# Sustainable Intrapreneurship - The GSI Concept and Strategy - Unfolding Competitive Advantage via Fair Entrepreneurship

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# Sustainable Intrapreneurship

## The Concept of Graded Sustainable Intrapreneuring (GSI) - Unfolding Competitive Advantage via Fair Entrepreneurship

A Review of Intrapreneurship with New Concepts, Findings, and Insights

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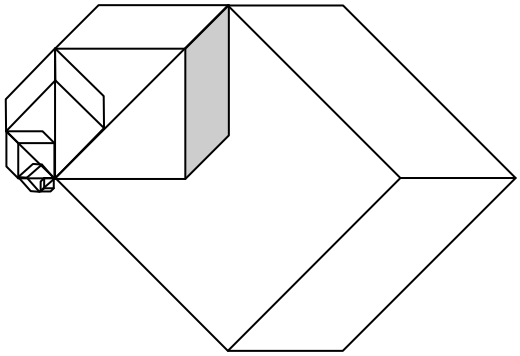
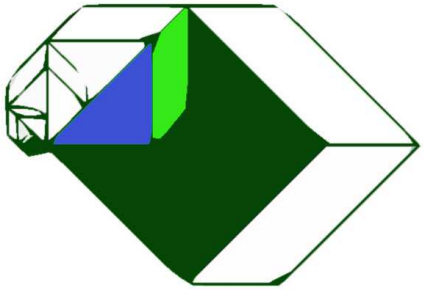
“Intrapreneurs will make all the difference between your firm’s success and failure.”

- G. Pinchot III





## Abstract

Entrepreneurship and intrapreneurship are among the most important prerequisites and concepts of modern economics and free market theory. Intrapreneurship is defined here in its broadest definition, as grades of entrepreneurship within a given system or entity, such as a company, organization, sector, cluster, national or even global economy. Hereby, intrapreneuring is more than only providing some opportunity to some employees. The wider definition rather unfolds intrapreneuring into a new universal concept of economics, efficiency, and effectiveness, which helps to solve some key dilemmas including the principal-agent-problem (PAP). This study reviews intrapreneuring in the public and private sector based on major empirical research. To optimally manage intrapreneuring, a set of sound goals and incentives, contextual, structural, behavioral, and legal-contractual measures are needed, as well as fair chances and a fair bargain for all. Free markets require internal opportunity and frameworks of fair competition. On this account, sustainable intrapreneurial modules could give rise to industry5.0. Intrapreneuring is proposed to reflect all grades of entrepreneurship that are itemized into its key dimensions independence, opportunity risk, and reward. Balanced dimensions of the right level assure graded sustainable intrapreneuring (GSI) for optimal output. Due to the universality of this concept, it applies for all work systems and sectors, public or private, micro- and macroeconomically, together with other 3D-concepts of economics. Social intrapreneurship, 3BL-GSI, or shared value strategies, could solve most societal problems if financed via QE in a GSI-conform digital full-reserve economy.


## Objective and Methods

**Objective:** *Preparatory research-review strategy:* The general methodological strategy of this study is predicated on database and literature searches to review, complement, amend, compare, analyze, correlate, compile and assemble the general, most crucial, information about generic intrapreneurship along its main ramifications and state of research, in a new comprehensive, and concluding way. Hereby, a new semi-quantitative concept of a sustainable, fortunate and healthy form of intrapreneurship shall be found for a complex behavioral socio-economic phenomenon, by accounting for its key dimensions. ***Methods:*** *Statistical PPMCC Analysis (Pearson's Correlation Coefficient Studies):* The dependency of a linear association between two individual data sets was measured by calculating the individual Pearson's product momentum correlation coefficient for each array of data (X, Y) in a two-dimensional setting, and according to the standard formula:

$$Dependence\ R_{x,y} = \frac{\sum_{i=1}^{n}(x_i - \bar{x})\,(y_i - \bar{y})}{\sqrt{\sum_{i=1}^{n}(x_i - \bar{x})}\sqrt{\sum_{i=1}^{n}(y_i - \bar{y})}}$$

$\bar{x}, \bar{y}$: *arith. mean of sample x, y*

Datasets for correlation studies were obtained from publicly available database sources of economic research studies carried out by public and private institutes, e.g. the GEM-2011 (Bosma et al. 2011), GII 2014 (Dutta et al. 2014); The World Bank 2014 - World Development Indicator Database 2013 (update 2014), IMF International Monetary Fund 2014 , 'World Economic Outlook Database' (update 2014), WIPO 2013 (Gurry et al. 2013), and UN 2012 'United Nations Statistics Divisions', National Account (Main Aggregates Database, December 2013), Central Intelligence Agency, 'The World Factbook' (update 2014), global competitiveness index (Schwab et al. 2014), economic freedom index (Heritage Foundation), HDI (UNDP), among others. *Coefficient of determination of regression analysis:* Regression analysis was performed using the Excel software and according to the standardized formula:

$$R^2 = 1 - \frac{\sum_{i=1}^{n}(Y_i - \hat{Y}_i)^2}{\sum_{i=1}^{n}(Y_i - \bar{Y})^2}$$

$\bar{Y}$: $arith.\,mean\ of\ sample$ $\hat{Y}_i$: $estimated\ regression$
$= \hat{a}_o + \hat{a}_1 x_{i1} + \cdots + \hat{a}_z x_{iz}$

Linear, logarithmic, and polynomial regression analysis were performed according to most common standards to intuitively reveal and represent trends and dependencies for a better basic understanding.

## Introduction

The term 'intrapreneurship' is a portmanteau neologism: a word created by blending 'intra-corporate' and 'entrepreneur', first suggested by Gifford and Elizabeth Pinchot in their seminal paper 'Intra-Corporate Entrepreneurship' published in Fall 1978 (Pinchot & Pinchot 1978; Macrae 1982). The idea was initially brought up in a scientific discussion with Bob Schwarz, in his name bearing School of Entrepreneurs in Tarrytown, about Norman Macrae's 'too-big-to-innovate' paradigm within his seminal 'The Coming Entrepreneurial Revolution' survey, published in 'The Economist' 1976 (Macrae 1976; Pinchot 1985). Although similar concepts were also proposed by others, that were inter alia using the terminology internal, and corporate entrepreneurship (CE) or corporate venturing (CV), which describe organizational renewal using projected and more planned forms of innovation (Antoncic & Hisrich 2001; Pinchot 1985; Pinchot 1987; Acs & Audretsch 2010; Peterson & Berger 1972; Schumpeter 1934), intrapreneurship can be seen as the more holistic and comprehensive concept, as it is better to define it internally by its co-founding element 'the act of an entrepreneurial employee', or active 'intrapreneuring' of 'intrapreneurs' (Macrae 1982; Pinchot 1985; Pinchot & Pinchot 1978). This is amended herein by 'of all grades and forms of entrepreneurial activity of all actors/entities in all work systems/entities' (GSI chapter). Traditionally, there are many diverging definitions and attributes of entrepreneurs in regular use (Schumpeter 1934; Fry 1993; Acs & Audretsch 2010): for example, more than 75 definitions and attributes were identified, in only one recent survey (Morris 1998). Consequently, intrapreneurship has also inherited some of this ambiguity, or inaccuracy, (Antoncic & Hisrich 2001; Pinchot 1985; Pinchot & Pinchot 1978; Macrae 1982; Duncan et al. 1988; Antoncic & Hisrich 2003; Sharma & Chrisman 1999), which must and will be further advanced and clarified here. So far, by now, intrapreneurship is by most general and common consent, employee`s entrepreneurial way of thinking and acting, innovating and venturing to quest, develop, make use of, and maintain opportunity to create value and benefit for the organization (Antoncic & Hisrich 2001; Pinchot 1985; Antoncic & Hisrich 2003; Haller 2009). Hence, it can be seen as an 'internal amendment' to the older 'entrepreneurship' concept which dates as far back as to Richard Cantillon in early modern France of the 18th century, when a market economy was first emerging from mercantilism and feudalism. He defined it in its modern meaning as self-interest motivated venturing of risk-bearing businesses in 'free markets', also to macro-economically best meet all demands, wants and needs of consumers and the economy, thus predating, and already in accordance with, Adam Smith's epoch-making 'The Wealth of Nations' (Smith 1776; Hoselitz 1951; Cantillon 1755). Ever since, entrepreneurship has been regarded as autonomous cause and legitimization of freely evolving market economies (Schumpeter 1934; Cantillon 1755; Smith 1776) that is maintained by risk-bearing owners, who are independent decision-making venturers (Fry 1993; Acs & Audretsch 2010), i.e. producers, farmers, traders, and were initially translated as 'undertakers' (Hoselitz 1951). If entrepreneurs weren't risk-bearers at all (i.e. 0% risk; e.g. all too big to fail firms and banks; or full risk externalization), there weren't much real entrepreneurship nor a 'free market economy'. Today, entrepreneurs are mainly thought to be represented by business founders and classical 'enterprisers' and 'venturers', who nevertheless have to bear real equity ownership. Importantly, this remains it's only defining, key characteristic feature. In 2011, there were nearly 400 million entrepreneurs found to be operating in 54 surveyed countries (Bosma et al. 2011), that may add up to approximately 600 million worldwide (own estimation, 2014). Certainly, a huge majority of them are only very small businesses with less than ten employees that only make a small fraction of the

world's total value of held businesses. Entre- and inevitably intrapreneurship, was historically widely banned from most regular employees (Hoselitz 1951; Pinchot 1985; Pinchot & Pinchot 1978). This might rudimentarily reflect the term's 'feudal origin' (Hoselitz 1951), and resembles the terms ancestral etymological evolution from strict hierarchical organizational dynastic structures, from mercantilism and also throughout industrialization (Max Weber 1923): when the 'division of labor' and the 'division of ownership and leadership' narrowed the concept down to 'the risk bearers', which in turn broke intrapreneurship and leadership further apart from its primal common origin 'entrepreneurship'. Ever since, intrapreneuring has become a growing management and innovative employee method, as economies underwent rationalization, automation, digitalization, computerization, and free-market globalization - the time when it was first termed and spread the most. Today, it reaches new peaks in our information and innovation age (Grossman & Elhanan 2001; Torelli 2013; Tuomi 2002; Downes & Nunes 2014). But yet intrapreneurship has not fully unfolded all of its potentials. Still it is often not fully implemented, or not, or not adequately or correctly, mainly due to old-fashioned HR management policies, or dominating stereotypes, top-down-enforced and leg-up-only practices that restrict intrapreneurial freedom, free job markets with fair access, and fair bargain until today, to various extents and forms. Concomitantly, fast innovation has become a major key success factor (Downes & Nunes 2014) in today's fast-paced times. Thus, antiquated hierarchical structures like classical firm bureaucracy and high levels of staff subservience of traditional and old management and HR forms, that were previously, or initially, more effective due to more orderly principles of work procedures in growing businesses (Taylor 1914), were now found, especially since the 80s, to in fact limit innovation, growth and self-renewal of most modern businesses (Macrae 1976; Peterson & Berger 1972), due to not getting the right people into the right job, the right structure, with the right attitude, the right independence, adaptability, flexibility, and required freedom and support to perform optimally, to find suitable solutions, to brainwork, to innovate, and to - healthily, happily and economically - do a good job (Sherman 2012; Pinchot 1987; Grossman & Elhanan 2001). Looking back, intrapreneuring was mainly limited to business leaders, for a long time in the past, who have obtained degrees of managerial independence functionally delegated from the 'entrepreneurial owners'. A widespread rethinking became first inevitable in the 90's self-modernizing, increasingly competitive, progressive consumer market economy (Grossman & Elhanan 2001; Pinchot 1987; Torelli 2013). At this time, it was more officially found that promoting an employee's independence and entrepreneurial mindset with new intrapreneurial structures, chances, and incentives can raise organic growth, long-term potential, profitability, innovation, and top and bottom line performance (Grossman & Elhanan 2001; Pinchot 1987; Sherman 2012; Desouza 2011; Haller 2009). Further intrapreneuring research then helped identifying its important structural and behavioral elements: 'intrapreneurial infrastructure' is required to provide a suitable framework, e.g. a 'house of opportunity' to realize capacity, 'a house of modules' and 'decentralization' to realize flexibility and agility, and a 'house of innovation', as it was early proposed by ATKearney, to promote 'organic growth' right from within the firm. This will also directly benefit the macroeconomically 'shared human capital factor' of a sector, cluster, and entire country, the firm capital, and its organizational learning, as opposed to sole leveraged M&A strategies and behind-the-door technology deals, and all other non-organic growth strategies. Major behavioral intrapreneurial features comprise all forms of pro-activeness, entrepreneurial orientation, mindset, innovativeness that became more achievable via sound talent management, fair bargain, incentives and opportunity, risk, and

reward: via intrapreneuring. Its success in firms has led to a new upshot that can be summarized to: 'intrapreneuring best aligns employee activities with organizational goals' (Pinchot 1985; Sherman 2012; Haller 2009). The gist of Pinchot's concept is already found in its first description in 1978 that covers the following ultimate elements of the concept: (1) a risk and reward system, (2) working systems of intra-capital (3) independence and autonomy (4) intra-corporate venture capitalists groups [today maybe mainly found in P&L and budget responsibilities] (5) equitable evaluation and assessment, intra-market, and (6) employee business plans (Pinchot & Pinchot 1978; Pinchot 1985; Pinchot 1987). Although not all of its points have been equally feasible - e.g. point 2, 4 and 5 empirically still prove challenging - it has clearly become a highly profitable reality not only but mainly for innovative and modern firms. Most prominent or famous examples include 3M's posted notes (Fry 1997) and hundreds of additional 3M products that were a result of a 15% intrapreneurial 'time-off', but also Google Maps, News, and Gmail, Sony's Play-Station in 1994, and Java Sun have shown how to prevent intrapreneurial cross-over that additionally results in big business success (Juntunen et al. 2013; Pinchot 1985; Haller 2009; Anon 2012). Steve Wozniak and Steve Jobs, for instance, the founders of Apple (Isaacson 2012), were not retained by HP and Atari, at the big expense of these firms. Famous entrepreneurs like Bill Gates, Steve Jobs, or Larry Page (e.g. a 20% time-off to intrapreneur at Google) officially and successfully initiated programs that have embraced and cultivated intrapreneurs (Gallo, 2011; chp. 3). In the following years, Atari declined, while HP became more intrapreneurial and profitable (House & Price 2009), subsequently to Pinchot's early claim that companies without incentives and opportunities for intrapreneurs will lose them (Pinchot, 1985; pp.36): employees don't necessarily have to, but optionally should get a chance to be as intrapreneurial as needed for them, a project and the firm. Additionally, the 'right mix of people' is often found to be also very important. Additionally, 'intrapreneurial restructuring' - in the widest sense - has already led to an age of outsourcing, spin-offs, franchising, starbursts, start-ups, and bottom-up innovation and intra-competition (Jagersma & van Gorp 2003; Quinn & Hilmer 1994; Chesbrough 2003) that leads to more net sum of intrapreneurial activity (including managements) and has hereby already much impacted the entire world economy. A more stringent definition of the GEM finds 4% of intrapreneurs cumulating worldwide - a rate that much correlates with national GDP (Bosma et al. 2013; Bosma et al. 2010), innovation and growth KPIs. For leaders being challenged to meet competitive targets, intrapreneurship still remains an insider's 'secret weapon to success' but bears the risk that it must be soundly implemented (Desouza 2011; Pinchot & Pellman 1999), which could be challenging in specific contexts - but at once can be also very promising, especially for the medium term.

## Opportunities of a Graded Intrapreneurship Concept

If intrapreneurship is regarded as an either yes or no, black-or-white concept, as it is sometimes found in today's scientific literature, the portmanteau could become directly but falsely suggestive of an oxymoron (Thornberry 2001; Ross 1972; Duncan et al. 1988; Owens & Fernandez 2014), which might lead to some misunderstandings or misconceptions. The reason for this is that it is a graded concept instead: as the core of its matter is defined by employee's technical entrepreneurial activity (EA) for various tasks and functions. So, a broadening of Pinchot's maybe a bit too elitist-innovator focused containment (Pinchot, 1985; chapter 2) seems to be required, helpful and important. On a scale of entrepreneurship ranging from 0 to 100% there is no intrapreneur found, neither at 0 or 100%, simply because it is an obligatory defining feature or it is the *de facto* entrepreneur. Thus, it is to be defined within

the entire spectrum of entrepreneurship (EA), i.e. in between 0% and 100. It is only internally defined, as an entire range of grades (Fig. 1). Subsequently, this concept can be situational and contextually calibrated and offers a more holistic understanding that may help to free the entire range of hidden potentials by finding and adjusting it to the right level. Ideally, customized levels of independence, or the opportunity, risk and reward dimensions, mutually reinforce each other and rise along with the level of complexity of the specific work procedure and can thereby optimize performance and output via context adaptability, agility, innovation and new solutions. Importantly, only the right level that suits and benefits employees, teams, departments, and job function at the same time can best evolve to profit also the firms. 'Managed intrapreneuring' can hereby be defined as the sum of means taken to implement intrapreneurship including psychological-behavioral and contextual-structural elements, IT and ICS, EVP, organizational and HR design and functional process ergonomics, organizational cybernetics, and all opportunity channels, to add a new intelligent-vector that aligns all grades of intrapreneurial actions towards firm strategy in all layers of its hierarchies. The resultant intrapreneurial scope ranges from entrepreneurial mindset, goal-oriented pro-activeness, discretionary effort, marketing (CRM, marketing, etc.), interpersonal skills, invention, commercialization, innovation, market awareness, solution-finding, customer relations management (CRM), sales management, workflow upgrading, idea generation, R&D, invention and commercialization, incremental or disruptive innovation management, and also designing and starting new strategic business ventures, firm architecture, and their management (Desouza 2011; Pinchot & Pellman 1999; Ray et al. 2012). Grades of raised intrapreneurial vectors of various magnitudes are hereby directed towards a set of advisable well-communicated SMART criteria (Doran 1981) and other goals, missions, and targets of all hierarchical levels. Managed graded intrapreneuring is 'always contextual' and thus needs to be 'made-to-order': it embraces the closing of identified 'intrapreneurial gaps' using 'top-down' and 'bottom-up' restructuring strategies and activation methods, an intra-market-thinking and performance ground, highly customized and 'logical opportunities', fairness, independence, good incentives, support of idea development and commercialization (Pinchot 1985), as well as just, fair, healthy and supportive career development paths - to enable sound solutions for all participants, maybe in a Kaizen-like way of steady improvement.

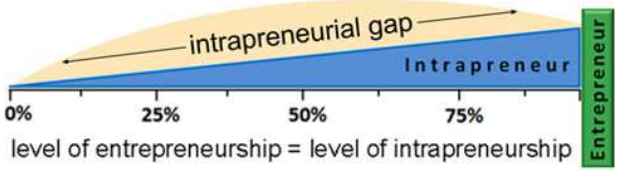



**Fig. 1** Intrapreneurship is graded entrepreneurship

## Top-down and Bottom-up Intrapreneurial Management Hierarchies

Historically-philosophically, the division of ownership and leadership (Berle & Gardiner 1932) has categorical-mechanistically promoted the formation of primal precursor intrapreneurs of an initial higher order. This has inevitably resulted in the creation of a new context of 'intra-dependence': e.g. (I) when culture gained independence from nature [culture splits from nature as a new intra-nature that raises socio-economic intrapreneurs], (II) subsequently, when merchants gained more independence from their feudal lords [ownership splits into intra-national ownership with more intra-independence, and intra-leadership] (Pinchot & Pinchot 1978), and (III) when executives and managers gained it from owners [ownership splits into represented intra-ownership and intra-leadership], and (IV) when employees became more empowered by and within top-down management hierarchies [what could be termed a split into specialized intra-leadership with intra-intrapreneuring for the representing executive

intrapreneur intra-owners; all are fully replaceable and controllable by simple real-owner reactions]. These intra-split cascades have societal-economic pattern formation activity (they structure all of the command lines and decision-making trees that affect almost everything relevant for humans) and are thus common and very powerful hierarchical power chain-reactions to organize free markets. But these bear a threat: they could also potentially lead to a fully controlled economy - if all equilibria can be circumvented, e.g. in a private money creation loophole scenario as is given in today's fractional reserve banking (FRB) (Anton 2015; Jackson & Dyson 2013). In theory, this scenario would be managed via TCT (total control theory) strategy that would yield high inequality. But this is also what we measure today: at least 50% of the world's wealth is owned by less than 1% of the population - 50% of the population owns less by far less than 1% (e.g. calculations of the guardian and fortune, 2015); Oxfam, for instance, finds that the 62 wealthiest persons own more than 50% of the world in 2016. FRB and cash-flow obligations could result in even higher *de facto* inequality in reality. Based on NPV estimates >75% of the world is already owned by less than 1% - and it is more unclear in which hands the money and property are. Top-down hierarchical entrepreneurial and intrapreneurial power patterns tend to form at the regular expense of bottom-up growth patterns, which might be one of the reasons. Top-down chain reactions have the power to block bottom up and to expand their control at the expense of bottom-up control via controlled skill exploitation. But this inhibits agility, flexibility, innovation, creative and intelligent solution finding, brainwork, and can't align most complex behavior with goals. In turn, a systemically fixed and hence predetermined inequality could potentially inhibit other positive types of bottom-up entrepreneurship (new business formation) and intrapreneurship and its hierarchical pattern formation. Hence, the right level of top-down and bottom-up need to be achieved at their natural equilibria that tend to be disturbed. Both chains are highly important but they tend to not find the balance, which to makes things worse, is very different from case to case, and thus, hyper-context dependent. Hence, common sense is advisable: intrapreneuring only as much as it makes sense but not less, markets only where they work. A change towards intrapreneuring can be best achieved in win-win situations, without causing negative stress that interferes with sound economic incentives. Historically, basic categorical split reactions have led to the emergence of the management intrapreneurs, which has simultaneously narrowed the term down to the nucleus of entrepreneurship with a new fused-in core of equity, ownership, and business venture. Then, over time, entrepreneurship also turned more and more into risk-bearing ownership. Risks were externalized if possible and a new category of self-sustaining ownership has remained while all others (intrapreneurs) became more and more exposed to all market risks without new benefits (e.g. if a firm closes and jobs are lost; the risk of unemployment). FRB banking loopholes enable to reach this stage immediately using firm property, equity or ownership deprivation (Anton 2015; Jackson & Dyson 2013). Another key loophole is the too-big-to-fail dilemma and excessive reserves hazards, e.g. bank bailouts during the financial crisis and alike. A digital full reserve would end all of these financial crises and hierarchical patterning problems and is thus advisable, to end all losses and depletion reactions. Ultimate entrepreneurs might dream of the ultimate split reaction that yields ever-sustaining ownership with all risks externalized via TCT. A fair economic game in both, top-down and bottom-up is also required to enable optimal management, strategy, and decision-making trees to permeate throughout the organization. Historically, upper management intrapreneurs will benefit a long time while other intrapreneurs will be more inhibited by the intra-intra-split-reaction dilemma and rigidities and externalities

that arise from inter- and intra-market inefficiencies. Within the 'intrapreneurial gap' (Fig. 1), employees are not free enough to do the best job to be done. Even ideal solutions they offer to superiors are often ignored and neglected and even sometimes turned into something negative due to the empowered top-down expansion thrift and its better access to key authority. This phenomenon was the initial reason to propagate "intrapreneurship" as firms went too big - and as a result, too top-down to innovate (Pinchot & Pinchot 1978; Pinchot 1985) while decentralization and modularization were widely suggested. Even if the core of the problem could continue also in smaller enterprises, i.e. if bottom-up reactions and 'chances are not generally provided', intrapreneurs presumably could be still 'better heard' and are likely to get more attention and options in SMEs, but all seems to be difficult to statistically assess. Indeed, today's SMEs are shown to be more efficient in several innovation indicators, for example, patents per employee (Breitzman & Hicks 2008). Although leadership and independence were initially the primal privileges of entrepreneurs, over time and at a certain business size and complexity, new forms have detached leadership from ownership via categorical splits (Fig. 2) and the intrapreneurial gap could grow further. Fig. 2 schematically simplifies how high-level of entrepreneurial activity is top-down splitting and branching into all affiliated management segments in generic categorical reactions, successively splitting ownership [property rights, see next chapter] and leadership incrementally apart. But as mentioned, this cleavage or split principle fails to reconfigure intrapreneurial leadership (Pinchot 1985) via fusion reactions from the bottom up, and, as a result, doesn't close the growing intrapreneurial gaps (Fig. 1) - neither adequately nor reaction-mechanistically. Unfortunately, today HR still often disregards the key specialists, experts, and innovators, who have to be more integrated, and first of all hired, to obtain real access and opportunity to thrive with the business. Today, intrapreneurs are not appreciated enough, they are often not hired for the right position, and their innovations (e.g. disruptive innovations) are often not channeled, valued, or implemented enough, which leads to 'anti-economical' inhibition of breakthroughs in all fields and sectors at the expense of future growth and profitability. Systemic blockage of intrapreneurial specialist and also managers, in all bottom up careers, hence is an important factor of interference for the economy and an important and relevant topic for management and strategy but also economics. After all, this reactive segregation pattern brings about the two bipolar leadership types, which are: (I) the entrepreneurship path (represented by a top-down command, in reminiscence of an old TCT hierarchy) and (II) the re-evolving or modernizing intrapreneurship path (bottom up specialization or management): although both are important they compete at non-equal terms. Conversely, fusion reactions technically transition intrapreneurs into entrepreneurial paths: e.g. if a more intrapreneurial specialist is assigned a management-linked position. While predominantly, top-down draining leg-up-like hierarchies might have evolved, also of hidden networks and alike, bottom-up setups or fusion for intrapreneurial specialists are still often top-downed (e.g. R&D and engineering) and frequently underrepresented. Unfortunately, these often huge, HR-caused intrapreneurial gaps (Fig. 1) emerge right at the forefront of science, technology, R&D, and innovation, which are in fact the most important qualitative key drivers of organic growth. Simplified: HR is the mother of all problems for intrapreneurs - that are all employees, hence for basically everybody. It is HR that often fails to hire the right people and to provide the right opportunity to applicants and employees. At the same time, internal applicant favoritism happens in most firms of today. Internally employees create a self-benefitting situation: they only let their 'intra-firm experiences count' for HR and all new hiring criteria: but external candidates are maybe the more needed and more

competent intrapreneurs that also need at least get a fair entry chance [but they cannot manipulate or see HR decisions from the outside, these are non-transparent and discrimination of individuals can also not be tracked]. Arbitrary, positive and negative discrimination might prevail (both types, of course, increase the level of discrimination; indeed positive discriminations are always predicated on negative discriminations, as an inevitable cost). 'Managed intrapreneuring' offers various solutions to close these 'gaps'. Decentralization, spin-offs, franchising, start-ups, or logical categorical process-based intra-market-like modularizations of SBUs (strategic business units), are just some structural top-down means to be mentioned here that can much advance competitiveness (Quinn & Hilmer 1994). These managed means are of the 'cleavage reaction type'. Contrariwise, bottom up intrapreneuring utilizes newly freed opportunity and independence as a growth matrix and merges functional (specialist) leadership with some higher grade or level of particular entrepreneurial freedom - by assigning partial/temporary property rights, e.g. the allocation of the right of an intrapreneur to participate and use a facility and the allocated right of the entrepreneur to cash in on the results (Fig. 2). Now, in ideal and free markets, these split and fusion reactions and property allocations should reach a healthy optimal balance, which they supposedly often don't in reality. As every position within all hierarchies bears this intrinsic fusion/split or top-down/bottom-up duality, only a proper design can unfold lasting competitive advantage throughout the entity with continuous improvement. Depending on the business model this design can be simple or also very complex. The right level of intrapreneuring can be very high and could be also very low. Finding the best top-down balance requires an understanding of all GSI-dimensions.

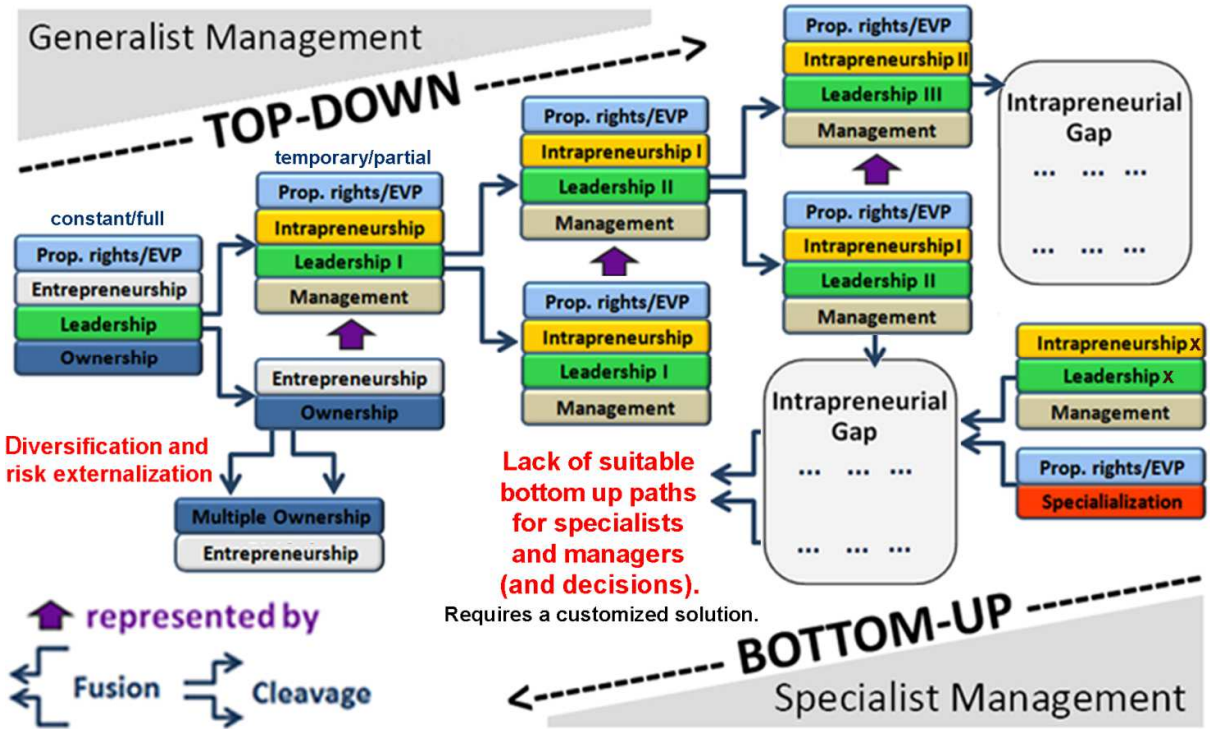



**Fig. 2** Schematics of top down and bottom up categorical fusion and split reaction of intrapreneurship

## Graded Sustainable Intrapreneuring (GSI): A Three-Dimensional Concept

The previous chapter has identified intrapreneuring as a graded concept. More specifically, these grades can be itemized into three key capital dimensions (for a discussion about intrapreneurial dimensions see for example Srivastava & Agrawal 1993): (1) independence, (2) opportunity/risk [intrapreneurial

opportunity always bears a relative risk of failure, also in light of fair opportunity distribution], and (3) reward. To better understand intrapreneurship, these crucial dimensions are to be interrelated in a formula for 'intrapreneurial activity potential in a given context'. From many real-world empirical examples, it becomes apparent that dimensions are to be well-adjusted. For instance, if dimensions don't act in attuned concert it can diminish real output e.g. due to employee frustration, stress, not enough incentive or opportunity to meet all challenges or too high costs. Right-leveled GI (graded intrapreneuring) also needs to correspond with the quality of the market: if there is only little market quality the GI level can only be low - in a perfect and fair market the GI level can be high. As GI is good for innovation and output, markets must be fair and with many opportunities for many participants. However, to be also sustainable, the GI dimensions also need to be well-adjusted to achieve an optimal output potential. Like for all financial products, opportunity, risk, and reward need to equilibrate naturally, but can be also artificially disturbed. Low risk should equilibrate with a low yield potential, high risks with more yield potential and opportunity. Whenever arbitrage doesn't mediate this effect than the market is failing. The same holds true for intrapreneurs: more responsibility associated risk is can be linked to more reward and opportunity but fair chances must be given in the first place - also for intrapreneurs.

Thus, opportunity in the firm for intrapreneurs only reflects a functioning intra-market if proportionally is found - but in calibrated real and relative terms. The next question is how to balance these dimensions? Dimensions can be made quantifiable by estimation and empirical experimental assessment of selected characteristics and features, but they also have to be calibrated in relative terms in relation to the fully entrepreneurial context and the relative assigned role in the organization, the sub-job, or participation in the sub-venture; hence always in % of the job, and by standardization only in decimals). Or put differently and more simple: only the delegated authority, divided by the intrapreneurs that share the responsibility serves as the basis for the relative risk, reward, and opportunity. The entrepreneurial job itself serves as the context of the maximal level (100%, 1) - as the entrepreneur bears the full risk, which can also vary much depending on all factors and contexts. As above, these key dimensions are defined as (1) latitude and independence, authority-level [the characteristics of empowerment]; and (2) property right and monetary incentive, valuation, remuneration, influence, career chances, or other considerations [the characteristics of reward], and (3) opportunity and its risk, real chance, context and challenge [key characteristics of opportunity risk]. Noteworthy, it also becomes obvious that only a fair competition is a 'real competition': the less fair a competition, the less real it also is, as fairness turns out to be a key defining feature of competition (which is also discussed later and schematized in Fig. 12). In 'unfair competition' settings winners are already much pre-defined and there should be nothing left to compete about via performance: the 'fixed winner' is always inevitably prearranged and does not really 'compete' (but the impression of competition may still be maintained as it helps to make a 'preset victory' more glamorous and appealing to others). With more complexity of the world, 'fairness' becomes more complex too and is even difficult in less complex phenomena like sports, which can be typified to: "Unfairness wins the game but hereby loses the competition" [and thereby less wealth for all due to less efficiency]). Also, eligibility is crucial key part of fairness [and it is very astounding and symptomatic that this really needs to be mentioned today], and market saturation makes 'intra/extra-fairness' increasingly more important than ever before (as external chances diminish). Hence, to achieve well-adjusted dimension, new fair and free platforms, and frameworks of competition (for all business types and employees) seem to be a new prerequisite. With other words: a free market

economy doesn't work without unalienable fairness. By 'achieving maximal fairness' and opportunity a good growth media is founded on balanced GSI dimensions. Further ancillary and structural-contextual-behavioral GSI dimensions can now be derived for all other purposes and functions (which will make the concept also much more specific). The 'intra-game' requires internal assessment (due to a <100% independence level and PAP, see later chapter). SMART KPIs (key performance indicators) of what should be achieved are usually found as performance/opportunity costs. The quality and feasibility of KPIs hence plays a very important role and should be unbiased, independent, and fair. Real achievement divided by real opportunity ($A_{real}/_{Oreal}$) must be assessed for intrapreneurs and can reach levels above one if a new solution or innovation is found or suggested. intrapreneurs could be also asked for a critique of criteria as some might have expert views and ideas. The intrapreneurial job needs to match right levels of opportunity with independence by finding the right grade of empowerment, risk, and reward. If fairness is given, the real and calibrated dimensions should balance out each other at proportional values. The more risk - the more reward and independence is simply needed to compensate for the risks to meet the associated challenge. No negative risks should be put on most employees but an 'opportunity that asks for an achievement'. Importantly, more leeway is needed to match bigger challenge and opportunity and this must be compatible with healthy career paths and life cycle, and work-life-balance (Fig. 12.2). E.g. if a junior researcher is measured by its publications and research success then he or she must be allowed to fully control it without the help, support, or constant inhibition of a senior. If this full independence is not possible then the junior may not be assessed or evaluated on his research or publications - as no fair competition is given and a new solution must be found, like today. The GSI concept proposes proportional dimensions to approximate the highest integrated GSI potential. There are fast and slow ways and methods to approximate. Independence is in fact needed to do (1) the regular job and (2) the intrapreneurial job, at well-adjusted risk and reward and leeway within the business context and firm strategy. If GSI is enabled and could be found it must fulfill two functions: (1) maintenance of GI and GSI at the right level; (2) creation of new GI and GSI opportunities for intrapreneurs. GSI helps to align the complex behaviors of all employees with firm strategy of all organizational layers and forms but also requires compatible goals based on Kenneth Andrew's deliberate strategy with "clearly defined set of purposes", "static core" and a more intrapreneurial "dynamic periphery", for a "coherent pattern" of decision making trees in the organization. The management needs to transmit the information and what it consistently and fairly values and aims at for intrapreneurs, to align GSI opportunity with all missions and visions (Pinchot & Pellman 1999; Macrae 1982; Promberger & Rauskala 2003; Anon 2012; Venn & Berg 2013; Pinchot 1985; Akintunde & Polytechnic 2013). The intrapreneurial part of the job must allow creative solution finding, or process optimization, or fail-fast (a response system to avoid intrapreneurial or management failure as soon as possible). This again includes partial and temporary leadership and property rights and the theoretical split and fusion reactions (previous chapter). Many additional factors are also in play when designing the context-structural frame of managed GSI: equity share, equitability of bargain and evaluation, fair information topology, fair information sharing, fair transparency, fair feedback level, and sustainable EVPs for 'a positive work setting', idea and invention culture, staff talent management, commercialization support, and all stakeholder dimensions (Freemann 1984; Blowfield & Murray 2011; Pinchot 1985). Interestingly, fairness contexts allow for a better intramarket management, which allows finding a better GSI balance, which also allows of a better

entropy-energy-matrix of the organization (Norelli 2013) all simultaneously. Hence, "fairness" of all intra-contexts seems to be the major trick of the trade. However, the extra contexts can much affect the leeway of the intra-contexts and its overall fairness with respect to the extra context: e.g. salary and wage level, and all other benefits, i.e. costs [e.g. if wage levels don't adjust externally due to market failures in maybe all countries - it is difficult to solve them internally due to cost competition]. This could mean that a market failure, like in the US or Europe diminishes the wages of blue and white color workers (e.g. postdocs, construction site workers) then they would bear proportionally high risks (even for their life and families); high risk also means that the invested time brings little benefit for them in the long run (e.g. most postdocs work 65h per week).

Though, if dimensions are internally one-sidedly slanted in a blind maximization attempt e.g. of high risk only, or if one of them is even totally neglected, adverse effects and/or costs may arise over time. This 'imbalanced form of GSI' is further termed 'non-sustainable intrapreneuring (NSI)' as it bears disproportionately adjusted GSI dimensions. As product score, the simplified GSI concinnity formula resembles factors of the professionally used JD-R model (Bakker & Demerouti 2007), the MPS level, and corresponds with the entropy-energy-matrix (Norelli 2013). It can be refined by employing the assumption that GI (suitably graded intrapreneuring) provides potential via suitability, which means that the variance of optimal and factual should be close to zero (see formula). Based on the sustainability assumption that the dimensions should be equally adjusted for concinnity, the variance of dimensions should be also zero (see the subsequent formulas). Hereby, NSI diminishes the overall benefits of intrapreneurial potential (GI output), via the variance of calibrated GSI dimensions. In the real world, NSI means, that it can affect the wellness, health, and performance of staff via fatigue, and can cause unwanted negative stress, burn-outs, or disturbed life-work-balances (see also Fig.12) with its negative effects on medium-term performance, innovation, creativity, adequateness, market responsiveness, agility, and output. More empirically, this could be in fact found in some case studies (e.g. Gerlmaier & Kastner 2003), and in real world intrapreneurial job sectors like IT (Fitzsimmons et al. 2005; Pearce & W 1996), or life sciences (e.g. the thousands of early-life postdoctoral burn-out per year). Hence, GSI is proposed here to be a management solution with economic impact: sustainable performance means that employees can focus on the job to be done and don't need to worry about the hierarchy and its decisions; they receive all opportunities needed and may lead if they can; GSI assures a sound work environment with suitable incentives. Managed GSI puts the people first, and in the center of attention, when new processes and structures are designed, together with them and for them, to create new win-wins situations via e.g. better enabled participation, and allowed continuous improvement (from many perspectives), like in the Japanese Kaizen, by also allowing more degrees of freedom to work, interact, lead, perform, and a more healthy work-life balance.

Managed GSI (all means taken to install fair GSI) could bring all factors together due to a better prioritization and sequence of building blocks that provide all structural contextual elements to improve all workflow, processes and output via incentivized leeway and multifaceted optimization (empowering of intrapreneurs). More empirically, an inter-study comparison of two recent scientific surveys reveals that a more sustainable type of intrapreneuring can indeed be linked to an increased average job satisfaction level (Gerlmaier & Kastner 2003; Fritz et al. 2011): i.e. if, what is term GSI here, is reached, or, at least, approached (Fig. 3, right). In the aforementioned study, the independence of IT sector intrapreneurs presumably enables higher output measures, while at the same time lower fatigue and higher job satisfaction levels are reached (Fig. 3 right). No risks should arise for intrapreneurs

of all levels (i.e. all employees) if they don't have any option to get an unachievable job done. Like the project manager, they should be assigned fail-fast and creative solution finding options. E.g. if the project manager decides to run for a bad or an inevitably unachievable goal or target, the team players must have the option to evidence fast-fail or to offer a new and better solution (that should be also valued [maybe with some more leadership in the future or more opportunity options - as there must be some bottom-up patterning potential and fair chances distribution and evaluation based on achievement over opportunity]; team players need to get a chance and assigned roles and must act responsibly for the team and its output as a whole (GSI team incentives; relating all individual contributions and incentive for team performance); concept of shared leadership may also apply for GSI via promoting 'suitably contributing strategies'; Teams can be ideal or not ideal if imbalanced - like GSI; e.g. if one player has all the work and risk and the other the reward - also in real and relative terms). Furthermore, the project manager and all team players must be allowed to fail-fast, re-adjust, or optimize the project without being disadvantaged if reasons can be found and/or deduced. All team members must have sustainable interests and roles, and more sustainable career path opportunities (in the firm and the economy), and the right GSI-level. The relative understanding of opportunity, reward and independence may change much along the way, for instance, in R&D projects: our current understanding might change, e.g. about what is worth to strive for (which can often happen too late in projects, e.g. in R&D at the forefront of science and uncertainty; most R&D and firm project fail due to unachievable 'senior or investor goals' that must be achieved anyhow by the project manager or scientist or other employee. The GSI level might also change if persons develop along their career ladder and take over more responsibility. Or the GSI level changes for roles if the firm grows and develops, or if the responsibility alters. With respect to novelty of the GSI formula, today, only an intrapreneurial "innovation climate" formula is published so far (Eckardt 2015) and Pinchot is right when he mentions that there is no formula that can help to identify an intrapreneur (e.g. 1988) - also, or especially also due to the graded concept reason: the GSI formula identifies that a right and balanced level of intrapreneuring can be helpful. GSI should not cause new stress or any forms of negative-sum intra-competition syndromes in organizations that might inhibit growth - but only win-wins (more rel. risk, more rel. reward and rel. independence). Also, not everybody needs to run for high GSI roles of top intrapreneurial leadership - only if helpful win-win positive-sum situations and outcomes arise for all via 'value adding leadership'. The right mix of people with different intrapreneurial ambitions can be also important. The right level of intrapreneuring is the key and is different from employee to employee. But a solid structure must be also given to avoid chaos and to enable deliberate strategy that promotes a better cooperation of top down and bottom up intrapreneuring. Leadership skills of employees are to be considered appropriately and are to be freed from the leverage of hierarchical command, if applicable: (1) by case incidental GSI-opportunity, and (2) maintained GSI to steadily close the intrapreneurial gap two-fold. Intrapreneurs also need GSI support and protection from strong anti-preneurial forces of inertance found in almost all organizations, stemming from all positions within hierarchies and an old thinking, hidden and official bullying, and 'organizational antibodies'. There is no rule of thumb for its specific design, but GSI could help or shall, at least, remind that all dimensions need to be well-balanced to achieve ideal output in all respects with suitably incentivized empowerment, ICS, and EVPs. As GSI resembles dimensions of the MPS (motivating potential scores) score of the job-analytical JCMs (job characteristics model) (Hackman & Oldham 1980): such as risk and reward

[=feedback], independence and empowerment, and related latitude [=autonomy]. Once a relative GI vector is found, the GSI formula can be derived. GSI is an advancement of MPS but only from the perspective and in the light of intrapreneuring. It can serve both as (I) a new descriptive economics indicator and (II) also for 'creative purpose' (job and assignment design (= as a GSI compass), to better measure and install intrapreneuring on the job (1, 2).

$$\boldsymbol{MPS} = \frac{\boldsymbol{skill\ variety + task\ identity + task\ significance}}{\boldsymbol{3}} * \boldsymbol{autonomy} * \boldsymbol{feedback} = \boldsymbol{a} * \boldsymbol{b} * \boldsymbol{c} \approx \boldsymbol{GSI}$$

Hence, the MPS factor rule (Hackman & Oldham 1980) clearly resembles the simplified 'GSI product score':

$$\boldsymbol{GSI} \approx \boldsymbol{a} * \boldsymbol{b} * \boldsymbol{c} = \boldsymbol{risk} * \boldsymbol{reward} * \boldsymbol{opportunity} \quad [\%, \boldsymbol{decimals}]$$

The relativized GI vector (graded intrapreneuring) is found as variance of GI (optimal) and GI (actual):

$$\overrightarrow{\boldsymbol{GI}} = \boldsymbol{VAR}\left(\boldsymbol{GI_{opt.}}, \boldsymbol{GI_{act.}}\right) = \boldsymbol{VAR}\begin{pmatrix}\boldsymbol{I}\\ \boldsymbol{O}\\ \boldsymbol{R}\end{pmatrix} = \boldsymbol{VAR}\sqrt[2]{\boldsymbol{I^2 + O^2 + R^2}} \propto \boldsymbol{MPS}$$

The represented relativized GSI concept is found via the assumption sustainable=proportionate=VAR=0:

$$\boldsymbol{GSI} = \boldsymbol{VAR_{GI}} * (\boldsymbol{1 + VAR}_{\boldsymbol{risk}} + \boldsymbol{VAR}_{\boldsymbol{reward}} + \boldsymbol{VAR}_{\boldsymbol{independence}} + \boldsymbol{VAR}_{\boldsymbol{tasks}} + \boldsymbol{VAR}_{\dots})^{-2}\ [\%, \boldsymbol{decimals}]$$


**Fig. 3** Graded Sustainable Intrapreneuring: well-adjusted GSI drives success, satisfaction, and health

The level of optimally graded intrapreneuring (GI 3D-vector) multiplied by its sustainability level (a balanced proportionality adjustment via its factor variance) yields the final amplitude of the GI vector, sustainability corrected. As a result, GSI equals the GI vector at zero variance of its relative dimensions. Opposite to graded sustainable intrapreneuring (GSI), NSI is below a certain threshold and shrinks and almost minimizes the GI vector. For example, money creation loopholes in private hands, e.g. in FRB, represent NSI as no countervalue is created: due to minimal risk and extreme reward [trillion Euros, only in Europe, were given without any countervalue, 'for free' to the financial sector after the financial crisis = NSI]. Or if employees bear extreme risk in fictitious self-employment, or if they are steadily highly rewarded for no value-added (GSI needs to be re-adjusted here). Admittedly, it remains somewhat difficult to precisely estimate and implement the 'right level' of all 'dimensions' - and also, its calibration is complex and depends on many factors. But it can still offer a generic 3D-grid for a better understanding, and a mind compass to design new sustainably customized intrapreneurial jobs via 'GSI guided common sense'. Again, GSI should never cause any stress, existential fear (angst), or only too much risk without independence or reward (if so a too high GI vector was chosen). It

aims at finding a suitable independence and opportunity level for employees in the first line. In summary, if a way to go can be found, GSI provides a better functioning performance and career paths with also higher job satisfaction (Fig. 3) health and output. Responsibility and org. goals need to be GSI-matched with opportunity and independence. A clearly defined GSI-conform job description is also important (what are the 'natural' or intrinsically given responsibilities and how are they matched with independence and reward) but must leave room to maneuver if legitimate and valid: this helps to close the 'responsibility gaps' caused by 'intrapreneurial gaps' (Fig. 1) of most positions in an organization. An intrapreneur takes over more responsibility than only for his workplace and can identify and solve problems and inefficiencies that nobody would care about otherwise: but also needs a viable job for his life. Intrapreneurial options, valued feedback, and opportunity must be given. With increasing variance of each dimension in relation to all dimensions (as decimal mean) the GSI level (sustainability-adjusted GI) is suggested here to fall exponentially (as a working model): arithmetically, only if there were no variance the GSI level would equal the GI level (GSI=GI). Importantly, all dimensions are decimals of the contextual system's relative (rel.) dimension: which means that the aggregated intrapreneurial intra-risk (of all factors and participants) should not be higher than the total delegated entrepreneurial risks of the context and given situation. Of note, all dimensions always have a very context-dependent maximum and this can be also highly varying (100% level of risk [$r_{max}$] can thus be very high or very low due to the real entrepreneurial context, etc.). Eventually, common sense is often advisable again. Thus, the more difficult part is obviously to estimate the job-dependent calibration of these dimensions and how they correspond to real-world job functions and tasks before they can ever be correctly leveled and suitably balanced. This should be theoretically grounded and legitimized before tested in empirical or experimental case studies to design for a virtual context, a practical job, and convenient processes, agility, responsiveness, and variability. On this way, GSI dimensions theoretically frame appropriate percentages of dimensions and give some clue about the newly related mixed property right allocation schemes (e.g. in exchange for his invention an intrapreneur should get some bargain, influence and/or share; for using the equipment and capital the firm should get the remaining benefits [GSI legitimization: to maintain and reinvest in a balanced proportionate way, thus no profit skimming only, which would be a type of NSI]). An equitable participation over time that reflects the GSI level and good and fair incentives for intrapreneurs and employees (also scientists and engineers, new junior managers, teams members and leaders, teams, departments, SBUs, sub-groups, sub-firms) needs to be well-adjusted to opportunity and its possibility to unleash more responsiveness and agility, intelligent solutions, internal breakthrough of the best ideas, promotion of workforce, flexibility, and fast-fail [attention: fast-fail is a suitable method for intrapreneurs to re-check achievability and feasibility of targets and goals, but some bigger inventions and breakthrough may need some more time and risk if promising]. Coincidental findings that were not part of the project also need GSI options, like sound leeway and motivation, for possible re-adjustments of all organizational strategic fits. To enable intrapreneurial behavior and to unleash the potential of intrapreneurs one needs to protect and allow - i.e. not prohibit - their behaviors. Specific empirical hints can be found in a particular survey of 26 high-GSI innovation-type intrapreneurs that has extracted and revealed their much overlapping archetypical motivation patterns. In short these comprise *influence with freedom, strategic scanning*, *greenhousing, visual thinking*, *pivoting*, *authenticity and integrity* (see Desai 2013 for more details). In the first place, these behavioral patterns indeed also need to be generally enabled like the freedom of

employees that they also may need, and the fair valuation of their work that they seek, while concomitantly achieving more suitable incentives and flexibility to solve all problems on the way also via these behavior patterns. Forms of 'managed intrapreneuring' hereby installs GSI-conformity, via ergonomically, healthy and productive value-adding workplaces with as high-leveled responsibility and incentivized self-motivation as is good for both the employee and firm, so that they can mutually grow, together. This also includes structure-contextually means, individually tuned, top-down and bottom-up balances - even synergies -, to meet all GSI-needs of the firm and also of the 'employee-customer' [The employee-customer could be proposed to consume his own job and demands a matching configuration and good ways to adjust and join the configurations (more entry level positions are needed - also for career changers, so that no job-life-cycle-stages of employees are bottlenecked so that a firm can grow). The more the intrapreneurial employee will like the job (due to its suitability of GSI and its contexts mainly), the more real job will be consumed especially to produce, perform and service. Hence, also a healthy and good work atmosphere must be given that doesn't interfere with efficiency and effectiveness (that are high but are clearly not a 'never-ending sprint' discipline but aims to yield high efficiency at a healthy but demanding pace that may be suitably customized for all cases, but without loopholes that would inhibit GSI). Basically, as is widely found in the literature about intrapreneuring, an entrepreneurial thinking shall help employees to act more economic, to mainly save resources and to optimize output and performance over costs while also getting options to innovate and change for any advancement. Management might also readjust or reorient to GSI and can hereby unfold more GSI intrapreneuring via GSI-chain-reactions that could transmit throughout the organization, to best match all of the firm's strategy goals. This requires internal communications solutions (ICS) and clearly defined goals, responsibilities, GSI-conform jobs, and steady "new opportunity". Intrapreneuring is also part of the firm's culture and leadership style, way of thinking and decision-making, comprising deliberate and spontaneous strategies', as already the complex signals, decisions, and behaviors of HR and the management much impact all GSI-transmission, organizational learning, intrapreneurial ambidexterity and the leader-member exchanges (LMX) (Rosing et al. 2011; Carmeli & Halevi 2009; March 1991).

## Extrapreneuring: Intrapreneuring from the Outside

Non-canonical types of intrapreneuring that occur outside, or extra, of the original organization, firm, or the 'primordial legal entity', but still play a role in its processes, are termed 'extrapreneuring', as they are performed by intrapreneurs that contribute from the outside of the organization. Its main examples are listed here: (1) outsourcing (Quinn & Hilmer 1994) into other companies and entities (which in the last decades of globalization often included overseas outsourcing, or offshoring, due to labor, tax, and regulatory arbitrage incentives). However, the extrapreneuring-associated modularization of SBUs - irrespective of the country - also has a structural-organizational effect on total sum intrapreneuring. It can provide for structural SBU divisionalization via top-down interpreneurial split pattern cascades (e.g. new and more sub-management units; better-allocated property rights, etc.), and hence, a higher net sum of GSI; however the smaller the business units the less easy to organize intracapital; but the concentration of intrapreneuring could be higher as employee opinions and ideas are better heard and more likely to be also fairly valued. This Coasian decision-making depends on strategic PA (principal-agent) pair formation to optimize intrapreneuring (GSI) and will be more discussed in a later section. An example: if better intrapreneurial GSI solutions can be found in a high wage country it could help to

offset an offshoring benefit of a low-labor country - but this could put some global pressure on GSI formation by calibrating also in the light of a growing international competition. This is more likely to target quality and premium strategies of high-skill countries than low price strategies of more labor-intensive products; it is also more typical of local or domestic procedures like marketing and distribution than a technical supply chain/production (e.g. of electronic parts, modules in Asia and pacific countries). Due to this theoretically derived mechanism, the level of extrapreneuring (as perspective of entrepreneuring) should be higher in developing countries and intrapreneuring higher in developed ones (high GDP countries), by trend. In fact, this theory can be corroborated by recent empirical studies, especially the comprehensive and systematic GEM studies (Bosma et al. 2013; Bosma et al. 2011). Offshoring is also a driving force of this global effect, which promotes exrapreneuring and new entrepreneurial activities that are arbitrage-exposed in its related elements, processes and parts of the value chain. From a high-GDP country perspective, and to some extent firm perspective, it could be also advisable to maintain and protect critical know-how, skills, jobs and technology inside of the firm, cluster, country, supra-network, or entity, to prevent an irreversible drain of economic and intrapreneurial expertise and a 'drain of the real hard competencies' - while keeping only the soft 'short-term and fluctuating specific competencies': intrapreneurial skills, sector-specific capabilities, and competencies of a country can serve as a pluggable shared resource of an additional diversity of freely accessible technologies. This could advance the local factor and industry4.0 by such modules of shared fair platforms, maybe an industry5.0 proposition (from a country perspective); also a valid point for intra-economic, strategic, and security reasons). Generally, extrapreneuring forms more distinct and enclosed separate extra-capital systems (P&L responsible companies) that are more independent in financial accounting than intra-capital might be at first glance. Non-standardized 'profit re-allocation' of today (i.e. allowed or non-prohibited hidden disbursements and profit sharing strategies) still affects both forms without any real limitation to a private decision. It seems, the best way of managing intracapital externally, and intra-venture-groups might have been found but is not researched publicly. GSI offers help in finding a new designer solution (also at low risks). Until today, high levels of fair competition and fair reinvestment (both are pre-requisites of intracapital, intra- and extrapreneuring) are widely and generally not much standardized. As a result, business evolution and free markets are below their potential, to some extent (see also Fig. 12). For instance, can there be free markets in a private money creation monopoly? Probably not, as fairness falls for all, there can be no efficient and effective market. The lack of a sound monetary system (Anton 2015; Ryan-Collins et al. 2014; Jackson & Dyson 2013) is thus to be viewed as a major flaw that prevents free markets, as well as sustainable intrapreneuring. Extrapreneuring offers more exposure to 'more regular markets' (as regular and free as they might be) via new entities. Intrapreneuring solves all remaining challenges internally under the umbrella of the entity. Pinchot's intra-capital systems are better if the appropriate design and financial rules can be found as well as structure (GSI leverage, financing, fostered GSI 'econsystem', following ecosystem, but for economics: an intra- and extra-business-niche). Nevertheless, extrapreneuring can secondarily cause extra-problems and externalities (e.g. local jobs, capital, know-how, and taxes could be lost via offshoring or outsourcing). Another form of the list of extrapreneuring is widely called (2) 'crowdsourcing' (Howe 2006). This is also a type of extrapreneuring that is predicated on taking advantage of unsolicited and willing groups, such as IT platform users, among others, that consciously or unconsciously develop and deliver ideas, solutions and information, often or usually for free (another foretelling of a PA

principal-agent) 'problem', as real performance, invention, etc. is not remunerated but delivered en mass; maybe this is sometimes a new form of market failure that could depreciate labor and buying power via information asymmetries; e.g. brain-worked solutions can be found for free on the internet (like this open access article that was written without a pay or job); and IT processing power, big data analysis and storage cost at almost zero marginal costs) to the benefits of the firm, entity or private network of hundreds of firms that now hold the customers and applicants information and ideas. Nevertheless, among the many and almost costless economic upsides of 'crowdsourcing' that are to be mentioned is: a higher speed of innovation, of R&D, of problem-solving, big data for better market and customer behavioral studies (a better identification of demand and more customized supply), all sorts of trends, fast future trending with the help and expert advancement by customers: like most employees also, a customer can be a true expert as a user ('the custopreneur'). Extrapreneurial customer- and user benefits, and user rights have fallen short for a long time. This means unpaid intrapreneurs of all stripes are participating and contributing on platforms but are extra-corporate, custopreneurial exprapreneurs (should be compensated somehow - but won't be); another portmanteau is found: 'custoprenuering'. A third form of extrapreneuring to be listed here is (3) 'open innovation', promoted and sourced by 'inter-intrapreneurial trade' on a global (and still forming) inter-corporate market (to exchange intrapreneurial work) (Chesbrough 2003; Lindegaard 2010). Exchange is mutually helpful: e.g. if a company that coincidentally finds a better new method that doesn't fit into their own needs and goals, missions, strategies or portfolio; this way intrapreneurs could better benefit from the very many 'coincidental breakthrough results' via collaboration that they can't implement locally in the firm and thus too often discontinue 'innovation gold mines'. Intrapreneurial work would be more valued whenever a market value can be found - at the end of some day. The patent system doesn't meet all of the requirements and often patent troll strategies (Furman et al. 2013) prevail that inhibit intra and extrapreneuring (due to game-theoretical and strategic reasons, potential TCT strategy implementation, and monopolization). In 'Open Innovation', this inter-intrapreneurial trade would be placed in an inter-intra-market with fair exchange rules for business ideas, technology, and alike. These rules are to be fair and maintained as such also with IT and ICS infrastructures or they won't allow a competitive or free market, and won't work intrapreneurially (and need monitoring), nor efficient and effective. Instead of a stock exchange, an innovation&technology exchange&collaboration market, exceeding patents and licenses, at suitable prices (maybe via standardization and no exclusive patent or license restrictions) could be found. Patent trolls and innovation and technology blockades have grown too high today and inhibit innovation (Furman et al. 2013) and GSI (due to lack of freedom); especially for SMEs, intrapreneurs and/or private man); A proposition would be a GSI-managed extra-market for 'open innovation' (Chesbrough 2003) (or 'managed extrapreneuring') that is "fair" and without GSI-blockades. Last but not least, (4) shared 'clusterpreneuring', partnering, and shared value strategies (Porter & Kramer 2006) should be also listed here: all these comprise the phenomenon whenever a higher-order cluster, entity, or system, or international export cluster, forms, and a new interdependence and common fate is developing. In this interaction, all internal entities start to become intrapreneurs within the developing superordinate entity and co-synergize with new momentum and benefit from extrapreneurial productivity add-ons and features, collaborations, and other shared values, shared human capital and potential shared technology platforms (unpublished biotech-cluster strategy review, 2015). And finally also the public (5) 'goverpreneuring' that aims to better the local factors via economic conditions and legal frameworks.

## Intrapreneurship as Solution to the Principal-Agent Problem (PAP)

The Coasian Contingency Theory (Coase 1934), published by Coase in his 'The Nature of the Firm' in 1934, proclaimed several criteria for managing delegation as internal or external PAs (principal-agent) combinations. It proposes when transactions should be carried out, as what is termed here 'intrapreneuring' (GSI PA pairs inside of the firm; intra-market) or 'extrapreneuring' (GSI PA pairs outside of the firm, extra-market; regular market). Coasian decision-making is found on the basis of managing the firm's inside and outside value adding procedures, which includes intra (inside) and extra (outside) PA pairs to form. These PA pairs inherit a universal economic dilemma that is known as PAPs (Principal-Agent-Problems), described and analyzed for a very long time in the literature of economics (Ménard & Shirley, 2008; chapter 14 of Garry J. Miller). This important principal-agent (PA) dilemma refers to an underlying drawback principle that is always at work in all types of such PA transactions. PAP rise with market inefficiencies and a lagging economy that doesn't reach full employment. More specifically, PAP deals with all issues of delegated authority (extra- and intra-PAP), product and service ordering, employment and hiring, and licensing, insurances, contracting, and so on. Many PAPs originate from information asymmetries of (a) the agent and (b) the principal (the second is usually forgotten in theories but it shall be claimed here that also the principal is required for efficiency and effectiveness of all PA pairs). Empirically-historically, PAPs pose more frequently a challenge to the principal (e.g. does the agent meets all criteria that could escape the control of the principal; but the principal could also distort the market for his benefits, theoretically: e.g. inhibiting the natural negotiation power of the agent in phases of economic stress, e.g. for blue-collar workers in the US that even created an unexpected need for a minimum wage in the US as the market wages were totally failing to recover, even admitted officially; this wage decoupling from growth is based on inhibited negotiation power of workers and not enough jobs for all in need of a job; due to simple math it must be also the result of a lack of efficient monetary transmission stemming from FRB (Anton 2015) and NSI. Intrapreneurial GSI solutions, organizational learning, GSI-ambidexterity, GSI-LMX (Rosing et al. 2011; Carmeli & Halevi 2009; March 1991), and so on, are part of the solution, like organizational and viable fusion and split reaction, and mutual ICS (internal communications solutions) for viable jobs and win-win-PA pairs. Today, the conventional and most common PA theory (PAT) postulates that PAPs are a result of (I) hidden characteristics, (II) hidden actions, and (III) hidden intentions (Ross 1973; Mitnick 1973). Now, for all intrapreneurial functions and GSI to be fully included the world's universal PA theory has to be newly amended here: by (IV) 'hidden potentials' - for the first time (to the author's knowledge). Adding hidden potentials finally complements the entire PAT for the first time in economics history by simply delivering a 'new vector of progress', innovation, and optimization, to the PAT - unleashed and fueled by all hidden potentials. Hidden potentials bring more dynamic and a time-flexible optimization drift into the PAT, as future growth opportunities and optimizations are now better considered by both the principal and the agent. Potentials of both, principals and agents, also allow thinking about shared values (Porter & Kramer 2011) for competitive advantage and coevolution: for example, strategic partnerships with extrapreneurial component suppliers. The same is also true for intrapreneurial teams, and departments, inside the organization: if they positively co-develop lasting synergistic effects and win-wins better evolve. Thus, it makes much sense to let employees grow together with the firm and to assure fair access to new staff too (more entry positions, also for career changers). As PAP are here shown to be solvable via GSI (see formula, and managed GSI), which (extra and intra)

depends on the functioning of the markets, GSI-PA fairness comes again into play: fair and sustainable deals, win-win, "many winners not only one", fair chances and bargain for all, and positive-sum should be considered. An agent must get the opportunity to do a good job, which also has to be valued and holds possibility ready for the new. GSI assist in solving PAPs by auto-aligning 'hidden potentials' and beneficial complex behaviors of staff to unfold competitive advantage. The trick of the trade is that PAP can be solved automatically if markets function, or if the right GSI-level is found, and implemented [like sportsmanship, or a good culture]. It is also recommendable to achieve free access to intra and extra platforms of such PA deals and fair competition. Optimal fairness and PA markets and competition do not necessarily develop naturally, especially in the firm or public sector, but must be "normatively managed". Some goals and markets (intra and extra firm) must be maintained towards GSI and 3BL (Elkington 2001; Brown et al. 2006; Ernst & Sailer 2015): goals or standards must be chosen. Also, a winner on a non-fair platform will maybe not want to change the game but could be the only one who could (e.g. FRB). Thus, fairness cannot evolve naturally and must be designed *a priori*, like the rules of a sports game, had to be designed, at some point. Nevertheless, *a posteriori* (empirically) the very difficult technical question emerges: when, where, and how could this be done without interfering with, but further markets? Freeness and fairness of markets are needed by GSI to solve the PAP and is a crucial economic dimension (Fig. 12). If prerequisites are met GSI does the magic to align property rights, incentives, and behaviors in a way that no hidden issues arise that could build up - as GSI win-win situations drive principals and agents together to solve the problem competitively, economically but also farsightedly and fair (which mean that the natural level of negotiation power is used as it would correspond with the GSI dimension - a leveraged artificially high negotiation power could disrupt the industry fine structure in internal and external markets so that GSI levels would not be met any longer and system would monopolize in the long run). Thus, GSI is a predefined optimum for PAP in perfect competition; for most employees usually only low-risk levels would apply; risk and reward can be coupled to responsibility. Today, proportionality is blocked by top down and bottom up risk aversion and organizational rigidity. GSI should not create unwanted risks (or more risk, only better-shared risk, leadership, and reward). Employees should not be urged to take high risks [that they don't want] but it can be offered in the form of entrepreneurial options, responsibility, performance, and leadership. GSI should not raise risk without real [not fake] counterbalance reward and independence [GSI solutions do not comprise pseudo self-employment, which is NSI; but graded and real-self employment]. GSI solves PAT via incentives and performance measures and more fair distribution of opportunity. E.g. risk can be associated with 'losing opportunity', leadership project responsibility, like in Pinchot's intracapital venture groups (if provable): (Pinchot & Pinchot 1978): The needed unbiased assessment of achievement over the achievable is however at times very difficult and challenging (e.g. how to adequately weight all different forms of contributions in relation to opportunity in all contexts and time?). So far, PAPs are generally thought to be aggravated by inexplicit assignments of inter- and intra-organizational PA-roles, and, as a result, stem from unclear allocations of the four property right split reactions into *(i) ius usus [right to use], (ii) ius fructus [right to yield], (iii) ius abusus [right to alter], (iv) ius abutendi [right to dispose or sell]* (Demsetz, 1967; Holub, 2014; Tietzel, 1981). Intrapreneuring means finding the right split reactions and allocating optimal combinations of such categorical property rights. Contractual property right misallocations, in turn, make a high GI and GSI-level solution less possible (see formula), less feasible, and result in on-the-job

PAPs that may render the behavior of the economic actors less efficient. With other words, the unbiased manager must be able to manage fair PA-intramarkets with opportunity options - and markets only where markets make sense (and don't fail as in e.g. many cases of healthcare or science). As the general market forces are more difficult to implement the manager must find GSI balances to provide breadthways focused intrapreneurial opportunity if applicable (think of an understandable game where employees can succeed). Structural measures of managed intrapreneuring must ask the question how to best - and sometimes intra-flexibly or extra-steadily - allocate temporary property rights (e.g. P&L responsibilities, opportunity, resources, capital, infrastructure, leadership) with some right reward. A GSI solution for the various contexts is also starting a cascade of GSI. An agent's 'hidden potential' may idle if incentives or EVP contracting are lacking, or to avoid the often found 'adverse selection' from non-appreciative principals. For example in academia, in science, if an R&D junior scientist, i.e. a postdoctoral researcher, who finds a cure or a novel diagnostic or basic research finding is often only be blocked or even fired instead, as economic incentives are not given or are not at work due to whatsoever a reason. Mainly in networks, they are not at work, as success can theoretically be decoupled from performance in most fields of science and sectors. This leads to a loss of aggregated PA-efficiency in the firm and country (Mason & Rohner 2002; Pinchot 1985; Mitnick 1973). For designing EVPs and GSI employment opportunities, this means that all property rights, duties, missions and visions, targets, goals, task and assignments, even expectations are to be fully GSI and common sense approved and should have and fulfill SMART criteria (Doran 1981). They should be well-defined in a PA-GSI job descriptions but should also leave room for new GSI-opportunities: (room to maneuver and leeway for projects, innovation, ideas to be followed up if worth; they are worth it if the intrapreneur is willing to take some GSI level risk that is needed to implement them (as opportunity must be distributed fairly too); find out if the intrapreneur really believe in his own idea and how to measure and define its "success"). Furthermore, to achieve GSI, new standardizations might be necessary to be established. For simple tasks, GSI-SOPs could be designed also on a GSI equilibrated EVP basis for agents that accounts for the health, workflow, ergonomics, and motivation of all staff (also ask your staff what it thinks about your processes and let them help to improve them). To empirically improve workflows at GSI it might help to achieve the 4Cs compatibility, combinability comparability, and commensurability (for a better functioning intramarket, fair and good team-play, good interactions, "together we can", collaborations, and communications with each other that creates a higher overall GSI potential and a good intra-climate that should not suffer from an intra-competition that could be very toxic to output - hence sportsmanship game and only markets if the make sense; and not the winner takes it all - but many winners (PA win-wins). The 4Cs are also helpful for appraisement of GSI performance in the frame of reference of PA pairs. The more complex the job's tasks the more difficult and ambiguous it tends to be assessing true performance: e.g. R&D, or marketing, sales, and also management (top and bottom line related KPIs only if feasible). A total lack of opportunity for new external applicants and worldwide network discrimination is a big PAP that is widely established in HR-like discrimination chain reactions. Systematic discrimination by HR of top-level intrapreneurs, e.g. engineers and scientists (e.g. postdocs) has become an obscene reality in the US and Europe. The economy is blocked by old-fashioned HR procedures and a lack of monetary transmission (this combination is not a coincidence, in fact, the same bottleneck would appear in TCT strategies). Personnel favoritism, discrimination, and deprivation are still big issues that can not only theoretically but also practically hamper ideal economic performance

and PA pairs to form. This again reminds on the central intrapreneurial solution to the PAP: "appropriate opportunity for all", "no opportunity wasting" [finding ways to better deliver and distribute opportunity; e.g. also for junior scientists in businesses] and "no more intrapreneur's competency wasting" and "market orientation or thinking" [also of the intramarket with respect to the extra market; a Coasian competition of markets]. By providing an opportunity for new processes and value-adding procedures coupled to bargain for a new modularization of workflows, and GSI levels assure a better PA co-developments and flow. Adjustment of GSI levels can auto-optimize modules within an industry4.0, which itself can be seen as an intrapreneurial trend and solution to PAP via modularization into smart self-optimizing cyber-physical entities. Managed intrapreneuring and "free and fair platforms of competition" for better PA pairs to form and develop, upgrades industry4.0 to 5.0. A higher fairness dimensions promote competition and thereby GSI internally and externally at the also same time (Fig.12.2). Managed intrapreneuring can enable a better flowing PA-coevolution by reducing asymmetry-based inefficiencies of information and other structures via suitable modularization, GSI, ICS, EVP, implemented by empirical and scientific change management (TowersWatson 2014; Ray et al. 2012). GSI could also provide a 3BL solution for externalities (risks dimension): proportional cost contribution for independently accounted external costs to adjust to reward. This better standardization and GSI could yield a more standardized and fair green industry2.0 from today's industry1.0 that started with the sustainable development, Gro Harlem Brundtland's "Our Common Future", in 1978 (WCED, UN), 3BL (Elkington 2001). Traditional PA solutions are generally known to be based on (1) incentives linked to outcomes, (2) direct monitoring of agent actions, (3) cooperation between principal and agent, (4) cooperation within teams (Ménard & Shirley, 2008, chapter 14). GSI offers additional solutions for these PAPs (Ross 1973; Mitnick 1973) by optimizing incentivized opportunity via GSI deals. E.g. of the archetype: 'intrapreneuring support and partial property rights and leadership and reward in exchange for exclusivity of future property rights' (Demsetz, 1967; Holub, 2014; Tietzel, 1981). Set the game standards right and let employees contribute intelligently; "clearly and fairly value their work even if it escapes a standard assessment". Still, a firm's GSI/EVP 'contracts' are often mainly only built on 'easily breakable trust' (Ménard & Shirley 2008), which renders the integrity, intrapreneur-friendliness, credibility, non-discrimination, compliance, and a fair corporate culture more essential today (Desai 2013).

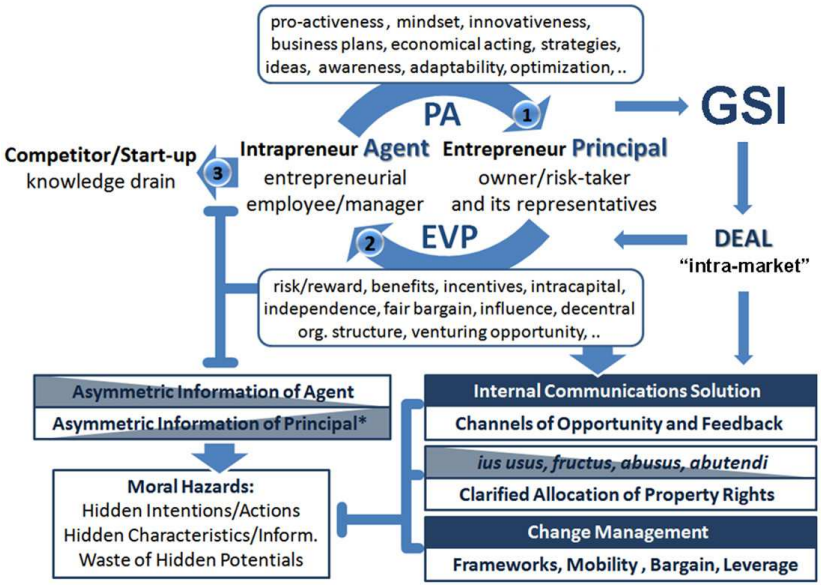



**Fig. 4:** GSI as key solution to the principal-agent problem (PAP)

## Intrapreneurialism in the Private Sector: Microeconomics of GSI

Intrapreneuring, as healthy GSI solutions, are applicable everywhere: in the private and in the public sector, in NGOs, the government, within parties, the political system, the health care system, universities, academia, research, education, the field of infrastructure, transportation, simply everywhere - where ever an economic solution and optimization is possible. But carefulness is advisable as not all markets are functioning naturally: all GSI intra- and extra-markets apply only if markets would not fail naturally, and a market goal must be also specified. In the spirit of Kenneth Andrews, for firm strategy the 'purpose' must be always defined, well-founded, and understood. This holds very much true for the firm's intra-market, but also the extra-market, as we will see in the following sub-section. Private GSI is the designed option and the way to achieve these goals by allowing and 'freeing' employee actions and to use their expertise and intelligence in the best possible way for them and also for the firm. GSI must hereby try to stop the continuous blockage of intrapreneurs and must end the discrimination of applicants for new, fair entry and positions and career options. Customized GSI career development paths and talent management systems can solve this dilemma. Hence, a good economic system has to assure to benefit intrapreneurial achievement with more equal opportunity in the firm in a fair way. Noteworthy, equal opportunity also means: no positive discrimination as this causes negative discrimination at a 1:1 ratio, and nothing is won for fairness! The GSI-formula adjusts for this reward and all other dimensions and is applicable everywhere in the public and private sectors. This paragraph reviews intrapreneuring in the private sector: abbreviated as PrI, GI, EA, or private GSI. Let's ask the question: Can we know if private intrapreneuring (GSI-PrI) sustains a competitive edge in dynamic markets? Generally the answer seems: yes, but GSI adequacy is also needed. Empirically: Today, there are already many successful examples of intrapreneurs (Haller 2009; Pinchot 1985; Pinchot & Pellman 1999) also in economics papers. Furthermore, all major surveys of the so-called leading consultancies much support the view that private intrapreneuring (PrI) provides a competitive advantage (Accenture, 2013; Ernst-and-Young, 2010; Ray et al., 2012; Towers Watson, 2014). Nevertheless, it must be also admitted that clear-cut statistical reports are still rare difficult to find and to conduct due to the complexity involved and a private and confidential nature of what happens in the firm (Antoncic & Hisrich 2001; Antoncic & Antoncic 2011; Fitzsimmons et al. 2005; Pearce & W 1996). Also, the GSI concept is still totally new needs to be empirically tested in the next steps. Recent studies have indicated that PrI is getting more important for fair teamwork and routing forms. As a result, IT, PrI structures and 'fair teamwork', fair policy and fair opportunity should also get more important. This is in fact already reflected by a 2009 credo of leading executives, 81% of which have prioritized knowledge management and collaboration as the prevailing success factors of tomorrow (Glenn & Stahl 2009). Also, the benchmarks of PrI rise with the standard of living and GDP, when innovation strategies tend to rely more on (1) innovation reactors, (2) product leadership, (3) agile production, and (4) quality than on a more classical type of mass production (Mattila et al. 2013). Importantly, also a majority of leading executives (84%) prioritized in a 2010 survey innovation as a key part of their growth strategy (Capozzi et al. 2010). CEOs also included elements and means of PrI. Since many decades and at a clearly progressive rate, business innovativeness and intangibles have become the major survival and success factors. Global patent filings, for example, have increased at their strongest rate in nearly two decades and industrial designs have reached ever new records in 2012 (Gurry et al. 2013). Moreover, estimates of '(even depreciating) intangible assets'

now have already excelled the company's tangible assets, and they are still clearly predicted to further surmount all tangible assets throughout the 21st century (Corrado et al. 2006). Backed by several recent reports and views, a summarizing model can be claimed that market competition and saturation drives strategy towards more innovation, and thus intrapreneuring, and ergo decentralization:

*market competition ←→ innovation pressure ←→ intrapreneuring (PrI-GSI) ←→ decentralization*

In fact, the scientific literature also offers results and correlations that clearly support this view, as market competition is shown to depend on decentralization, which serves as a read-out for the PrI model (Bloom et al. 2010). PrI is still on the rise (Ray et al. 2012; TowersWatson 2014; Bosma et al. 2011). Achieving organizational agility with PrI is important in dynamic and volatile markets (Ray et al. 2012; Glenn & Stahl 2009). For instance, 88% of senior executives from leading companies specify 'agility' to be pivotal for their 'global business success'. MIT research shows agile companies grow 37% faster and generate 30% higher profits than less agile firms (Glenn & Stahl 2009). Agility is an intrapreneurial function (Pinchot & Pellman 1999; Pinchot 1987), in full accordance with GSI theory (GSIT). Intrapreneurial SMEs (small and midsize enterprises), should theoretically have a higher aggregate GSI level per employee in total, as a more customized GSI levels and jobs are given, and more intrapreneurial/self-dependent hierarchies. Hence, if relative GSI is higher in SMEs, they should be more innovative, in GSIT. And in fact, SMEs and high-GSI-SBUs both accomplish more patents per employee than large enterprises (Breitzman & Hicks 2008) and can even turn into key innovation game-changers for an entire cluster and sector, or country (Gurry et al. 2013). In summary, GSI/PrI can benefit organic growth and innovation to thrive and grow businesses - and GSIT is already supported by some first empirical findings (see also Fig.3).

## Intrapreneurialism in the Economy: Macroeconomics of GSI

The prevalence of employee entrepreneurship has been measured in the global, comprehensive GEM-2011 survey (for review see Bosma et al. 2011). Based on these interesting data of the GEM studies, and combined with several additional open access studies (see methods: world bank, fact book, global WIPO innovation survey, and global competitiveness report, global slavery and human development index, etc., 2011-2014), newly compiled empirical findings were derived in newly combined studies that generally agree with the previous findings and try to also add some new and additional aspects and correlation results to the topic. The country-specific data and the GEM data enable the integration of GSI as a macroeconomics indicator into a wide array of results of other studies to reveal and model new correlation network topologies (this country data integration of all studies pilot project has just begun could be continued and cited by others in the future). Analysis of statistical dependencies are performed here with the data of 37-56 countries and a total of 24 selected economic growth indicators using PPMCC correlation-studies and comprising a ~GSI indicator (PrI, PEEA: private sector entrepreneurial employee activity of the GEM study). A dependency analysis of all of these 24 KPIs yielded 2-D R-values of 276 combinations [due to $N_R$=24!/(22!*2!)]. This allowed the modeling of a core dependency network of indicators linked to intrapreneuring, innovation and economic growth (GDP) (Fig. 5-7). The results were visualized as branches to reveal a core network topology at different dependency levels: at a dependency resolution level of R>0.6 (strong) and R>0.4 (medium). This provides a new visual map of the inter-correlations that cluster with ~GSI/PrI (i.e. the GEM index of national intrapreneuring, PEEA) (Bosma et al. 2011). The combination of empirical country data (Fig. 7) in these correlation studies now reveals international R-hubs for economic growth and intrapreneuring (Fig. 5). Importantly, as a key R-

hub, intrapreneuring (at some GSI: ~GSI) correlates with GDP/capita and innovation (Fig. 6), and IT and education and technology indicators like internet usage (per citizen). Hence, ~GSI, EEA/PrI is likely to contribute to innovativeness and competitiveness of the local factor and country. This new finding is also much in line with our previous understanding but still had to be shown predicated on the combination of the existing data. Intrapreneuring correlates with many GDP-driving factors at different R-values, which is interesting to note: how strong these factors effect and affect each other in the global economy, and on the country level. The overall topology of the ~GSI-economic-growth network and its key hubs displays some new insight (Fig. 5): ~GSI/PrI is also required on the macroeconomics level - but with new KPI-macro dimensions. Like in the firm, this means again for GSI implementation: (1) goals need to be defined (e.g. GDP and wealth, standard of living), (2) managed intrapreneuring needs to provide for fair competition, and (3) new opportunities for growth must be given (market access, chances for good business models, products and services, business starters, new technologies [like green energy in the past that did not have it so easy at the beginning; intrapreneurial businesses and people support; more equal opportunity for sectors and intrapreneur] etc.). The basic GSI formula proposes that a minimized variance of dimensions is optimal at the right level or grade and that good incentives are always linked to fairness and many chances or opportunities for all. Thus, in macroeconomics, a 'managed GSI' applies too: dimensions and KPIs that are a country's 'GSI bottleneck' (all firms intrapreneur in the country's market with various GSI score).This is also what the topology of the network (Fig. 5) might suggest. It can be interpreted as the slowest relevant indicator could determine the overall growth pace as the high level of interconnectivity indicates cooperativity potential, which is also logically likely and evident. Although at different levels and weights, the country index matrix is already proposing what a limiting bottleneck might be, in international comparisons and might be in fact helpful: find the R-linked-KPI with the lowest rel, rank (rel. score) and try to improve it to minimize the variance that elevates GSI, and other 3D concepts of economics (Fig. 12), e.g. to improve GDP. The dividend of "human capital/investment" automatically shrinks if R-bottlenecks are given (e.g. if the health care or education system, or the "job sector" is "not fully functioning"). Hence relevant bottlenecks are to be dealt with first. This suggests that a proportionate approach could be more successful than only a targeted improvement of economics 'hobbyhorses' or 'objects of prestige'. Presumably, (a correlation is only a measure of statistical interdependence; in this case maybe an 'intra-dependency of co-evolving GDP-features/KPIs; hence, an intra-ranking of R-values might give more insights of this R-growth-KPI-net and clues of its broad causality). This would also argue positive growth factors (indicated in blue) can be both 'mutual prerequisites' and 'mutual promoters'. Optimizations would be best achieved concomitantly, and starting with the relevant R-hub-bottlenecks first. The fine-structure (values) of R and $R^2$ of the network of co-dependencies reveals how ~GSI and the other dimensions could be interlinked locally - in the global economy. Noteworthy, GSI would again propose - now on the country level and global economy level - that fair platforms of competition (e.g. global fair trade) are very essential, like infrastructure, human development, wealth, social security and standards, HDI, education, health care, jobs, and a sound monetary system (=digital full reserve and QE4P (Anton 2015; Jackson & Dyson 2013)). Putting the original GSI dimensions into macroeconomics, GSI would imply: if total risk, total reward and total opportunity of all sectors balance at proportionate GSI levels, all sectors and the economy would grow best in aggregate view (c. p.). However, if one sector always has more profits than risks or opportunity it will grow faster to reach equilibrium. This proliferation can be both malignant of benign. In healthy markets it is beneficial: good

new technologies or innovative business models are to be rewarded, as normal for sectors in growth life cycle phases. But it turns into malignant NSI growth if no competition or equilibrium is reached at some point (high reward for no achievement; NSI; in GSI every opportunity must bear a risk due to an equal opportunity requirement). If prices and GSI don't adjust in the long run a market failure must be the case, e.g. a monopolization or agreement must persist or must have happened to the sector or the economy: i.e. a NSI-bottleneck. From a natural scientific standpoint, we know that equilibria can be disturbed easily - especially if they are not protected and affectable. From Porter's Five Forces we know that the negotiation power determines such market equilibria and thereby the industry structure (Porter 2008). Bringing these two points together would suggest that measures, platforms and frameworks for fair competition might be helpful as they could de-repress GSI and open up bottlenecks. GSI-inhibitors comprise (1) unfair competition, or lack of competition, positive and negative discrimination, lack of a free market access (2) lack of suitable fair and free platforms (3) NSI in legal system, tax system, regulations, (4) lack of control and freedom, (5) artificial sector, firm, lobby, or bank dependent privileges, (6) prioritization that creates bottlenecks, (7) cultural factors, behavioral economics, lack of a healthy solidarity (8) hidden powerful networks, agreement, access restrictions, hidden and official monopolization, only one-sided negotiation power (9) unequal distribution of wealth and unequal opportunity in general, no diversity of customers, firms and competitors (10) other types of market failures. Free markets do not always self-maintain automatically - they could diminish themselves if no authority assures them in a free and fair state (e.g. antitrust). This way, the economy could reach a more and more "unfair state of competition" (e.g. for market entrants, job seekers, etc.). Unfairness could grow with market saturation and high market access barriers. In turn, also entrepreneurship becomes progressively more unlikely or improbable. Relative entrepreneurial activity falls, and intrapreneurship becomes ever more "the only remaining option for all" (!). Thus, more fairness and more 'fair bargain' in organizations must be created to compensate for this economic significant loss. Such logically derived predictions of GSI-trends, i.e. more intrapreneurship for less entrepreneurship, are also fully empirically supported by the GEM report (Bosma et al. 2013). Whenever markets fail via GSI- inhibitors or GSI-distortion, fair GSI-platforms or frameworks should be established and maintained, as is also done 'trillion times' in all firms too (see Coasian decision making (Coase 1934), previous chapter): "to get all jobs done" - also in the economy. To better reveal GSI's R-distance with other factors a ranking of all R-factors was performed (Fig. 8) to also reveal new details: intrapreneuring (GSI) most closely correlates with (1) innovation (R=0.8), (2) IPR, intellectual property rights, (3) GDP/capita, (4) internet usage per citizen (5) economic freedom, (6) HDI (human development, major index, including many relevant sub-indexes: life expectancy, education, standard of living, GNI/capita) (R=0.7), (7) 'commercialization support' for engineers, representing intrapreneurs, (8) science parks and business incubators, (9) human rights, and (10) venture capitalist funds; and so on (Fig. 5-8). Noteworthy, entrepreneurial activity and the slavery index are both clearly negatively correlated to intrapreneuring (Fig. 5). Hence, reciprocally, all "GSI-inhibitors" like money creation loopholes (e.g. FRB and other monopolies) could consequentially also be theoretically related to the slavery index. As all countries are occupied by FRB systems, a difference cannot be empirically found via correlations, but anti-trust in fact correlates with ~GSI (Fig. 5, 8). Also the labor market seems to be astoundingly unresponsive, on the global level, with respect to most growth indicators. Looking inside of the GSI-R-dependency-cluster reveals some more interesting intra-dependency details: for example, it shows that a 'humane/fair' culture index is directly

correlated with intrapreneuring (~GSI), like also 'trust in people' (including colleagues) (R=0.6). This is important to note, as it again indicates that 'fairness is not only an ethical standard' or only a theoretically derived prerequisite for competition but also an important empirical driver of sustainable growth and output of the economy', by correlation, and can be also causally explained and grounded. There can be two types of fairness: (1) 'intra-fairness', which is achievable via management and is economically limited by (2) 'extra-fairness' that has to "play the game" and can be best lifted by the government's 'managed intrapreneuring'. Low extra-fairness will again lower the maximum suitable potential of intra-fairness (GI), which can be achieved in a sustainably balanced GSI-approach. Hence, GSI could also theoretically indicate fairness of competition due to its optimal GI vector level (Fig.12, GSI formulas). Empirically, one can again have a global look at high and low innovative countries to reveal interesting differences (Fig. 6): for example, highly innovative countries show more intrapreneuring but what might be the reason for this? Again, the ranked t-test of correlation results demonstrate at a high confidence interval of $p<0.0005$ that 'high innovative countries' exhibit and share the following factors: (1) less product piracy, (2) more 'commercialization support' for intrapreneurs, (3) a higher GDP, (4) HDI, and (5) internet [and technology] usage (see Fig. 6). [*A methodological footnote for Fig. 6:* to discern between 'high innovation' and 'low innovation countries' data were partitioned under normalization of an regression line; into the lime and rosy areas]. Innovation correlates with economic freedom, in the correlation and regression analysis (ca. R=0.6). Hence, a partitioning into rel. high and rel. low as indicated makes specific sense for this question to also account and normalize for the overall economic background conditions. Product piracy seems to be higher in low-innovation countries, and represents again NSI as it is based on a piracy action and not GSI organic growth or newly achieved opportunity (unbalanced dimensions). Also, the HDI index and internet usage seem important (both reduce the overall life-risk of intrapreneurs and hence affect the 'calibration of dimensions' and help to better balance the equilibria). The legislator has to have the right estimates, vision, and farsightedness to improve the country with the right factors and dimensions. From a GSI-PA negotiation equilibrium perspective, a 'full employment' is advisable as it is closer to the more natural equilibria. Hence, a policy of full employment can be derived as an optimum from GSIT too. Good jobs can be created in an (1) entrepreneurial or (2) intrapreneurial way: via top down and bottom up reactions. Also, anti-trust seems to play a pivotal role for growth and correlates with IPR (intellectual property rights) and internet usage (Fig. 5, 8). This is likely to stem from traditional IT and communications sector clusters that have often initially developed as monopolies and subsequently from public sector privatizations in a significant amount of countries. So, why and how might intrapreneuring profit from an antitrust-R-hub? This is likely explainable due to the previous findings in the chapter of PrI: as more markets will saturate they will also build up new 'innovation pressures' that drive decentralization and presumably PrI (GSI) - and vice versa PrI also drives competition. Another detailed overview is given as regression analysis ($R^2$) in figure 9, 10, and 11. In summary, GSI (intrapreneuring) is highly correlated with major innovation and GDP-relevant human capital factors (R and $R^2$). Cooperativity is assumed, which means that countries need to identify the weighted influence of all factors, ranks and scores, to find potential and relative bottlenecks also in light of all 'economic life-cycle stages'. For example, if the health care system lacks behind - in relative terms [like in the US some years ago; a high GDP country with a relatively suboptimal health care coverage; and relatively high costs] could inhibit job growth also in other or all sectors of the economy. Although causally difficult to assess, in fact, 'affordable health care' legislation clearly correlates with a subsequent

job creation streak in the US until today [2/2016, probably the longest monthly streak of private sector job creation; more than 14 million new jobs via closing of coverage and other bottlenecks; but many other factors are also 'cooperatively' in play]. Hence, GSIT and assumed "factor cooperativity" imply that advancement of relative bottlenecks [with causality weight] is key in optimizing economic output on the country level - like in the firm too. Loopholes can be considered as bottlenecks as they fulfill the criteria of inefficiency (e.g. FRB, monopolies, unjust taxes). Again, like in intrapreneuring, this factors and GSI are to be (1) managed broadly [improve all limiting factors] and (2) in a targeted fashion of opportunity; to be "sustainably economic" with chances for all (Fig. 12), like independence and reward. To fulfill common goals: wealth, health and a good living and more fairness, justice and freedom from the inside.

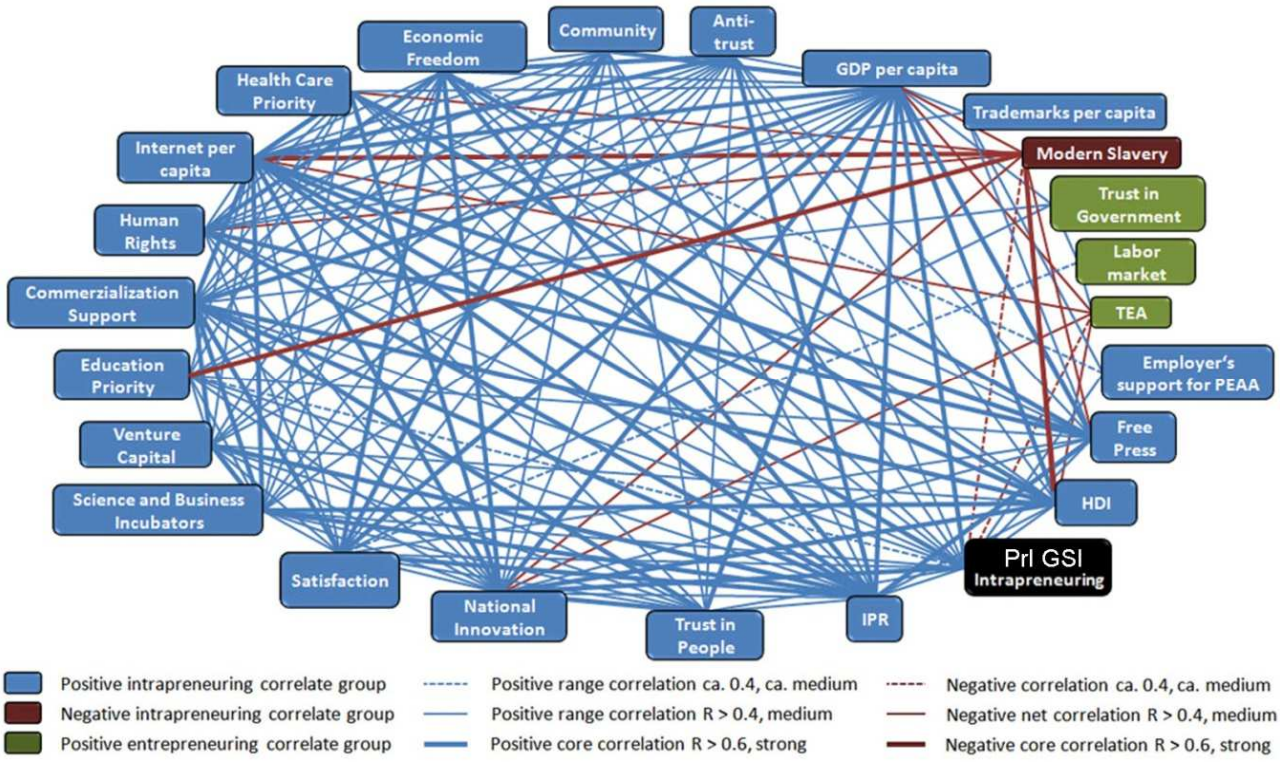



**Fig. 5:** Intrapreneurship (PrI, PEAA) is part of the innovation correlation group that drives GDP factors

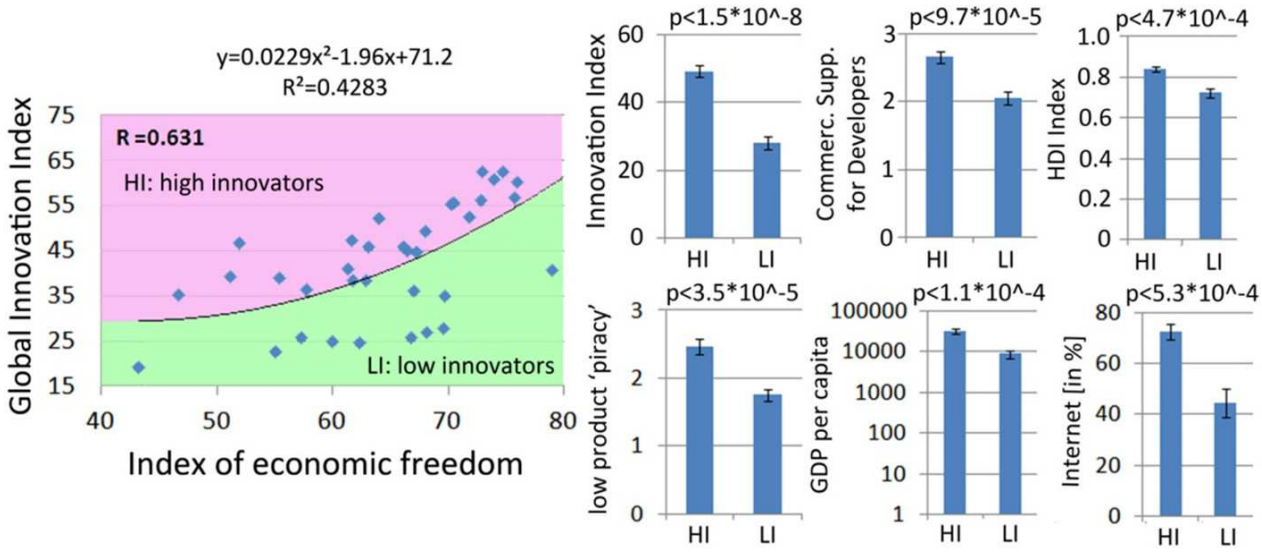



**Fig. 6:** Intrapreneurship (PEAA) is part of the innovation correlation group that drives GDP factors

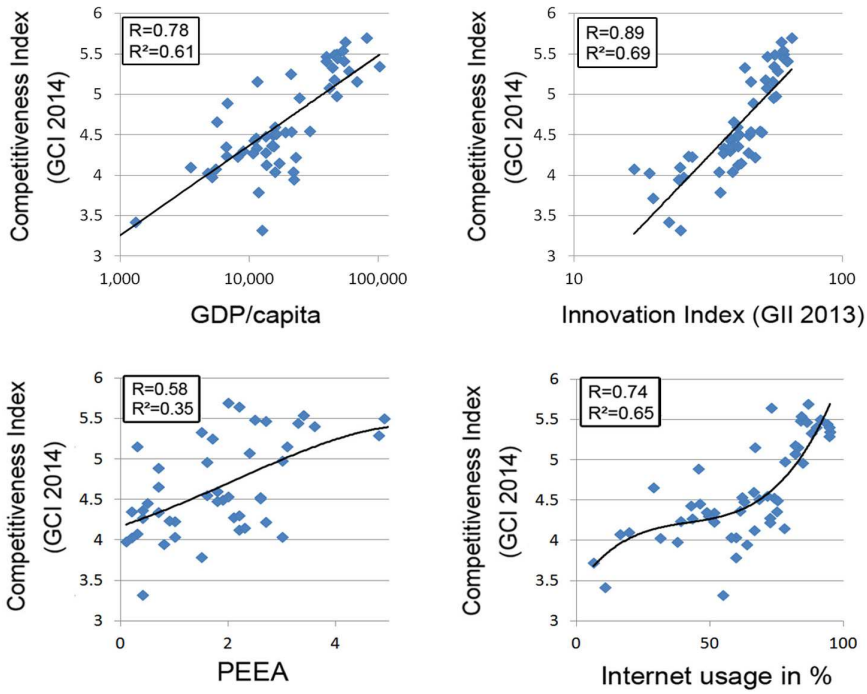



**Fig. 7:** Intrapreneurship (GSI, PEAA) is part of the innovation/GDP growth indicator dependency cluster

| | GDP per capita | Internet user/per 100 | Innovation Score (Global Innovation Index) | PEEA (Bosma, et a., 2011) | EEA Support (Bosma, et a., 2011) | TEA (Bosma, et a., 2011) | Index of economic freedom, The Heritage Foundation | UN modern slavery index | HDI 2014 human development index | Health expediture as % of GDP | Expenditure on education [% of GDP] | UN human rights index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GDP per capita | 1.000 | | | | | | | | | | | |
| Internet user/per 100 | 0.761 | 1.000 | | | | | | | | | | |
| Innovation Score (Global Innovation Ind | 0.774 | 0.856 | 1.000 | | | | | | | | | |
| PEEA (Bosma, et a., 2011) | 0.690 | 0.791 | 0.701 | 1.000 | | | | | | | | |
| EEA Support (Bosma, et a., 2011) | 0.141 | 0.239 | 0.189 | 0.587 | 1.000 | | | | | | | |
| TEA (Bosma, et a., 2011) | -0.415 | -0.491 | -0.537 | -0.327 | 0.240 | 1.000 | | | | | | |
| Index of economic freedom, The Herita | 0.578 | 0.597 | 0.631 | 0.526 | 0.305 | -0.208 | 1.000 | | | | | |
| UN modern slavery index | -0.513 | -0.613 | -0.542 | -0.372 | 0.244 | 0.130 | -0.386 | 1.000 | | | | |
| HDI 2014 human development index | 0.782 | 0.912 | 0.829 | 0.721 | 0.101 | -0.457 | 0.545 | -0.692 | 1.000 | | | |
| health expediture as % of GDP | 0.585 | 0.602 | 0.603 | 0.529 | 0.056 | -0.412 | 0.397 | -0.509 | 0.668 | 1.000 | | |
| expenditure on education [% of GDP] | 0.530 | 0.595 | 0.573 | 0.389 | -0.227 | -0.388 | 0.241 | -0.606 | 0.534 | 0.447 | 1.000 | |
| UN human rights index | 0.552 | 0.582 | 0.546 | 0.623 | 0.241 | 0.303 | 0.751 | -0.439 | 0.563 | 0.582 | 0.383 | 1.000 |
| Overall life satisfaction index 0-10, 10 m | 0.706 | 0.519 | 0.574 | 0.518 | 0.085 | -0.198 | 0.730 | -0.363 | 0.511 | 0.369 | 0.369 | 0.598 |
| Local labour market, 2007-2012, % answ | 0.076 | -0.114 | -0.125 | -0.187 | 0.040 | 0.520 | 0.142 | -0.009 | -0.124 | -0.262 | -0.091 | -0.122 |
| Trust in other people, 2009-2011, % ansv | 0.616 | 0.443 | 0.642 | 0.601 | 0.268 | -0.102 | 0.283 | -0.319 | 0.391 | 0.276 | 0.536 | 0.209 |
| Community, 2007-2012, answering "yes' | 0.653 | 0.499 | 0.580 | 0.616 | 0.261 | -0.214 | 0.526 | -0.366 | 0.584 | 0.315 | 0.235 | 0.466 |
| Trust in national government, 2007-2012 | 0.413 | 0.162 | 0.219 | 0.087 | -0.277 | -0.011 | 0.115 | -0.310 | 0.175 | -0.022 | 0.232 | -0.061 |
| world press freedom index 2014, Report | 0.602 | 0.667 | 0.524 | 0.606 | 0.258 | -0.334 | 0.670 | -0.477 | 0.597 | 0.515 | 0.558 | 0.806 |
| In my country, the anti-trust legislation | 0.507 | 0.617 | 0.660 | 0.586 | 0.298 | -0.183 | 0.726 | -0.316 | 0.502 | 0.353 | 0.507 | 0.498 |
| In my country, there is good support ava | 0.672 | 0.648 | 0.823 | 0.510 | 0.178 | -0.383 | 0.556 | -0.422 | 0.632 | 0.510 | 0.483 | 0.352 |
| In my country, there is sufficient ventur | 0.563 | 0.543 | 0.684 | 0.282 | 0.164 | -0.238 | 0.543 | -0.328 | 0.474 | 0.212 | 0.528 | 0.311 |
| In my country, science parks and busine | 0.541 | 0.624 | 0.756 | 0.456 | 0.227 | -0.389 | 0.529 | -0.397 | 0.601 | 0.420 | 0.544 | 0.341 |
| T trademarks in force/M capita | 0.430 | 0.388 | 0.233 | 0.196 | 0.289 | -0.246 | 0.307 | -0.267 | 0.418 | 0.278 | 0.178 | 0.520 |
| In my country, the Intellectual Property | 0.661 | 0.655 | 0.747 | 0.601 | 0.205 | -0.322 | 0.758 | -0.463 | 0.587 | 0.426 | 0.543 | 0.709 |

| | Overall life satisfaction index 0-10, 10 most satisfied, 2007-2012 | Local labour market, 2007-2012, % answering "good" | Trust in other people, 2009-2011, % answering "can be trusted" | Community, 2007-2012, answering "yes" | Trust in national government, 2007-2012, % answering yes | world press freedom index 2014, Reporters Without Borders | In my country, the anti-trust legislation is effective and well enforced | In my country, there is good support available for engineers and scientists to have their ideas commercialized through new and growing firms | In my country, there is sufficient venture capitalist funding available for new and growing firms ) | In my country, science parks and business incubators provide effective support for new and growing firms | T trademarks in force/M capita | In my country, the Intellectual Property Rights (IPR) legislation is comprehensive |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GDP per capita | | | | | | | | | | | | |
| Internet user/per 100 | | | | | | | | | | | | |
| Innovation Score (Global Innovation Ind | | | | | | | | | | | | |
| PEEA (Bosma, et a., 2011) | | | | | | | | | | | | |
| EEA Support (Bosma, et a., 2011) | | | | | | | | | | | | |
| TEA (Bosma, et a., 2011) | | | | | | | | | | | | |
| Index of economic freedom, The Herita | | | | | | | | | | | | |
| UN modern slavery index | | | | | | | | | | | | |
| HDI 2014 human development index | | | | | | | | | | | | |
| health expediture as % of GDP | | | | | | | | | | | | |
| expenditure on education [% of GDP] | | | | | | | | | | | | |
| UN human rights index | | | | | | | | | | | | |
| Overall life satisfaction index 0-10, 10 m | 1.000 | | | | | | | | | | | |
| Local labour market, 2007-2012, % answ | 0.345 | 1.000 | | | | | | | | | | |
| Trust in other people, 2009-2011, % ansv | 0.459 | 0.056 | 1.000 | | | | | | | | | |
| Community, 2007-2012, answering "yes' | 0.641 | 0.036 | 0.444 | 1.000 | | | | | | | | |
| Trust in national government, 2007-2012 | 0.413 | 0.521 | 0.365 | 0.280 | 1.000 | | | | | | | |
| world press freedom index 2014, Report | 0.479 | -0.068 | 0.187 | 0.379 | 0.079 | 1.000 | | | | | | |
| In my country, the anti-trust legislation | 0.535 | 0.064 | 0.475 | 0.292 | 0.083 | 0.598 | 1.000 | | | | | |
| In my country, there is good support ava | 0.610 | 0.157 | 0.694 | 0.542 | 0.434 | 0.350 | 0.576 | 1.000 | | | | |
| In my country, there is sufficient ventur | 0.499 | 0.204 | 0.439 | 0.502 | 0.299 | 0.357 | 0.568 | 0.726 | 1.000 | | | |
| In my country, science parks and busine | 0.578 | 0.112 | 0.528 | 0.517 | 0.294 | 0.384 | 0.596 | 0.882 | 0.732 | 1.000 | | |
| T trademarks in force/M capita | 0.202 | -0.176 | -0.005 | 0.232 | 0.054 | 0.526 | -0.005 | 0.167 | 0.230 | 0.244 | 1.000 | |
| In my country, the Intellectual Property | 0.662 | 0.078 | 0.463 | 0.573 | 0.251 | 0.737 | 0.686 | 0.704 | 0.702 | 0.714 | 0.280 | 1.000 |

**Fig. 8:** Intrapreneurship correlation matrix (zoomable resolution)

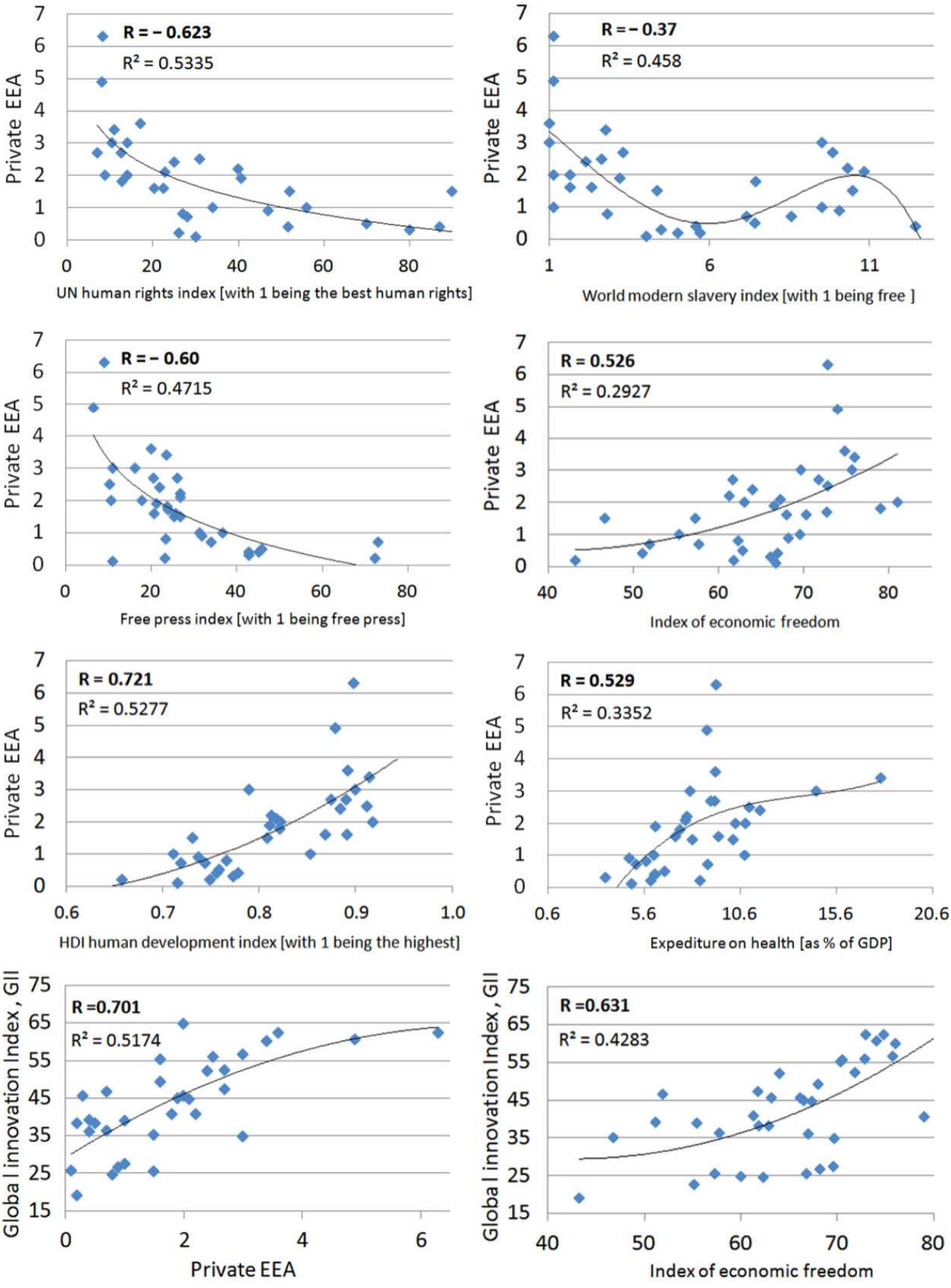



**Fig. 9:** Intrapreneurship (PEAA, PrI, GSI) with selected indicator regression analysis

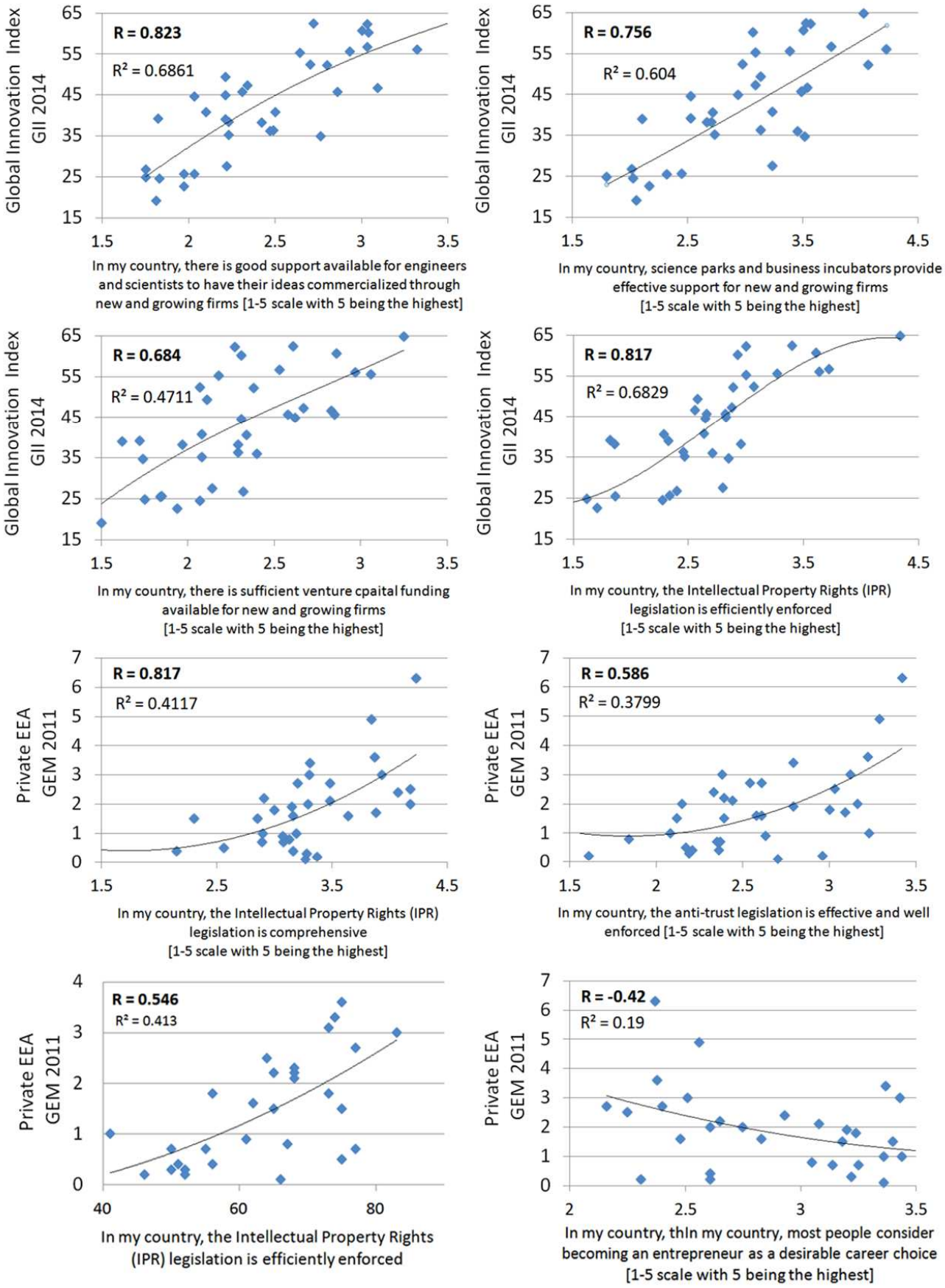



**Fig. 10:** Intrapreneurship (PEAA, PrI, GSI) with selected indicator regression analysis

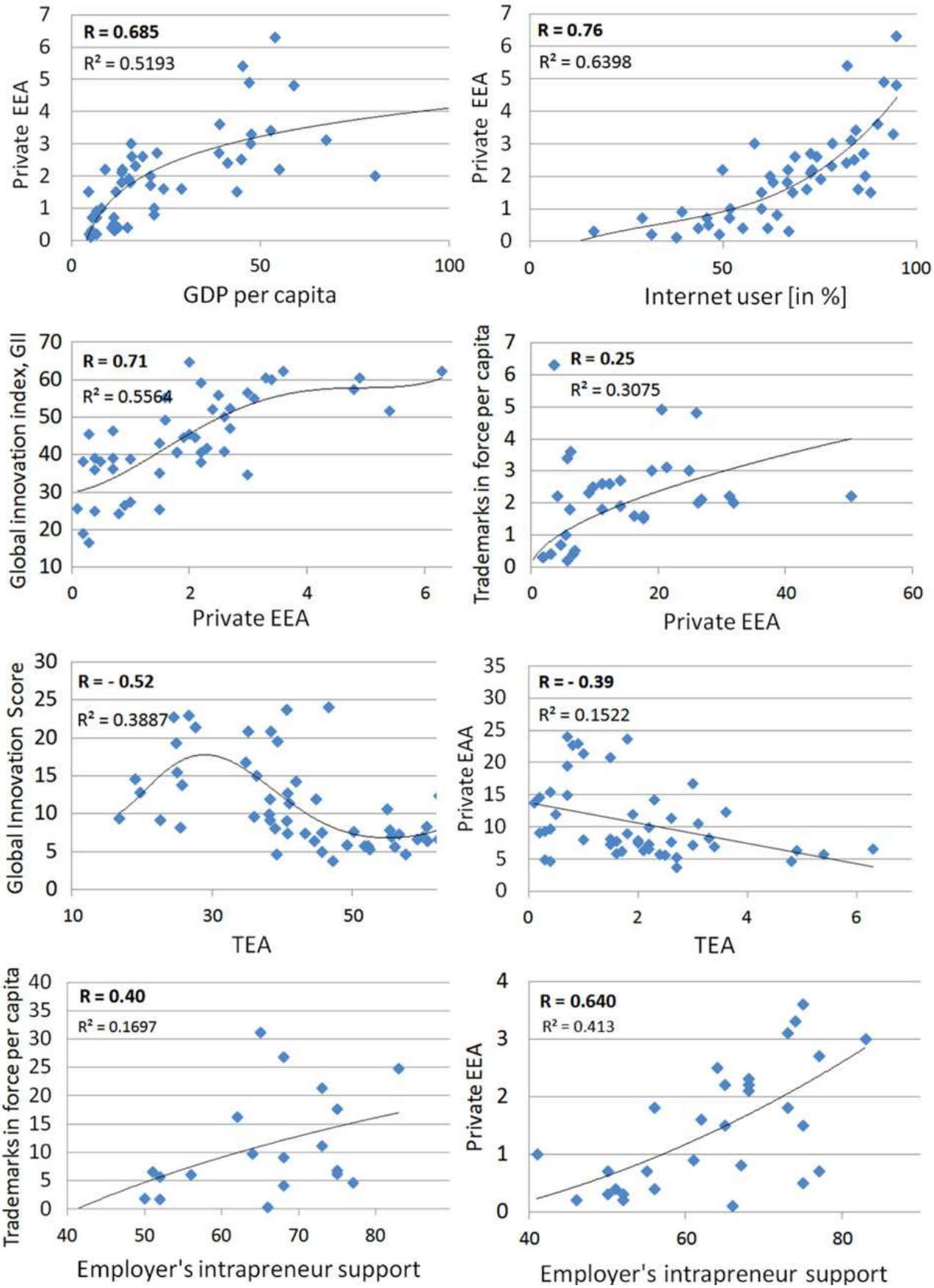



**Fig. 11:** Intrapreneurship (PEAA) is part of the innovation correlation group that drives GDP factors

## Intrapreneurialism in the Public Sector

Public sector (PS) reform, rethinking government and modernizing its federal, state and local institutions and authorities, can be recognized as one of the most enduring challenges. Reforms have developed differently in countries, however, some main trends have permeated heterogeneously, atypically, and then also in historic waves again, presumably indicating widely complex-structured international inter- and co-dependencies: Today's public sector and governmental 'service models' have developed from Weber's bureaucracy (Weber 1922), traditional public management (TPM), public value (PV) and PV management (PVM) (Moore 1995), and then, new public management (NPM) that is mixing in some first entrepreneurially derived business tools (Barzelay 2001; Hood 1991), and lately from the most recent and still very preliminary digital E-governance forms (E-Gov) (Dunleavy 2005). All of which still need to find a new way to be more "efficient and effective", while at the same time should provide more value and precious jobs for all. Degrees of entrepreneurial performance orientation (=intrapreneuring, GSI) are already widely believed to be the solution including a 'digital full reserve' prerequisite of 'free markets' (Anton, 2015). Reforms need to be better prioritized, performance-driven work solutions must be found, good intrapreneurial ideas, optimizations, and other innovations need to obtain and find opportunity, fair hierarchy ladders, more market-oriented benefits, risk and opportunity, and GSI is also needed, like practicable career paths for all (including scientists; no one-way into dead-end career paths), but also viable career paths for all: to motivate, direct and integrate most actions towards identified respectable, eligible goals). Also, public sector reform could address to find more holistic and 'free country with solidarity solutions' (leaving no one and no possibility behind). This might include setting out for streamlined easy to handle processes and procedures, loophole-free, and more equitable, simple and transparent tax system, transparency and anti-corruption legislation, anti-discrimination rights for all individuals, assured independence of all political actors. Government as protector of free and fair markets (free and fair platforms of competition for different classes and levels of competitors [new, established], whenever required) and market oriented cost comparison. As a result, GSI-E-Gov is a logical enhancement of NPM models and E-Gov. It needs to unfold its functional power to save costs, time and effort for everybody inside and outside the public sector via its equilibria. Importantly, 'saved costs' are to be reinvested to create new solutions and 'precious jobs' and extra value for the society, as GSI-win-win situations must be the goal. "Not cost-reduction till it hurts!" but "a tight ship to also afford a tight plane" and its synergies: the public sector could hereby offer much more value and jobs for all without 'crowding out'. Post-monetary reform (Anton 2015; Jackson & Dyson 2013) all financial problems, financial cliffs could be in fact historic, of the past. Economic management of the public sectors would be still highly required like managed GSI. GSI in the public sector also needs universally secure, trustworthy systems, also with automatization of legal and bureaucratic procedures (designed for the benefit and not the detriment of all people, which always also depends on "how it is done"). Simplification, transparency and IT-automation of taxation (easy to use real-time digital interfaces; planning reliability for all) can be also suggested to profit GSI. Reduction of taxation for companies and everybody is easy and possible in a "digital full reserve system and QE4P" (Anton 2015; Jackson & Dyson 2013), which is also GSI-approved, as newly created money would be invested by the government in an entrepreneurial and testable way, as opposed to giving it for free to the financial sector without control or performance check, as is really the case today (Anton, 2015). Still the question must be answered how the public sector can transition to become more economic at

the aggregated benefit of all, which must be the goal here. Obviously, rethinking government and its institutions still seems to be a necessity of today. 'Improvement goals' have to be defined in complex and difficult topics and performance, as cost efficiency and effectiveness, has to be monitored; like management accounting in the firm). Optimal KPIs have to be developed for public businesses and services and must be efficient and controlled if no competition is given. Cost-saving and performance and utility increasing programs must be started for all of the goals to be achieved, including the goal of having precious viable jobs for all, but not resource wasting jobs, and not at the cost of other jobs: again the solution is given by a GSI balance. Hence, all money saved shall be reinvested to achieve additional valid goals (valid goals not only appear valid they also must be factually valid, which is really "not a question of personal interpretation", and also requires the right prioritization and the right sequence, too). With respect to GSI, contemporary public service law - even worldwide - usually doesn't arrange for a structural basis for intrapreneuring, or opportunity for outstanding and VIIIs (very important intrapreneurial ideas). Many elite intrapreneurs exist that can't put their top expert skills on their calling card. But they very often hold the key to lasting improvement (Pinchot 1985; Pinchot & Pellman 1999), and also in the public sector. However, since the introduction of NPM-like reforms (Hood 1991), a 'faint intrapreneurial culture' with a new and at least a lower-level of independence has replaced some of the most rigid traditional public obedience culture (Heinrichs & Marschall 2009) if required. Resistance to [sustainable] intrapreneuring [GSI] is still thought to be based on (a) protection of system structure, (b) communication barriers and very strong divisional [and positional] egotisms, (c) excessive planning and (one-sided) [top-down] control systems, [e.g. a potential lack of senior control or junior opportunity] (d) inequitable reward, and (e) innovation lag and its associated adverse-selection (Heinrichs & Marschall 2009), (f) wrong incentive schemes that are not linked to performance and goal and do not match desired outcome, and (g) lack of good assessment and evaluation, and finally (h) lack of well-adjusted GSI dimensions - likely due to a wrong calibration. Departmental EO (entrepreneurial orientation) can be shown to correlate with the complexity of expectation and with the positional characteristics (Meynhardt & Diefenbach 2012). Thus, mentioned barriers have to be overcome and a suitable E-Gov/GSI/NPM needs to be further advanced with the right GSI dimensions in mind, GSI-incentives and 'managed GSI (designed for the respective desired outcome, and for 'congruent goals and targets' to align all intrapreneurial vectors and actions via GSI-jobs-structures). The big old economic question of "privatization" is again to be referred to as a Coasian decision (Coase 1934): should the government solve the PA dilemma internally or externally, in the intra or regular markets. The size of the governmental sector makes Pinchot's old idea of intramarkets and intracapital in fact feasible (Pinchot & Pinchot 1978).

## Intrapreneurialism in Academia

Scientific intrapreneuring can improve the academe (Perlman et al. 1988) - by allowing suitable GSI levels that adaptively provide equitable solutions for everybody who is working in academia: directors, professors, postdoctoral and doctoral scientists, research assistants, etc., and also students. A better equilibration of independence, bargain, risk and opportunity, hence GSI dimensions, are also needed here, especially for intrapreneurial and innovative junior scientists. A dilemma comes into mind: the career risk of a postdoctoral fellow might be higher than of a PI or professor but cannot be higher in GSI, per definition, an internal concept, in between 0-100%: the professor bears responsibility toward his investor and employer demands, e.g. grant donor and university, which are both not well defined

goals or KPIs. This reveals a conflict of interest that cannot be solved by the professor nor the postdoc but is an extra-fairness and systems problem, as the GSI-level of independence of the project can't be more than 100% and both the risk of the professor and of the postdoc add up to a level of above 100% (up to 200% if both require the success of a present or future project with antipodal strategies, opposing ways to go, and contrary required outcomes for their success; which is most often the case). Hence, if more risk and independence is needed then possible the reward diminishes for junior scientists (=high variance) and hostile forms of NSI prevail in academia in all countries, world-wide. The 'principle of subsidiarity' is clearly out of gear as the senior dominates the junior and both do not pull together (high conflicts of interest, moral hazards, PAP due to low GSI = NSI). Hence, managed GSI solutions must be found: e.g. viable scientific career paths with more options and better assessment, end of peer-review publishing censorship to achieve a higher scientific quality assurance than can be given in 'networking'. Reward is also a big issue for scientists: the only reward is authorship in a publication that even costs something; the sequence of authors counts and juniors have no real influence on it or which position, project, or experiment 'they get'. All is mainly a strategic decision of the senior who does not strategize to do good science or to provide opportunity for juniors but often has other egoistic private goals on his mind. But junior scientist need opportunity - like all intrapreneurs do. They need a way to go and a viable career path so that they can make it for a living too. Often they work harder and better than most other employees (7 days a week, 65 hours, and since their PhD up to 50% of their work remains unpaid, exposed to very high risks and no union represents them suitably; they invest a study and devote their live and are mistreated in million cases and only have some years to evidence their competencies - without getting the opportunity and independence that they need to achieve this, a subtype of 'graded modern slavery' equaling NSI; maybe in reminiscence of the ancient Great Library 'postdocs' in Alexandria that were also modern day slaves but in high antiquity). To get a successful project or experiment assigned or not, to obtain essential opportunity or not, to become first author or not; to get 'sound references' and support or not; this all escapes the influence and performance of the junior scientist but is totally decisive later on. It is also a systematic problem: to publish, a peer-review process is started, which can totally inhibit individuals and only benefit the hidden traditional senior research networks instead. Also, to publish valuable findings, a researcher even has to pay publication costs today. This also discriminates all junior scientists that cannot bear them - but they require own publications. False economic incentives in science today seem to work in a totally wrong direction and downgrade science worldwide every day (Stephan 2012) - an opinion of more and more real scientists. Hence, also here GSI is needed and could help to find sound economic incentives that would thrive and vitalize all sciences, simply by ending the sabotage of juniors-scientist's work and careers, whenever it might happen. Today, junior scientists are known to be under high career-pressure due to vulnerability to systematic or targeted scientific exploitation (Liu 2006; Shinbrot 1999) mainly owing to strong dependencies, late career (Cech 2005), and exposition to arbitrariness and unfair career inhibition in all hierarchies and departments, unfair funding organizations, unfair committees, or the unfair peer-review publication procedures. Put simple: the immense resources are not allocated appropriately in science and there is a total lack of fairness (hence mainly fake competition and NSI predominates and everything is decided by networking). All institutions and decisive procedures are even officially senior-biased, and senior network-biased in all ways that can practically totally circumvent any individual's success in science - even if a scientific genius. Any R&D individual can

be repressed or selected for discrimination this way - and nobody monitors or interferes with it. Of course, all new faculty position require senior references [email, phone number] and support (official vacancy designed for the candidate). To be fair, some senior have also noticed this problem that juniors bear and started to help to get more attention on this topic (Ronald 2015; Alberts et al. 2014; McDowell et al. 2015; Bourne 2013; Stephan 2012). But new discrimination via eligibility criteria has become an unseen standard everywhere (discrimination on age, experience, gender, individuality), access restriction to anything that is of value are higher than before, including positions, which are also on purpose systemically too rare (Schillebeeckx et al. 2013), since decades in the US (Cech 2005) and Europe (FAZ, THE, NPR, etc.). This has lead to the situation in which a fair performance-based career is almost impossible for all excellent researchers. Already, the sociologist Max Weber, described, in his work "Science as a Vocation" - a text initially given in a lecture from 1917 - these big unsolved problems of all academic career paths. Although chance would not be everything, he knew of "no other occupational career path that is so dependent on arbitrariness" that leaves everything to chance. He did not mean scientific luck only - mainly the hazard of hierarchies. This old issue remains until today. In science, man doesn't forge his own destiny. Many of the (junior) scientists can not be the architects of their own fortune. Access to a healthy, viable and normal career path is getting improbable for most scientists. There are not enough faculty jobs (Schillebeeckx et al. 2013) over time since decades and it dramatically worsens since decades too. The 'success factors' escape the influence of junior scientists as they face comparably high career risks, low opportunity, and not enough independence (=NSI) for their huge R&D responsibilities to quickly achieve outstanding and seminal research in some years of slavery - and then there is no plan b or alternative as the business sector's HR also systematically discriminates postdocs and scientist applicants at an highest extent. Despite a lack of suitable GSI and independence, they must compete on the global level with the whole world of science in the field (not only locally like most businesses). To publish a hard-to-find novelty as the first in a sophisticated and complex field, they bear extreme risks in their career and project investment. Hence, it must be concluded here that this is an example of non-sustainable intrapreneuring (NSI) - as career risks are too high (only short-term contracts for a few years; totally uncertain future, no valuation for good work, no planning reliability, for innovation, careers, family, R&D), relative reward is too low for good R&D and relatively too high for bad R&D, achievement is not evaluated on opportunity given, and opportunity and leeway is too low to manage all challenges and demands appropriately. A scientific breakthrough often starts with an 'intrapreneurial motive' or a coincidental idea or finding, basically a new way of thinking. Hence, 'it is tempting to speculate' that managed GSI would not only optimize all of the work conditions, the independence and unbiased nature of science and its evaluation, but could also unleash the power of intrapreneuring to help the best and right ideas to also prevail due to fair eligibility, fair and more sportsmanship competition and scientific community solidarity and fairness for all scientists. Thus, GSI could drive innovation and a truly better understanding and description of all phenomena. As no big science market can exist - due to high levels of specialization - the Coasian decision is again an intra-market, especially for basic research (as other forms of organization would be inefficient due to loss of knowledge and lack of open science; incremental R&D might work better in private hands; while breakthrough needs all sorts of public platforms and free modules to start with). Hence, it were better for academic research to comprise 'open innovation' (Chesbrough 2003), and 'open science', in line with major 'free access and free science publishing' standards, supported by new and old movements

(David 2004). Knowledge must be understood as a public good that needs to be adequately maintained and logically restructured, as it is also the base for our understanding of the world, the basis for all business innovations and education. Intrapreneurs must obtain some opportunity in academia and in R&D, and innovation: a junior should be also encouraged and allowed to also propose his work without the help of a senior (or dependency to a senior). Valid arguments of junior and seniors should count something - also grants or publications should be only rejected if valid arguments exist. If not they should be accepted - also if previous arguments can be proven wrong. Finally, these changes would perfectly feed into GSI again and benefits interdisciplinary innovation and organic growth (Chesbrough 2003) of all sectors. As everything follows life-cycles, also science and scientists, or knowledge and innovations, different GSI levels are to be found along the way in truly "viable and livable career path". This would also make science much more independent and reliable. GSI would help end the blockades of intrapreneurial scientists that also heavily affects the quality of science (Ioannidis 2005), and the performance and health of researchers (Holleman & Gritz 2013; Alberts et al. 2014). More fairness, livable career paths, and GSI solutions could provide a better future for scientists that would lay the foundation for a better future of science - of a higher quality and independence.

## Social Intrapreneurialism: 3BL-GSI

As already mentioned in the "Intrapreneurialism in the Public Sector" section, intrapreneurship is a graded concept that is, of course, also equally relevant for all social forms of entrepreneurship, or shared value strategies (Porter & Kramer 2011). Post-monetary reform towards digital full-reserve all governments could have enough free money to finance public-private partnership to (a) benefit private sector investment (via low-interest rates and minimal inflation, more available venture capital (VC), better infrastructure and local factors), as well as (b) benefit the public sectors (budgets, end of domestic deficit spending and of unnecessary fiscal constraints and taxes that indirectly arise from FRB). Coasian decision-making generally means that the intramarket must solve those problems that the extra market cannot solve. Like in the firm too: those primary and supporting value adding procedures that are better not externalized - due to economic and strategic reason - remain in the value chain and inside of the firms processes. The same holds true for social intapreneuring in the economy's public sector (public sector=intra, private sector=extra market that is also an intra market of its own i.e. in the public sector's framework of free markets). The more economic and cost-effective the public money is spent the better the output and the more can be spent next year, in a full reserve setting. Like in the firm the intra-solution is again the intra-market that always has as its essential prerequisite: good goals, targets, assessment, performance-cost ratios and KPIs). Furthermore, private-public hybrid models could bear more flexibility and agility to find new solutions than public-sector-only models (that did not work in the past). But the public component seems required with an independent 'fairly managed GSI level'. For example, the city needs more social housing, all housing process are to high, and makes a call for new bids: the best bid is found via cost-effectiveness (area/costs) at a given quality standard and the best bid is chosen. In many public offerings, prices are not fully fixed and can vary much until the houses or projects are built. GSI, however, would propose the deal to be fixed at a given time like the optimal dimensions also have to be fixed at a given moment in time. As a result, cost deviations must be valid, explainable, and justifiable as previous bids have been not accepted due to the costs. This requires transparent, independent procedures free of lobbying. Hence, GSI proposes more fairness in

the bid system: or put differently opportunity, risk and reward must find equilibrium - like demand and supply in microeconomics. This example illustrates the power of 'performance per cost' ratios that must be fixed for each deal, could be offered privately and selected publicly - but in a fair competition scenario and with more than one winner (whatever the optimal amount in this context might be, depends on the sectoral GSI; like all employees must have a chance to 'win' also social entrepreneurs need more than one chance and more than one GSI level). Not only one winner - since 'winner diversity' is also important due to 'the future of fair competition' with old winners - and also with some new entrants. Hence, GSIT adds a new point to Porter's 5-Forces (Porter 2008): fair competition. GSI assures an optimal industry structure via fair competition, if its dimensions are well balanced, which requires balanced 5-Forces of Porter's model. If there are no new entrants then there is no equal opportunity of 'managed GSI'. If there are no substitutes then there is no fair product and service competition but a counterproductive competition or monopoly. If there is no negotiation power of suppliers or customers than a market efficiency also drops together with GSI. How many suppliers or customers negotiation power should balance is context dependent and suitable margins of suppliers and suitable prices for customers are indicative, like the total number of competitors and if the possibility of new market entrants is given to have an ongoing fair competition. The 'need to maintain competition' is part of the so-called economic-indeterminacy-principle (EIP). It is generally relevant but especially for social entrepreneuring, shared value - or social GSI if it is financed with public money. It promotes business evolution and GSI as performance/cost cannot always exactly be determined at one time point but should also not generate more costs [again the right GI level must be found, e.g. optimal number of competitors in the intramarket]; EIP will hereby yield multiple statistical time points. But prices at contracts must be fixed. If however the price alters - today the case as most projects are exceeding the initially planned costs - then % reward dimensions should be lower too (due to lower risks and responsibility). In summary, social GSI - social intrapreneuring - is the logical extension of social entrepreneuring (Dees 1998; Leadbeater 1997), or the 'shared value' concept (Porter & Kramer 2011), which also includes its synergies and a phenomenon termed here 'clusterpreneuring' (see extrapreneuring chapter). GSI unfolds new synergies within the given entity, in the team, department, firm, or even economy - as it helps to manage more suitably by giving an intra-framework for GSI dimensions (that cannot be found elsewhere). New GSI incentives for public-private business models could drive innovation and intrapreneuring towards more entrepreneurial and efficient solutions, for potentially all major social and environmental problems, at given standards (e.g. precious healthy work, or 3BL). Historically, and hence empirically, the markets did not solve all of these remaining societal problems, which can be verified manifold, and thus, they require a new intra-form and GSI-financing. A monetary reform and QE in the hand of the public sector (and not the private today in FRB) seems to be a major solution to this problem (Anton 2015; Ryan-Collins et al. 2014; Jackson & Dyson 2013; Douglas et al. 1939; Fisher 1936). Such public-private GSI models could be found to solve literally all social problems of today by paying new private GSI enterprises by problem-solving- and demanded value-adding-performance. What is right in the firm cannot be wrong in the economy. Also cost-saving always needs to go hand-in-hand with a new investment strategy - also to create new precious jobs: but some planning reliability for all employees needs to be accounted for too: uncertainty levels and minimal planning reliability for their employees or R&D projects can diminish the dividend of what could be called 'shared human capital': if employees grow and develop so can the economy. All career

paths need some planning reliability like families and businesses, research, and even entire sectors too. Academia is also a form of 'social entrepreneurship' with many 'shared values' and synergies. A system or cluster should aim at generating strategic positive sum competition (Porter 2008) a win-win situation for all participants and stakeholders (Freemann 1984). Like in shared value and social entrepreneuring GSI could be the very long missing 3D concept of competition, for any societal or private goal (Fig. 12). Without fairness there is no competition and no GSI. Hence, fairness is the key trigger of all concepts (see Fig. 12). Legend of Fig. 12: (1) number and fierceness of competitors, competitor composition; (2): fairness [2.1 specificities, 2.2 rules, 2.3 equality, equal opportunity], (3): GSI, [3.1 risk, 3.2 reward, 3.3 opportunity]. All economic dimensions seem to be structured in three dimensions like GSI and can be part of each other building an intra-3D-concept-tree. GSI is of 'a higher order' and thus requires the sustainability dimension of the aforementioned zero variance and serves as indicator and design frame like a basic 'economic compass'. GSI is also a dimension of the social component of 3BL (Elkington 2001): economic, social and environmental - and a key part of 'sustainably economic' (Fig. 12.2).

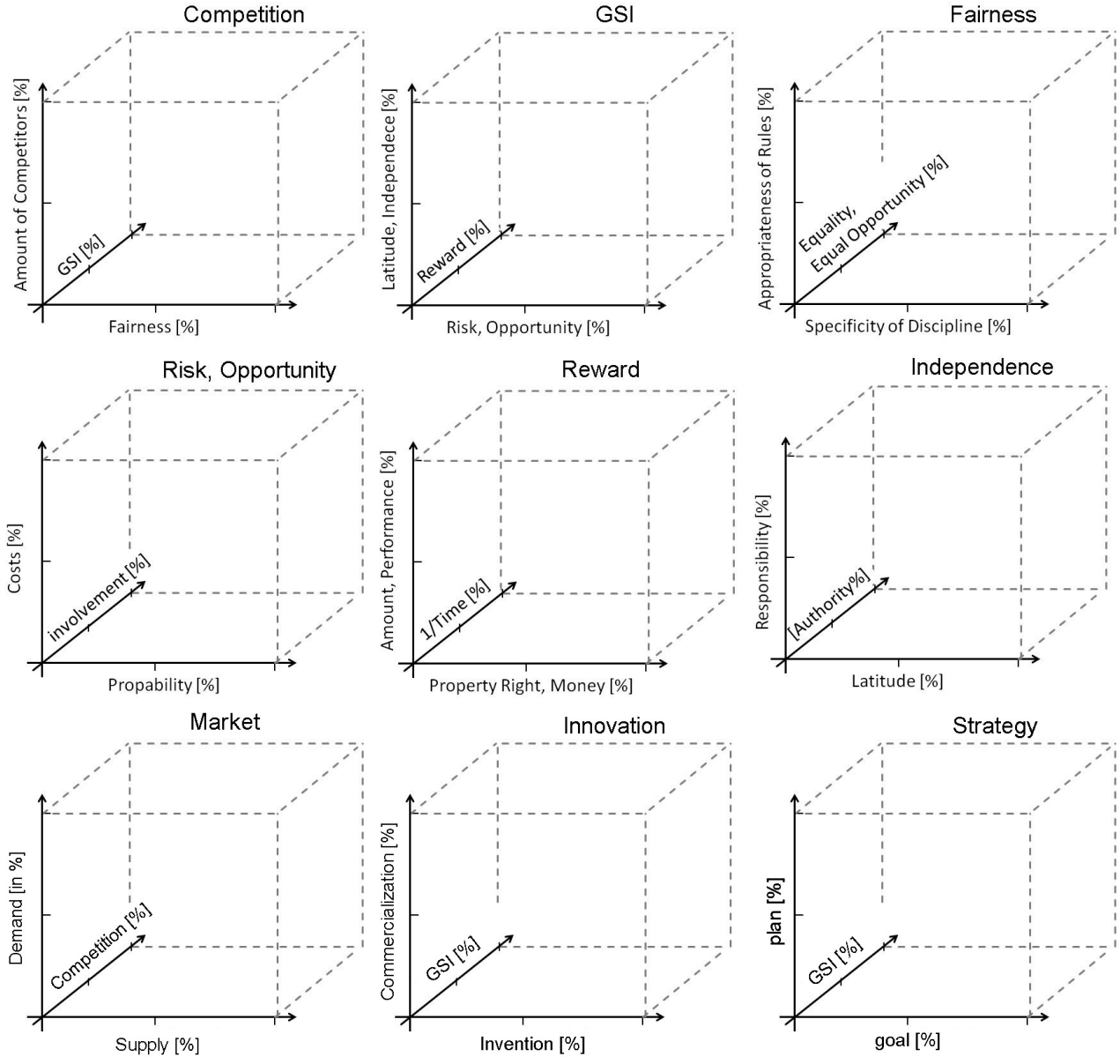



**Figure 12.1** Dimensions of Competition and its Component GSI

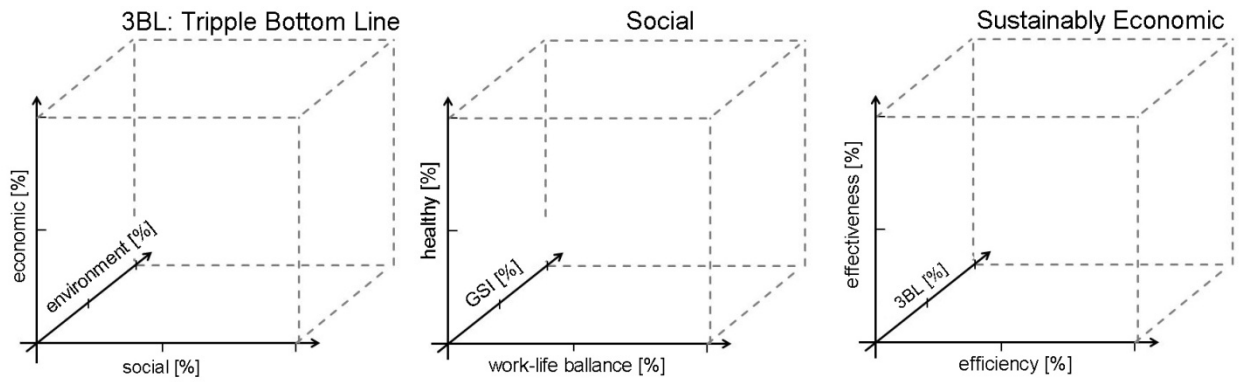



**Figure 12.2** GSI is part of the Social Dimension of 3BL that is part of 'Sustainably Economic'

## Implementation of GSI: Outlook to Industry 5.0

With respect to intrapreneuring and GSI theory, one of the biggest remaining challenges is how to practically implement intrapreneuring in its widest sense, with the right structures, and at the right dimensional level. In fact, knowingly or not, intrapreneurial thinking is already part of our daily work, business, and private decision making. Although Pinchot has already offered many good ideas about the topic (Pinchot & Pinchot 1978; Pinchot 1985; Pinchot 1987; Pinchot & Pellman 1999), many would still agree that its implementation remains a context-specific challenge. The concepts reveal that already a change towards more fairness and optional opportunity can make a big difference for GSI and competition in all entities and systems. Hereby, GSI can serve as an economic indicator and idea and way to think about intra and extra markets: For example, the extra-market can be also understood as intra-market: the planned TTIP between the US and EU will provide more demand and supply and thus a new mega-market (Fig. 12.1). GSIT would also assume that a bigger market will increase competition (due to concepts in Fig. 12). When competition increases there is also more potential for fairness (as more aggregated chances could be available c.p.) and because fairness and competition are interdependent). Big markets function better at full employment and a megamarket is advisable if the market is free and fair, no loopholes or strings attached - which is a bigger topic especially in a world of TCTs: who can exclude FRB-driven TCT-strategies in the 'free markets' by evidence? Megamarket fairness could be increased by the amount of specificities of disciplines if it provides more opportunity or 'possibility' for all too (Fig. 12), i.e. a higher diversity and amount (quantity and quality) of offerings and jobs. Interestingly, also these 3D dimensions - in the context of GSI - find their optimal equilibrium in proportionate dimensions (resembling GSI, when sustainability is reached): this means that a US/EU TTIP megamarket (the biggest in the world) would have to bear more fairness and will have more competitors and hence more GSI (in GSIT, PrI model). Due to a higher complexity in the markets, this requires now more appropriateness of rules/standards/laws as sound general principles must be found in more cases, contexts and disciplines and in a higher diversity; while keeping bureaucracy low while still achieving fairness. More equality and equal opportunity for all, participants and stakeholders (Freemann 1984), is also needed for a macroeconomical GSI level and industry5.0 markets (Fig. 12). Moreover, also the competitiveness dimensions will strive for GSI-like proportionality: as demonstrated earlier for private GSI: competitiveness might drive 'innovation pressure', decentralization, and PrI-GSI, and also its underlying dimensions. 3D-GSIT would argue that

TTIP has upsides of new economic growth potential but requires a difficult to managed GSI to achieve appropriateness of rules and high fairness for all participants. Like in the firm: the bigger the firm the more difficult to manage the intramarket and new measures of centralization and standardization are needed to provide for GSI and its sometimes more decentralized developments. It is also increasingly important to better assure equal opportunity: a good product or service must have a chance to hit the market. For instance, life-cycle, inter-generational, and business size fairness must be found: e.g. domestic SMEs often do not have the opportunity, infrastructure and business power of traditional MNCs to enter a mega-market. To give one example of many: most biotechnology SMEs cannot afford the expensive investments into clinical trials, domestically or internationally, and cannot cover long-term R&D-costs like a 'big pharma' global player can. 'Pipeline expenditures' and 'investment costs' can be by far too high for most player and SMEs in many sectors - and for all others. Patent and trademark strategies are more cost-intensive for SMEs in relative terms, like the primal 'access to decisive business deals in a maybe traditionally biased business network. In addition, distribution and marketing in foreign countries can also be relatively cost-intensive for SMEs compared to MNCs. The Coasian decision-making towards GSI proposes: what is good in the firm is good in the economy. Thus, this review reassures and restates the original concept of intrapreneuring and extends its definition by all grades and a balanced concept of GSI. In summary, to manage GSI it is very important to include a normative management component as free markets do not stay fair and free naturally and to assure sound intrapreneuring. This normative "managed intrapreneuring" assures fair opportunity and career paths - microeconomically for all in the firm and macroeconomically also for all in the economy. "Managed intrapreneuring" is the trick of the trade in the firm and economy, the needed design, context, opportunity and incentive that is build-in by shared and fair platforms. Same hold true for "managed extrapreneuring" that must also find better standards and norms for open innovation to unfold new economies of scale, scope, modules and time. Together both will allow more participation and agility, as well as a better career and competency development via internally new "compatible modules to perform", jobs for all (achievable in full reserve economies), and opportunity for applicants and all intrapreneurs, more possibility for good ideas and employees to be successful, and for new innovation to succeed. This indeed adds a new but old point to industry4.0: namely "fairness" (fair trade, fair competition, 3BL, GSI, fair and equal employment opportunities, fair chances and bargain, etc.). GSI will not lead to more risk for employees as it is a relative dimension and would also cost more reward. GSI tries to find a healthy balance in relative terms and the proportionate level could be optimal. In our times of saturating markets there is a very high and growing need of better "internal chances for all" - as external options (e.g. entrepreneuship, like starting a new business) have turned into a rarity of very high risk in many sectors due to the high market power of all established competitors. If "internal chances" are 'our only option' they also have to be advanced from a democratic, political, humane, 3BL, legitimization, and social-science perspective - hence, not only to optimize innovation, profits, and GDP also this way. In externally, increasingly dominated markets, with high-grown entry barriers, new solutions must be found. Managed GSI could help to build sustainable "fair frameworks" and "platforms of intrapreneuring". By adding GSI standards and fairness along with "really defined 3BL standards", this might lead to a "Green Industry5.0", with more, sustainable and better internal chances and life environments, today and in the future, and a more sustainable social-environmental development, higher organic growth rates, and thus good jobs and better standards, for a more viable, livable, happy and healthy living of all.

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