population social protection government programmes at the expense of subventions from the state budget' with the changes from 29.01.2003 № 117 'About the Uniform state automated register of people who have the right for privileges', from 29.01.2003 № 139 'About the approval of the Order of carrying out of competition on passengers transportations on a general use bus route.' Ministry of statistics of Ukraine order from 27.05.1996 № 150 'About the Instruction approval as for passengers account order who are transported by public transport along the routes', which has been registered in the Ministry of Justice of Ukraine 30.05.1996 №258/1283, with the changes and additions, other legislative and regulating acts which regulate the relations in the corresponding sphere.

The basic source of preferential transportations indemnification is the subvention means from the State budget of Ukraine, received by corresponding cities and areas. Distribution of these means is carried out by local authorities taking into account total amounts of the means provided for indemnification of a shuttle mini bus network of socially significant motor transport services, preferential transportations planned volumes of corresponding citizens categories, and the previous calculations of indemnification volumes for cities and city districts, and the region as a whole.

The scientific-technical, technological and information support issue, without which it is impossible to achieve a necessary degree of population and production transport service quality is an important point. Working out and realisation of corresponding programmes and measures have to be carried out with wide involvement of specialised research, scientific and other competent organisations and specialists.

One of the most important directions of an innovative policy is the creation of ASDMAC – the Automated Systems of Dispatcher's Management, Account and Control on passenger transport. These systems should be subordinated to transportation organization, that is to the executive committees of corresponding city councils (as for city passenger transportations), and to the economic authority of transport and communication of public administration (as for suburban and coach service interregional passenger transportations). In future, all-round GPS-technologies use is necessary for strengthening of the control over realisation of suburban and coach service passenger transportations.

Among all indicators which characterise development and improvement of the passenger auto transportations organisation system and increase of its quality, issues of safety have the highest priority. Ecological safety ensuring, and decrease in environmental pollution level has to be also one of the most important directions for prospective development of transport system.

Carrying out of the above-mentioned tasks with the account of the presented recommendations, will give the chance to provide dynamic balanced development of a country transport complex as a whole, to bring our standards of living nearer to the European ones, and to create conditions for economic activity strengthening in all country regions, which will favour gradual softening of interregional disproportions, reduction of depressive territories formation risks, and will protect the society from considerable additional expenses.

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# МЕТОДИ УПРАВЛІННЯ СТАЛИМ РОЗВИТКОМ ПІДПРИЄМСТВА

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*Смачило І. І.*

Описано трирівневу схему методів управління сталим розвитком підприємства з якісними та кількісними ступенями деталізації, яка може бути доповнена новими методами управління, що дає змогу досягнути гнучкості й адаптованості механізму управління сталим розвитком.

Запропоновано методи управління сталим розвитком на основі: дотримання існуючої стратегії розвитку; обмеження сталого розвитку підприємства; запобігання порушення сталого розвитку підприємства, застосування яких відповідно: надає підприємству змогу в майбутньому орієнтовано відтворювати показники сталого розвитку, яких воно досягнуло в минулому; веде до того, що в майбутній діяльності підприємства не виникатиме ситуацій, котрі призводять до порушення сталого розвитку; надає можливість не лише зберегти сталий розвиток як стратегію управління, а й запобігти зниженню його показників.

*Ключові слова:* сталий розвиток, частинні показники, методи управління, критерій сталого розвитку, механізм управління сталим розвитком.

## МЕТОДЫ УПРАВЛЕНИЯ УСТОЙЧИВЫМ РАЗВИТИЕМ ПРЕДПРИЯТИЯ

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Описана трехуровневая схема методов управления устойчивым развитием предприятия с качественными и количественными степенями детализации, которая может быть дополнена новыми методами управления, что дает возможность достичь гибкости и адаптированности механизма управления устойчивым развитием.

Предложены методы управления устойчивым развитием на основе: соблюдения существующей стратегии развития; ограничения устойчивого развития предприятия; предотвращения нарушения устойчивого развития предприятия, применение которых соответственно: предоставляет предприятию возможность в будущем ориентировано воссоздавать показатели устойчивого развития, которых оно достигло в прошлом; ведет к тому, что в будущей деятельности предприятия не будут возникать ситуации, которые приводят к нарушению устойчивого развития; предоставляет возможность не только сохранить устойчивое развитие как стратегию управления, но и предотвратить снижение его показателей.

*Ключевые слова:* устойчивое развитие, частичные показатели, методы управления, критерий устойчивого развития, механизм управления устойчивым развитием.

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## METHODS OF STEADY DEVELOPMENT MANAGEMENT OF AN ENTERPRISE

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The three-level chart of methods of steady development management of an enterprise with qualitative and quantitative indices has been described. It can be complemented with new methods of management which will facilitate flexibility and

adaptation mechanism of steady development management.

The methods of steady development management have been suggested on the basis of existing strategy of development, limitation of steady development of an enterprise, prevention in violation in the steady development of an enterprise. Application of these methods will enable the enterprise to recreate indices of steady development in the future, to secure steady development as management strategy and to prevent the decline of indices.

*Key words:* steady development, management methods, criterion, mechanism of steady development management, part indices.

Традиційні методи управління промисловим підприємством недостатньо ефективні у швидкозмінному конкурентному бізнес-середовищі. Для підприємства, яке функціонує в умовах зростаючої невизначеності і динамічності зовнішнього середовища, одним з головних чинників забезпечення конкурентоспроможності є сталий розвиток. У зв'язку з цим управління сталим розвитком – важлива умова ефективності життєдіяльності вітчизняних промислових підприємств. Тому одним із актуальних питань економічних досліджень є пошук шляхів забезпечення адекватного новим умовам господарювання процесу управління сталим розвитком вітчизняних промислових підприємств.

Вирішення питань забезпечення сталого розвитку підприємств потребує періодичного корегування методів управління як способу вдосконалення механізму управління сталим розвитком підприємства. Проблемам сталого розвитку присвячені наукові дослідження В. Гейця [1], В. Герасимчука [2; 3], О. Раєвської [4], Б. Данилишина [5], О. Єфремова [6], О. Котикової [7], Л. Корнійчука [8; 9], Н. Кирич [10; 11], Л. Мельника [12], О. Шубравської [13], В. Пономаренка [14] та інших учених. Серед зарубіжних дослідників теоретико-методологічним аспектам цих проблем значну увагу у своїх працях приділяли В. Данилов-Данілюк [15], Г. Дейлі [16], О. Зеткіна [17], О. Кузнецов [18; 19], Т. Сухорукова [20].

Аналіз результатів досліджень науковців показує, що, незважаючи на їхню високу наукову і практичну цінність, існує потреба в системному та комплексному вивченні проблем управління сталим розвитком підприємства.

Умови, які характеризують сучасний стан економічного управління:

1. Сталий розвиток підприємства проявляється як слабо-структурований (неформалізований) процес, який залежить від багатьох формальних і неформальних чинників. При цьому нема нормативів, на основі яких можна було б отримати висновок про вплив елементів підприємства на його розвиток.

2. До початку формування механізму управління сталим розвитком підприємства немає систематизованої інформації про його виробничу

діяльність та вплив зовнішнього ринкового середовища.

3. Завдання, що мають бути розв'язані за допомогою механізму управління сталим розвитком, не встановлені або сформульовані у поняттях, не пов'язаних із сталим розвитком.

4. Механізм управління сталим розвитком підприємства формується в умовах нестачі матеріальних та фінансових ресурсів протягом коротких часових проміжків.

5. Упровадження механізму управління сталим розвитком підприємства відбувається без попередньої науково-дослідної роботи.

Проведені дослідження дають підставу запропонувати таку логічну схему розроблення методів управління сталим розвитком підприємства: проведення декомпозиції управління сталим розвитком підприємства на об'єкти управління та керуючу систему; запровадження методів якісного та кількісного аналізу результатів управління сталим розвитком з одночасним обмеженням кількості аналізованих показників.

Із цього випливає, що механізм управління сталим розвитком підприємства повинен включати такі елементи:

1. Оцінка процесів, що тривають на підприємстві, з погляду його сталого розвитку.

2. Вибір стратегічного напрямку сталого розвитку підприємства.

3. Визначення додаткових тактичних пріоритетів сталого розвитку.

4. Оцінка стратегічного й тактичного напрямків розвитку з позиції його сталості.

5. Розроблення плану заходів щодо вдосконалення механізму управління сталим розвитком відповідно до визначених стратегічних і тактичних пріоритетів.

Концептуальну схему управління сталим розвитком підприємства подано на рис. 1.

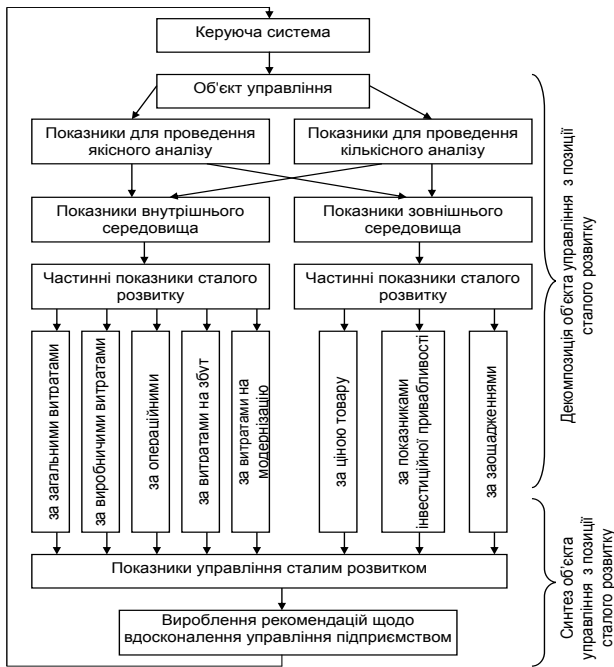


Рис. 1. Концептуальна схема управління сталим розвитком

На схемі показано, зокрема, декомпозицію підприємства (об'єкта управління) і механізму управління (керуючої системи), відображено синтез механізму управління сталим розвитком – це визначення нових показників сталого розвитку на основі нових теоретично об'ґрунтованих підходів.

Однією з проблем управління сталим розвитком є значна кількість показників, які необхідно враховувати під час дослідження сталого розвитку. Тому потрібно, насамперед, встановити загальну множину показників, причетних до діяльності підприємства і зовнішнього впливу на нього, а згодом доцільно визначити найбільш впливові показники. Практичний досвід показує, що необхідно обмежитися кількома такими показниками.

Вироблення рекомендацій щодо сталого розвитку підприємства пропонуємо об'ґрунтувати на основі двох ступенів деталізації. На першому ступені деталізації (наближеному) для сталого розвитку достатньо якісних рекомендацій, які випливають зі значень показників сталого розвитку підприємства. Під час більш конкретнішої деталізації необхідно враховувати кількісні характеристики. Виразимо їх через п'ять показників внутрішнього впливу і три показники зовнішнього впливу.

Для практичної реалізації запропонованих методів управління сталим розвитком підприємства необхідно деталізувати основні його елементи (рис. 2).

На першому рівні схеми основних елементів механізму управління сталим розвитком визначаємо тенденції змін частинних показників (ЧПСР). Зокрема, передбачено визначення сталості

величини ЧПСР ( $\Delta = 0$ ), її зростання ( $\Delta > 0$ ), спадання ( $\Delta < 0$ ). На другому рівні з'ясуємо швидкість змін ЧПСР при  $\Delta > 0$  та  $\Delta < 0$ . Швидка зміна ЧПСР відбувається тоді, коли при незначних змінах часу (місяць, квартал, півріччя, рік) різко збільшуються (зменшуються) ЧПСР. Сповільнена зміна ЧПСР відбувається тоді, коли при незначних змінах часу ЧПСР збільшуються (зменшуються) повільно. На третьому рівні відображаємо графічні зміни ЧПСР ( $\Delta$ ) для забезпечення наочності тенденцій змін для прийняття управлінських рішень. На рис. 2а) схематично зображено, що при будь-яких значеннях часу ( $t_1, t_2, \dots, t_k$ ) зміни ЧПСР дорівнюють приблизно нулю. Це якісно відображає наявність сталого розвитку підприємства. Рис. 2б) відображає швидке зростання ЧПСР ( $\Delta > 0$ ), що визначає відсутність сталого розвитку, зумовлену необ'ґрунтованим збільшенням окремих показників діяльності підприємства, зокрема цін на продукцію. Швидке спадання ЧПСР ( $\Delta < 0$ ), відображене на рис. 2в), показує відсутність сталого розвитку, зумовлену різким погіршенням показників діяльності підприємства.

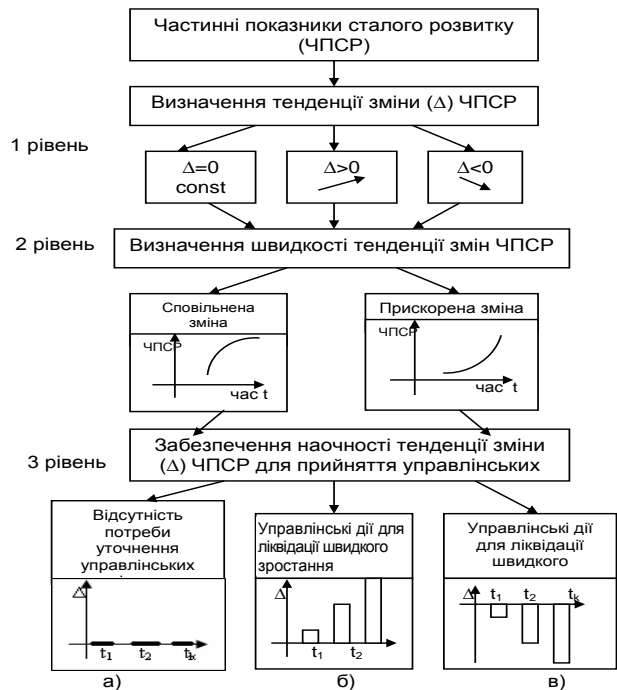


Рис. 2. Схема основних рівнів механізму управління сталим розвитком підприємства (перший ступінь деталізації)

Визначення тенденцій зміни частинних показників сталого розвитку приводить до двох суттєво відмінних висновків щодо діяльності підприємства. По-перше, висновок про достатню ефективність роботи підприємства (блок а) на рис. 2). По-друге, висновок про неефективне управління сталим розвитком, виражене у надмірному збільшенні (блок б) на рис. 2) або зменшенні (блок в) на рис. 2) аналізованих показників.

Якщо за результатами аналізу попередньої діяльності підприємства встановлено її відповідність сталому розвитку, це означає, що для управління сталим розвитком підприємства в майбутньому доцільно дотримуватися і продовжувати існуючу стратегію його розвитку. Так, приходимо до висновку, що за умов ефективної діяльності підприємства для управління ним необхідно застосувати управління сталим розвитком на основі методу збереження існуючої стратегії розвитку підприємства.

Опишемо управління сталим розвитком на основі методу збереження існуючої стратегії розвитку підприємства. Припустимо, що в блоці а) третього рівня якісного аналізу об'єкта управління, розділеного (декомпованого) на показники сталого розвитку (див. рис. 1, 2) сформульовано висновок про те, що процес розвитку підприємства відповідає сталому розвитку. Цей висновок впливає з критерію сталого розвитку: співвідношення між показником, що відображає результат управління підприємством, і показником, пов'язаним із повним забезпеченням платоспроможного попиту на продукцію підприємства. За цих умов для розроблення плану діяльності підприємства на наступний період необхідно обчислити показники управління сталим розвитком і застосувати знайдені їхні значення для вироблення рекомендацій щодо управління сталим розвитком підприємства.

Схематично управління сталим розвитком на основі методу збереження існуючої стратегії розвитку підприємства зображено на рис. 3.

Метод збереження існуючої стратегії сталого розвитку є елементом другого ступеня деталізації – кількісного аналізу процесів розвитку підприємства. Цей метод необхідно застосувати як розширений елемент блока а) у схемі першого ступеня деталізації механізму управління.



Рис. 3. Схеми методу збереження існуючої стратегії управління сталим розвитком підприємства (другий ступінь деталізації)

Проілюструємо цей метод за допомогою схематичного графіка залежностей показників сталого розвитку від часу. На рис. 4 зображено один цикл управління за допомогою методу збереження існуючої стратегії розвитку підприємства, побудований на основі розроблених показників сталого розвитку й управління ним.

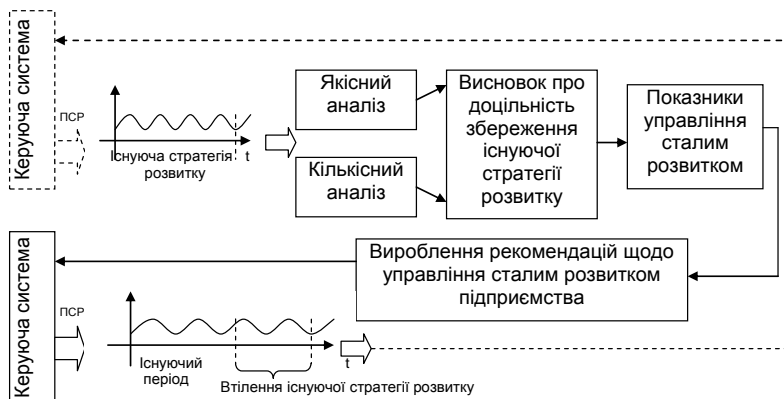


Рис. 4. Схематична ілюстрація до практичного застосування методу збереження існуючої стратегії сталого розвитку підприємства

Таким чином, описана тривірнева схема методів управління сталим розвитком підприємства з якісними та кількісними ступенями деталізації може бути доповнена новими методами управління, що дає змогу досягнути гнучкості й адаптованості механізму управління сталим розвитком. Застосування методу управління сталим розвитком на основі дотримання існуючої стратегії розвитку надає підприємству змогу в майбутньому орієнтовано відтворювати показники сталого розвитку, яких воно

досягнуло в минулому. При цьому показники сталого розвитку служать керованими елементами для збереження сталості розвитку підприємства. Використання методу управління на основі запобігання порушення сталого розвитку підприємства веде до того, що в майбутній діяльності підприємства не виникатиме ситуацій, котрі призводять до порушення сталого розвитку. Використання методу управління на основі обмеження сталого розвитку підприємства надає можливість не лише зберегти сталий



розвиток як стратегію управління, а й запобігти зниженню його показників сталого розвитку, тобто вживати заходів щодо обмеження швидких змін показників сталого розвитку. Для запобігання швидким (різким) змінам показників сталого розвитку необхідно розробити метод визначення меж показника сталого розвитку.

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# GOVERNMENT-MARKET RELATIONSHIPS AS AN EVOLUTIONARY GAME

UDC 338.242:330.33

**A. Zanegin**

The role of the state in market economy has been studied regarding evolutionary game theory which enables to differentiate stable and unstable equilibrium patterns between market and government economic institutions. The idea of two different unstable equilibrium situations has been put forward. Stable equilibrium (homeostasis) possibility in economic system has been studied. Regulation in general has been considered as the stable equilibrium condition which facilitates market development and protects the economy.

*Key words:* evolutionary game, attractor, repeller, crisis, stable equilibrium, unstable equilibrium, homeostasis, sub prime mortgage.

## ДЕРЖАВНО-РИНКОВІ ВІДНОСИНИ ЯК ЕВОЛЮЦІЙНІ ІГРИ

УДК 338.242:330.33

**Занегін А. Г.**

Роль держави в ринковій економіці розглядається з позицій еволюційної теорії ігор, яка надає можливість розділити стійкі і нестійкі типи рівноваги між ринковими і державними економічними структурами. Висувається думка про дві різні ситуації нестійкої рівноваги. Розглядається можливість стійкої рівноваги (гомеостазиса) в економіці. Умовою стійкої рівноваги є регулювання, взяте широко як сприяюче розвитку ринку, так і оберігаюче від його ексцесів.

*Ключові слова:* еволюційна теорія ігор, нестійка рівновага, стійка рівновага, репелер, аттрактор, ринок, держава, регулювання.

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## ГОСУДАРСТВЕННО-РЫНОЧНЫЕ ОТНОШЕНИЯ КАК ЭВОЛЮЦИОННЫЕ ИГРЫ

УДК 338.242:330.33

**Занегин А. Г.**

Роль государства в рыночной экономике рассматривается с позиций эволюционной теории игр, которая позволяет разграничить устойчивые и неустойчивые типы равновесия между рыночными и государственными экономическими структурами. Выдвигается идея о двух различных ситуациях неустойчивого равновесия. Изучается возможность устойчивого равновесия (гомеостазиса) в экономических системах. Условием устойчивого равновесия является регулирование в широком смысле, как способствующее развитию рынка, так и оберегающее экономику от его эксцессов.

*Ключевые слова:* эволюционная теория игр, неустойчивое равновесие, устойчивое равновесие, репеллер, аттрактор, рынок, правительство, кризис, регулирование.

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Political statements on the government size aside, could science say anything about the issue? Could it be Economics, for example? Unfortunately, Economics just talks about government role in the economy. The well-known mixed economy notion is

essentially empty: it says nothing specific about the mix.

It says nothing about the equilibrium in the Government-Market system either. What conditions could it be stable under? Maybe there is no stable equilibrium at all?

Are there any tipping points when small changes push the system to one state or another? Which states of the system are attainable?

Given these questions, the subject under study is not market equilibrium (classical approach), but

equilibrium in the combined Government-Market system.

There exists a very good tool to deal with the above questions. This tool is evolutionary game theory (Saari, 2010).

Even the simplest, most general evolutionary game theory ideas and models provide an amazingly new and fresh insight into the relationships between Market and Government.

The term "evolutionary" speaks for itself. Government-Market system has a dynamic structure. It changes. What is big now could be small tomorrow, in a new historical situation.

Structural system evolution may be regarded as a result of a game. Market and Government are the participants of the game. The outcome of the game is the change in market economic size and power in relation to the government economic size and power.

Two extreme outcomes of the game are obvious: absolute power government (non-market economy) or unbridled market system with zero government power.

But what is the path of the system from one extreme to another, how does the evolution work?

To figure that out, and to make the use of graphs possible, we are going to define a parameter namely "market power differential" or MD, which is simply the difference between market economic power and government economic power.

If  $MD < 0$  economic power of the government is dominant with various degrees of dominance which, of course, depend on the absolute value of MD.

This describes the centrally planned economy with various degrees of centralization.

In case of  $MD > 0$  the market is a dominant force. Again, there could be different degrees of market dominance. The extreme situation may represent the system, close to the possibility described by Jacques Attali. He believes that some typical traits of such outcome could be: capture of all social protection networks by markets, dismantling nation-states, "devastating wars, pitting nations, religious groups, terrorist entities, and free-market pirates against one another" (Attali, 2009).

Let us build a graph, depicting a possible path from one extreme to another.

The X-axis will be the relative size of the market. Although sizes measurement and comparison are quite vague, it sounds reasonable to say that at some point the market makes 0.3 of the combined government and market size and at another point it constitutes 0.8 of the mentioned size. What matters here is that 0.8 represents significantly greater relative market size. Let us denote this as MS. If  $MS = 0$ , there is no market economy.

If  $MS = 1$  there are only market structures. If MS deals size, MD denotes differential power and potential. Small issues, in principle, may be powerful. It is not accidental that evolutionary game theory suggests analogy of a terrain, a landscape with its hills and ravines, with mountain peaks and valleys. Mountain peaks have high potential energy, according to physics.

Let us put MD on Y-axis.

A possible evolutionary path from absolute government dominance to absolute market dominance (or vice-versa) is represented in Fig 1.

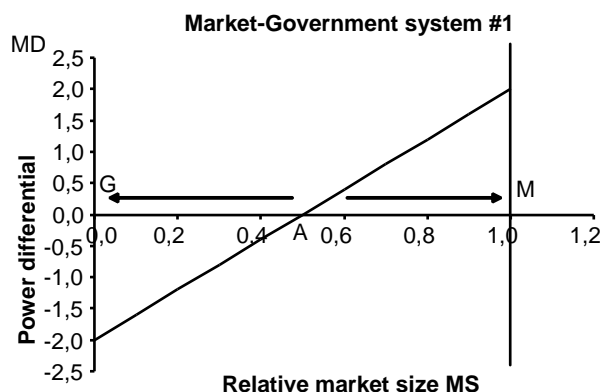


Fig. 1. Evolutionary path #1

At point G there is no market and market differential MD is negative with maximum absolute value. The government captures all economic activity. At point M government as an economic agent is nonexistent.

Suppose  $MS = 0.2$  (see Fig. 1). In what direction will the economy go? The power differential is negative, so the government dominates. To answer the question we need clear understanding of different economic entities dynamics.

Everybody knows that with a decrease in economic activity within recessions unemployment grows and demand for consumer goods drops, which depresses economic activity even more. The vicious cycle evolves. In good times this cycle may transform into a virtuous one. This is a manifestation of positive feedback loops. It is positive in the sense that the feedback signal aims at direction of the change. So whatever the change, the positive feedback enhances it. The negative changes (in pure mathematical sense) become even greater by absolute value, and so are the positive ones.

Positive feedback loops permeate all complex systems, economy included.

For our study it is important to underscore that government typically begets government, it feeds on itself, trying to enhance this particular element of the system. Yet it is true for market components, too. Markets usually beget markets. Positive feedback loops work in both entities.

So what happens at the point where  $MS = 0.2$  and  $MD < 0$ ? Owing to the positive dominating government power feedback nature the government domination will only grow. The market cannot prevent that at this point. Eventually the system reaches point G where government domination is absolute.

Now assume  $MS = 0.8$ . (See again Fig. 1). In this area  $MD > 0$  and the market dominates. The positive feedback logic suggests that the market will be enhancing its position until the system reaches point M for absolute market domination. The arrows in Fig. 1 illustrate these movements to the extreme points.

What about point A? How will the system behave at this point, where power differential is 0? In fact this is the top of the hill, a tipping point. A small push will cause a precipitous move either to G or to M. Prof. Saari uses the term "repeller" for this kind of situation. This is unstable equilibrium. According to evolutionary game theory mathematics, unstable equilibrium point corresponds to positive slope of the evolutionary

path. Indeed, at point A the slope is positive.

If the slope at the crossing is negative, it is a stable equilibrium. It is called "attractor". This is not shown in Fig. 1.

Mainstream economic science, to our mind, implicitly considers equilibrium as stable. Yet unstable economic situations are real. Thus, the notion of "repeller" is by no means empty. It is quite appropriate for economic and financial crises mechanics description. We remember pretty well how financial operations with sub-prime mortgage derivatives tipped the world economy into 2008 – 2009 crisis.

Yet the question arises: does Fig. 1 exceptionally depict Government-Market system behavior? Clearly, there may be room for criticism.

In reality, many market economies, at least for a short period of time, remain at stable equilibrium, however fleeting it could be. Otherwise we would have seen just two types of economic systems: 100 % planned economies and unfettered markets economies. The real picture is rather "motley".

There are, indeed, economies with more or less stable Government- Market mix within a certain time span.

Now the logic of evolutionary game theory comes to the fore. If we reject the path from G to M in Fig. 1 with one crossing of axis X as unrealistic, we can get to M by crossing X exactly 3 times. We cannot cross X just twice, actually, because the system at point M has a positive MD. Or, as the evolutionary game theory puts it, the global connecting curve slope must be positive. Yet, in the middle there is a negative slope. Thus, in order to have positive global slope there should be one positive slope + one negative slope + one positive slope, which, of course, equals a positive slope (+1-1+1=+1).

Fig. 2 shows the path with 3 crossings of axis X.

At Point A the slope is positive, so it is a repeller. MS to the left of A eventually leads to the absolute government power. Within A-H interval the power differential is positive, so the market dominates and the system moves to the right. Something new happens here, though. The curve slope turns negative, which means movement deceleration to the market domination. The system cannot go beyond point H, because beyond this point until point B the government power is overwhelming again.

So every market structure between H and B as well as between A and H gravitates to H. It is obvious that H is stable equilibrium. So it is an attractor.

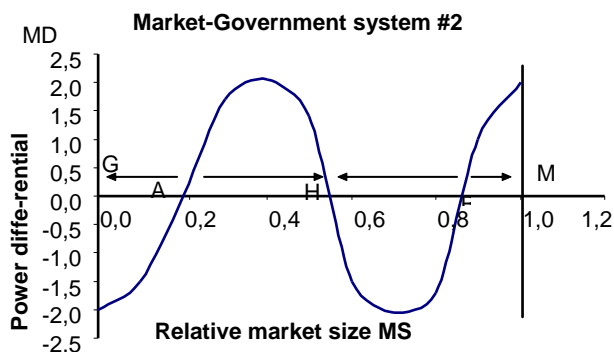


Fig. 2. Evolutionary path #2

What about the interval between B and M?

Every structure within this interval due to economic entities positive feedback nature precipitates to M, the absolute market dominance.

Yet, the moves from A to H and from B to H need more explanation. Why is it that market domination power in A-H interval decreases? Why is there a decrease in government domination power within H-B interval? In case of precipitous positive feedback does not accelerating dynamics work?

Well, positive economic entities feedback nature remains intact, of course, yet it may be confronted by regulation.

This is why the system comes to the stable equilibrium point H.

It is interesting that Fig. 2 reveals two regulation types. Within A-H interval it is in favor of the market (the antitrust laws in the USA) and within interval H-B it is against market expansion or market failure (Glass-Steagall Act in the USA).

The notion of regulation, though, should be enlarged. To put it in a nutshell, each and every economic entity – households, companies, governments, should exercise some kind of regulation and self-regulation given the challenges of supposedly unsustainable (positive feedback loops at work!) life modes on our planet.

Regulation is a process characterized with a negative feedback loop. In a negative feedback loop the feedback signal works against the change in the system, leading to stable equilibrium, i. e. homeostasis. The notion of homeostasis is no stranger to biology. What is strange is that it has no place in economic theory, despite all signs of being absolutely adequate to the reality. Paradoxically, it may take evolutionary game theory to make it relevant to Economics.

Down to the economic interpretation of Fig. 2, given some factual evidence of existing stable equilibriums, attractors, it is inevitable that there are always unstable ones, repellers. There are two of them in our case.

Hence, repellers may represent crisis points. Point A may describe a transition to the market economy. Point B may well be adequate to the US situation before the recent crisis. The repeal of Glass-Steagall Act in the USA, among other things, intensified instability of the markets. Tipping the economy into reasonable regulation could have pushed it in the homeostasis direction. As with human body, it might have been temporary; the direction would still have been correct. Yet the economy was tipped by sub-prime mortgage mechanism in the direction of unfettered markets where market failures were more pronounced.

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# METHODOLOGICAL APPROACH TO ESTIMATION OF CORPORATE BONDS ISSUER DEFAULT RISK

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**O. Slutska**

The article is devoted to the development of methodical approach to corporate bonds issuers default risk estimation. Fuzzy logic rules have been laid down generated to determine default risk level, focusing on four financial indicator values and of market interest rate level. In addition, probabilities of company transition to another risk level and bonds issuer default after a certain time period have been calculated.

*Key words:* corporate bonds, issue, default risk, fuzzy logic, the classification tree, Markov chain.

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## МЕТОДИЧНИЙ ПІДХІД ДО ОЦІНЮВАННЯ РИЗИКУ ДЕФОЛТУ ЕМІТЕНТІВ КОРПОРАТИВНИХ ОБЛІГАЦІЙ

УДК 336.763.3

**Слуцька О. В.**

Стаття присвячена розробці методичного підходу до оцінювання ризику дефолту емітентів корпоративних облігацій. Сформовано нечіткі логічні правила, які надають змогу визначати рівень ризику дефолту, орієнтуючись на значення чотирьох фінансових показників та рівень ринкових відсоткових ставок. Крім того, розраховано ймовірності переходу компанії до іншого рівня ризику, а також ймовірність дефолту емітента облігацій через певний проміжок часу.

*Ключові слова:* корпоративні облігації, емісія, ризик дефолту, нечітка логіка, дерева класифікації, марківські ланцюги.

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## МЕТОДИЧЕСКИЙ ПОДХОД К ОЦЕНКЕ РИСКА ДЕФОЛТА ЭМИТЕНТОВ КОРПОРАТИВНЫХ ОБЛИГАЦИЙ

УДК 336.763.3

**Слуцкая О. В.**

Статья посвящена разработке методического подхода к оценке риска дефолта эмитентов корпоративных облигаций. Сформированы нечеткие логические правила, которые дают возможность определять уровень риска дефолта, ориентируясь на значения четырех финансовых показателей и уровень рыночных процентных ставок. Кроме того, рассчитаны вероятности перехода компании на другой уровень риска, а также вероятность дефолта эмитента облигаций через определенный промежуток времени.

*Ключевые слова:* корпоративные облигации, эмиссия, риск дефолта, нечеткая логика, дерева классификации, марковские цепи.

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Due to the crisis in the Ukrainian economy in 2008 – 2010, there was a significant deterioration in corporate bonds issuers' creditworthiness. This resulted in lower liquidity and significantly reduced amounts of primary and secondary market debt securities. One of the main reasons for this status was lack of attention, and sometimes ignorance, of risk management procedures by a number of borrowers and investors. Given this Ukrainian corporate bonds market restoration requires appropriate

issuer's default risk assessment methods development. That will enable to assess properly corporate borrower reliability.

Research in bond issuers' default probability estimation has been conducted by worldwide renowned scholars: E. Altman, F. Black, D. Duffy, R. Jerome, R. Merton, A. Peresetsky, R. Singleton, S. Turnbull, F. Fabozzi, W. Hickman, M. Scholes etc. Since the Ukrainian bond market is characterized by slightly different dimensions, existing models cannot be correctly applied to assess local issuers default risk, because they are based on data received from overseas financial markets. Problem of debt securities

issuers reliability evaluation has also been studied by Ukrainian scientists: I. Britchenko, G. Velykoivanenko, V. Vitlinskii, L. Dolinskii, A. Kaminskii, B. Kyshakevych etc. However, the problem of corporate bonds issuer's default risk requires more detailed research and further development.

Risk assessment science-based methods development for corporate bonds and in particular issuer default risk as one of the most dangerous ones will heighten the interest of potential investors in these financial instruments. The tasks to be solved are based on the real defaults history in the domestic bond market in the past, with account taken of Ukrainian debt securities issuers peculiar features.

Bond issuers' default risk assessment must include decision-making mechanism that will predict the possibility of borrower's default in the future. Relating to previous research finding [1], the most appropriate approach in terms of Ukrainian economy conditions implies the use of bond issuers financial statements. Higher quality results will be reached with account taken of macroeconomic indicators in the model, which determine default risk systematic component.

The correlation ratio has been calculated in order to analyse the relation between the observed number of defaults and macroeconomic indicators as well as determine the key exogenous indicators to forecast borrowers' default [2]. The result has revealed the most significant correlation to be observed between the quantity of defaults and bank interest rates.

Subsequently the factor analysis and the "gravity centre" method of were used to select basic financial indices for corporate bonds issuer's default risk estimation [3]. Financial leverage ratio, liquidity ratio, EBITDA interest coverage and EBITDA to assets ratio have been determined as the most significant financial indicators in determining a company's financial position. In order to determine the issuer's financial position classification criteria the three-level scale scores for previously selected parameters assessment have been elaborated [4]. The assessment is due to be conducted basing on the fuzzy logic tools.

The database of bond issuers, classified as reliable and unreliable ones in terms of their debt obligations, has been formed in order to identify certain relations between selected financial and macroeconomic indicators and the fact of a borrower's default in the past. Selected bond issuers' financial ratios that were outstanding within 2007 – 2011 have been transferred into fuzzy scale to form the initial database for further research. Each credit redemption event, which characterizes the issuer's reliability, or the last default (coupon payments violation and principal debt repayment, or moratorium on obligations repayment), which characterizes the borrower's unreliability have been considered as the research object. As a result, the sample of 112 objects, comprising of 69 event commitments and 43 defaults has been received.

A combination of StatSoft Statistica® Data Mining classification tree methods have been used to solve the bond issuers distribution problem in terms of default risk with regard to the selected ratios. Firstly, the Boosted Trees method was used. The basic principle of this method is to build a sequence of very simple binary trees [5]. As a result, 86 % of actually unreliable issuers, i.e. those who defaulted, have been

classified correctly. As for reliable borrowers, the percentage of correctly classified ones was somewhat lower and amounted to almost 58 %.

Thus, the use of the boosted trees for company classification has resulted in failure to distribute bond issuers into two classes according to default risk. An intermediate class of issuers has been established taking into account a certain degree of belonging to reliable or unreliable issuers' classes. Bond issuers have been divided into three classes according to risk, namely low, medium and high classes, on the basis of borrowers' default probability represented using the boosted trees classification method. Furthermore, the CART method has been used to determine the classification rules for issuers' default risk. As a result, the classification tree structure represented in Fig. 1, has been obtained.

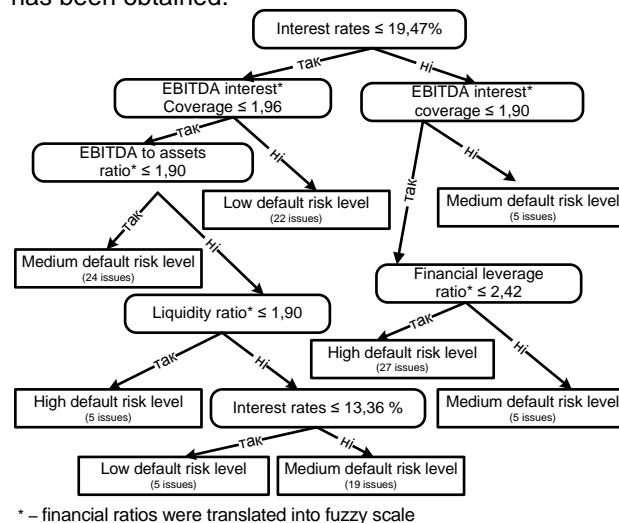


Fig. 1. Bond issuers classification at default risk

The comparison of the actual credit events and projected default risk levels identified by the classification tree (Fig. 1) enabled to detect minor differences. Thus, only three issuers that were classified at low forecast default risk levels actually violated its debt obligation terms. However, it ought to be noted that the violations were recorded within technical default, because the obligations on the bonds were still being fulfilled, which confirmed the appropriate issuers financial condition level. Late payments in these cases were due to other reasons rather than borrower's financial inability, which is difficult to predict.

A more detailed analysis of eight issuers, who eventually fulfilled their obligations on the bonds, but had a high estimated risk level, led to the following summaries. Four issuers are subsidiaries of foreign or domestic financial groups. As a result, it is important for the mentioned debt issuers to maintain high reputation and positive credit history. Therefore, most likely, even with poor borrowing enterprises' financial state, parent companies did not permit to default on other group members bonds. As for other issuers with high default risk, which had still fulfilled their obligations, it ought to be noted that they made a breach in other payment periods on those or other series of bonds, and some of them were eventually declared bankrupt. All the above confirms high predicted borrower's default risk and possibility of their debt failure.

Subsequently, certain future default risk evaluation rules, represented as fuzzy linguistic variables shown in Tab. 1, have been formed on the basis of generalized bond issuers' distribution with regard to classification trees with fuzzy financial performance scales. Note that each rule weight reflects its degree of importance and adequacy. In order to determine optimal weight values for each of the

proposed rules neural-fuzzy networks method with back propagation algorithm [6], which is implemented in the Matlab® ANFIS editor has been applied. Following up the procedure described, of model parameters optimization has been performed. Initial weight values for each rule have remained unchanged and equal to 1.

Table 1

Rules for determining corporate bonds issuers' default risk level

| № | The indices level        |                 |                             |                        |                              | Weight<br>w | The level of bonds issuer's default risk |
|---|--------------------------|-----------------|-----------------------------|------------------------|------------------------------|-------------|--|
|   | Financial leverage ratio | Liquidity ratio | EBITDA coverage of interest | EBITDA to assets ratio | Interest rates in the market |             |  |
| 1 | x                        | x               | -L                          | x                      | -H                           | 1           | L  |
| 2 | x                        | -L              | L                           | -L                     | L                            | 1           | L  |
| 3 | x                        | x               | -L                          | x                      | H                            | 1           | M  |
| 4 | H                        | x               | L                           | x                      | H                            | 1           | M  |
| 5 | x                        | x               | L                           | L                      | -H                           | 1           | M  |
| 6 | x                        | -L              | L                           | -L                     | M                            | 1           | M  |
| 7 | -H                       | x               | L                           | x                      | H                            | 1           | H  |
| 8 | x                        | L               | L                           | -L                     | -H                           | 1           | H  |

**Note:** L(-L) – low (not low) level; M(-M) – medium (not medium) level; H(-H) – high (not high) level

The borrower's default risk has been determined, using the operations with fuzzy sets based on the proposed fuzzy scales of four financial indicators, the interest rates level in the economy and prescribed rules. It ought to be mentioned that, as a result of calculation, the ambiguous issuer identity at one of default risk three levels has been obtained, providing more valid risk assessment, given the impact of numerous external and internal factors for each individual borrower.

Although at previous stages bonds issuers' classification problem was solved in terms of default risk, the next step is to solve the problem of borrower's risk class forecasting. To achieve this, the bond issuer's dynamic default risk level has been analysed using Markov chains method. Markov chain is a sequence of dependent trials, in which conditional events occurrence probability in each trial depends solely on the outcome of the previous trial [7].

In order to elaborate a transition probability matrix for each of the abovementioned 112 issuers, specified issuers' default risk level has been assessed for the first-, second-, third and fourth-quarter period prior to a credit event (execution or defaults on bond issue). A number of causes for risk level conversions in any quarter in comparison with the previous quarter have been calculated. For the last quarter prior to credit events the transition to one of two states – default or debt payment – have been traced.

Markov chain of bonds issuers's default risk levels has been schematically represented in Fig. 2.

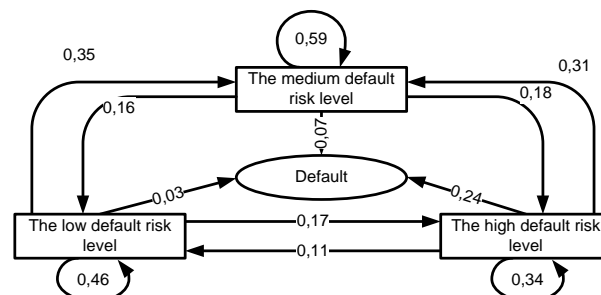


Fig. 2. The probabilities of changing the bonds issuers' default risk level

In Fig. 2 each risk level is defined by the probability of company's bond obligation default of to be averted in the next quarter. Thus, if the issuer is characterized by low risk in the current quarter, within the next period it will remain in this class with the probability of 46 %. It will shift to the middle level with the probability of 35 %, transfer to the high grade accounts for the probability of 17 %. The remaining 3 % characterises the default probability on bonds.

Thus, the use of Markov chains has enabled to predict the bonds issuer's default risk over time, relating to the current risk level and probability values transfer within risk classification in the next quarter. Bonds issuers' default probability after a certain period of time has been defined. The results have been presented in Tab. 2.

Table 2

Bonds issuers' default risk probability

| The current bonds issuer's risk class | The issuer's default probability |                   |                   |                   |
|---------------------------------------|----------------------------------|-------------------|-------------------|-------------------|
|                                       | within 1 quarter                 | within 2 quarters | within 3 quarters | within 4 quarters |
| Low level                             | 3 %                              | 9 %               | 14 %              | 18 %              |
| Medium level                          | 7 %                              | 14 %              | 20 %              | 24 %              |
| High level                            | 24 %                             | 33 %              | 39 %              | 43 %              |

Thus, in case the issuer is currently at the low risk level the issuer default probability within a quarter will total 3 %, and within 4 quarters – 18 % (see Table 2). The borrower's default possibility, being in the middle or high risk class in the current quarter also increases gradually along with broadening forecast horizon. These results are quite logical, because a longer time period always implies higher risk, due to the influence of various factors, both internal and external, which are difficult to predict.

Thus, the results of the study have formed grounds for a common methodological approach to corporate bonds issuers default risk evaluation. The sequence of main steps within this approach and implementation methods have been presented schematically in Fig. 3.

Thus, correlation between the values of bond issuers selected financial indicators (a reflection of the borrower internal condition) and the market interest rates level (a reflection of the environment) on the one hand, and fulfilment of obligations or default on bonds, on the other, have been ascertained.

The research findings have enabled to classify bonds issuers into three default risk levels on the basis of the generated and optimized fuzzy rules of attribution to a particular risk level. Probability values of transfer to other level in the forthcoming quarter have been determined and the issuer's default probability after a certain period of time has been estimated on the basis of current risk class.

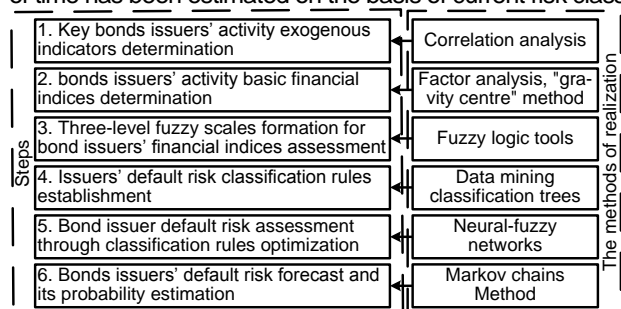


Fig. 3. The sequence of steps for methodical approach to bonds issuers' default risk assessment

Conclusions. The issuer classification highly depends on two major indices: EBITDA interest coverage and market interest rates. It has been proved shown that fuzzy logic assessment tools provide higher model adequacy, so they are recommended for practical application within the analysis of bond issuers and other enterprises. Established risk classes have appeared to be quite stable within time, periods which enables to use statistic methods in default probability forecast.

The methodical approach to corporate bonds issuers' default risk estimation has been elaborated, with account taken of the borrower's features, financial performance dynamics, the impact of macroeconomic factors and the overall market environment. In addition, it renders possible to determine default risk with some degree of affiliation. This enables to take into account the effects of other factors on the borrower, excluded from the model.

Further research of issuers' default risk impact is needed in the fund market influence field in Ukraine. Liquidity and other bond market risks estimates ought to be made as well.

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