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BEHAVIOURAL INTERVENTIONS IN REGIONAL POLICY. MOTIVATING ENTREPRENEURS TO USE SUPPORT INSTRUMENTS FOR INNOVATION

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Abstract: Small and medium sized enterprises (SME) play an important role in the economies of numerous emerging economies. Despite the fact that the SME sector plays a significant role in the national economy it still suffers from the underdeveloped financial sector services. It results in the lower levels of indebtedness of private sector in Poland in relation to such emerging economies like Malaysia, Estonia or Chile. The commercial financial sector is inefficient in delivering funds to SME, the important role in this area is played by regional policy, especially supported from European regional funds. The distribution of development funds is realized with serious problems because SME are reluctant to financial sector services and besides typical grants, debt-type instruments meet serious problems. Polish SME are also reluctant to use support instruments aimed at developing innovations, R&D, and intellectual property (IP) protection. Imitation model of growth still dominates among Polish SME. To address this issue, in 2014 the University of Gdansk (UG) launched a project, supported by National Science Centre (NCN, governmental), on using behavioural interventions to increase the propensity of Polish SME to apply more ambitious development measures through support instruments. The research revealed, that the majority of tested behavioural interventions aimed at building friendly support environment proved to be efficient and increased the interest of SME in developmental activities.

Keywords: Behavioural economics, behavioural interventions, entrepreneurship, innovation, regional policy

JEL codes: D03, E03, L26, R10, R51

1. Grounds of unwillingness of SME in accepting support measures for innovative activities¹

Small and medium sized enterprises (SME) play an important role at the economies of numerous emerging economies. In Poland the SME sector employs more than 70.1% of labour force working in enterprises (2012) and delivers more than 46.9% of GDP (2010). The development of the SME sector could reach higher numbers but it is slowed down by underdeveloped financial sector services for SME. For example, the debt of private sector in commercial banks reached 54.8% in relation to GDP (2010) while in countries similar to Poland's GDP *per capita*: Malaysia 114.9%, Estonia 97.2%, Chile 86.3%. The financial sector in Poland is inefficient in delivering funds to SME, the important role in this area is played by regional policy, especially supported from European regional funds. The majority of those funds are managed in Poland by autonomous regional authorities. The distribution of development funds is realized with serious problems because Polish SME are reluctant to use support instruments aimed at developing innovations, R&D, and intellectual property protection. Imitation model of growth still dominates among Polish SME.

The article deals with the problem of low propensity of SME to accept support measures which require substantial developmental efforts from small companies, including design of new products, implementation of technologies, creation of new intellectual property and other ambitious activities. It seems that Polish SME are afraid of public aid and prefer to operate mostly on the private market. Small businesses indicate that they are threatened by unclear regulations of qualified costs, danger of aid return, high penalties for improper use of aid and other dangers which convince them not to participate in the small business support programs. In Poland, similarly to the other post-communist countries, public administration has very strong position and SME cannot rely on the equal treatment. Because they do not feel as the partners of public administration they refuse to co-operate with it, limiting the collaboration to the really necessary matters. As the result public aid is allocated to the companies who know how to operate with administration, not to enterprises with highest development potentials. The development aid targeted at supporting SME development reaches "aid business" specialized in proper use of public funds without substantial results for the future.

The aim of this article is to assess whether behavioural policy interventions can positively influence on increasing the effectiveness of SME support policy on regional level. To do this, experimental simulations were used to accept or reject different instruments of policy interventions and to form policy recommendations for regional authorities how to increase the effectiveness of the development policy.

¹ The research was supported by National Science Centre (NCN) in Cracow, Poland in the frames of the project *Impact of behavioral influences on absorption of development policy instruments by small and medium-sized enterprises* (2012/07/B/HS4/02990), the full project report is entitled: *The Impact of Behavioral Interventions on the Effectiveness of SME Development Policy* [Kulawczuk et al. 2016].

2. The concept of behavioural policy interventions

The general principle of behavioural policy interventions is to use low – costs “soft” instruments which are aimed at changing the decisions patterns of people or economic units affected by economic policies in the direction expected by policy makers. In the most of cases behavioural interventions can stimulate the use of the existing economic aid instruments, which are distributed with difficulties. Typically, difficulties arise when aid instrument requires substantial contribution of the beneficiary to the success of action. This contribution can be in the form of the work load, changing a firm’s strategy, investing own resources etc. It seems that one of the strongest barriers in using support instruments by SME is their unwillingness to change the way of operation. Implementation of new innovative actions, conducting R&D activities and starting cooperation with scientists require significant shift in SME operations. By now, SME in Poland predominantly use the imitation development model based on copying solutions of other companies, mainly foreign ones. It is still cheaper, still produces good economic results and still is much easier than inventing own original solutions.

Behavioural policy interventions are mostly aimed at changing the SME standpoints and convince them to take the active measures. From the mathematical point of view behavioural policy interventions on regional level are mostly aimed at attracting new entrepreneurs to undertake active measures (like R&D), enlarging the scale of SME interested in the innovative development and convincing them to engage fully in new development activities. To achieve this aim solutions based on behavioural economics concept of framing are used. They provide more security, advice, co-operation, mentoring, training, participation and other forms of “soft” support to motivate participants to attend in development programmes. The World Bank experiences show that such approach works in the developing countries and it may also used in regional policy of European Union countries in the larger scale than now.

The discussion on the possibility to use behavioural policy interventions to extend the effectiveness of the policy has been present since 2000. Two Noble Prize awarded economists: Kahneman (2003) and Akerlof (2002) use behavioural perspective of economics in research. The practical importance of behavioural economy has been noted by OECD, which published a report entitled Regulatory Policy and Behavioural Economics (Lunn 2014). The author of the report refers to examples of actions based on behavioural economy, which were implemented in recent years by the administration in the US, the UK, Denmark, the Netherlands, and France. In 2014 the first theoretical study on the behavioural interventions was undertaken and its assumption was that behavioural policy interventions are the reactions for market failures or poor public policy failures (Madrian 2014). Earlier, in 2010, the report of the University of Gdansk found that it is possible to improve the effectiveness of typical financial tools of small business support (Kulawczuk & Poszewiecki 2010).

The review of the economic literature indicate that policy interventions may take different forms – orders, prohibitions as well as information and awareness-raising campaigns. The aim of all such activities is to form a specific behaviour that

leads to desired effects. However, interventions do not always give the anticipated effects, which stems from the fact that to achieve such results, it is necessary to understand the mechanisms of human behaviour and how people take their decisions (Shafir 2013: 1). Specific behavioural policy intervention is framing. Typically framing can increase the effectiveness of the policy because of better information, advisory support, training, changing non-financial conditions of support contracts, by increasing safety and self-confidence of policy recipients (Kulawczuk *et al.* 2011). The cost of framing is low or meaningless. Sometimes, policy designers can use choice options and trade off to convince to use policy instruments. Exploitation of heuristics, like risk aversion or herd instinct stimulation, can also be very productive in some cases, especially when the policy is aimed at increasing financial safety or liquidity (Kulawczuk & Poszewiecki 2010). It is worth to mention that the analysis on the impact of ideologies, beliefs and economic advice (elements of framing design) on economic policies was done by Slembeck (2003). The branches which extensively use behavioural interventions are: public health, taxation and road safety. The examples how successfully use behavioural economics concepts to conduct health and welfare policies were described by Thaler and Sustein (2009). Despite those achievements the use of behavioural policy interventions is not firmly rooted in the economic policy conduct.

Regional economic development in Poland and in EU in general is still the sphere with very rare use of behavioural public interventions. Summing up, behavioural policy interventions can be the reactions for market failures or failures of public policies. In this publication behavioural policy interventions are treated as tools with potentials to increase the effectiveness of regional economic policy.

3. Testing behavioural policy interventions through experimental simulations

Behavioural policy interventions are understood as practical policy actions connected with the use of soft influences to change the decision patterns of the affected population. They are often tested practically on the limited-size group but the results of such testing are seldom available. Experimental simulation is a completely different concept. Experimental simulations were based on quasi-experimental design described by Kulawczuk (Kulawczuk & Poszewiecki 2010) and fitted to the rules of psychological statistical methodology (Brzezinski 2007). To describe this concept the example of University of Gdansk research can be used. The research was conducted among 210 entrepreneurs or representatives from the SME sector who used educational services of the University of Gdańsk in years 2014–2015. The examined group was to be divided into two sub-groups of 105 respondents each that were to be presented with about a 16 decision situations concerning the application of financial instruments offered to SME. The decision situations faced by the respondents involved:

- 1) accepting a proposed incentive,
- 2) a refusal to accept an incentive,
- 3) a postponement of a decision for 3 months,
- 4) a postponement of a decision for 6 months or
- 5) a postponement of a decision for one year.

In relation to many other studies the research team decided to include the third category of decisions. Apart from YES/NO decisions we gave the opportunity not to make decision now and postpone it to some future moment: 3 months, 6 months and 1 year. It reflects typical business situations when entrepreneurs do not make decisions and wait for new information, examples of how situation changes and especially what are the results of the incentive for enterprises which did immediate positive decision.

The study took account of the time factor, as Polish small and medium enterprises often avoid taking the decision and postpone it. For several instruments, decision situations were formulated as a trade-off issue or as the assessment of preferences (for the assessment of the tendency to co-operate in risk conditions and for positive measures). Each of the sub-groups, although they were usually offered the same instruments, had different framing of their use. Framing means that despite the basically identical content (with several explicitly marked exceptions), the method of communicating or offering an instrument varied. The authors assumed based on conclusions of Tversky and Kahneman (1981) that the framing of the public assistance incentives or the framing of commercial financial instruments offered to SME may have a material impact on the propensity to use such financial incentives.

The following table presents the abridged scope of decision situations included in the questionnaire inquiries, including brief problem description, the hypotheses on the possible reasons, impact of this problem on the SME development and constructed decision situation for entrepreneurs using regional policy tools. In bold letters the differences (framing) between typical offer and proposed new instruments were described, what reflects different regional policy choices. The thematic scope of decision situations was based on the knowledge held by the authors, who have been involved in financial consulting for small businesses within the Polish-American Small Business Advisory Foundation. Besides the list of decision situations was consulted with Pomeranian Regional Government (in Gdańsk) and reflects the interest of regional authorities in the proper policy design.

Table 1. Foreseen problems, possible reasons, impact on SME development and constructed decision situations for entrepreneurs using regional policy tools

SME development problem	Hypotheses on possible reasons	Impact of the problem on SME development	Proposed decision situation in two versions: Typical – T and Friendly – F.
1. Lack of confidence to cooperation with private venture capital funds (VC)	Fears about loss of control over business, fears about enemy acquisition in the future on the stock exchange	Slight range of using venture capital financing among small business. High risk capital market supply and demand are very low.	1) Typical offer of private VC fund without any guarantees for safe exit from investment, T 2) Offer of public venture fund with guarantee of safe exit from investment (management buyout guaranteed). F
2. Seed capital for start ups nearly unavailable	Poor offer of seed capital from private sector and financial entrepreneurs about enemy acquisition and loosing of control over the business.	Weak flow of seed capital to start ups.	1) Typical offer of seed capital entry without the guarantee of safe exit from investment, T 2) Joint venture of public fund with the entrepreneur supplemented by the guarantee of safe exit from the investment (resembles Islamic banking solutions). F
3. Unwillingness to borrow from commercial banks to finance capital investment by well going enterprises	Shortage of confidence to banks, low confidence of benefits from debt financing, fears about unpredictable bank behaviour	High preference of credits subsidized by the state (e.g. <i>technological credit</i> with subsidized 50% capital repayment) and low supply of subsidized credits	1) Typical credit with 50% capital repayment subsidy like <i>technological credit</i> , T 2) Credit with changeable rate of subsidy from 0 to 100% . Subsidy financed from additional tax revenues coming from new technology production streams. When company performs well 100% credit subsidized. F
4. Unwillingness to pay for credit line stand by fees	Feeling that paying for unused financial resources is losing money	Preference of typical turnover credit which results in higher costs than credit lines with mixed fees: for used resources and for resources on stand by	1) Typical turnover credit for the given period, renewed on enterprises request, T 2) Credit line with mixed fees, automatically renewed . F
5. Low participation of SME in debt financing	Unwillingness to cover own contribution to the project financed by credit	Low flows of credits to SME	1) Introduction of auction for own contribution with ranges 1–99%, T 2) Introduction of auction for own contribution with maximum limit of 50% . F

SME development problem	Hypotheses on possible reasons	Impact of the problem on SME development	Proposed decision situation in two versions: Typical – T and Friendly – F.
6. SME have problems with long capital investment financing	Organic growth dominating in SME forces to economize on capital investment	Low capital investment rate among SME	1) Creation of long term group bonds for SME, T 2) Creation of long term group bonds for SME supplemented by information on the exhaustion of remaining funds to generate scarcity impression. F
7. Low savings rate among SME disturbs investment processes	Low culture of savings, capital accumulation and formation among SME	Low capital investment rate among SME	1) Incentive for systematic savings in saving – credit union for entrepreneurs for determined braches with subsidized interest, trade off 2) Incentive for systematic savings in saving – credit union for entrepreneurs with subsidized interest. Unions can be created by banks. trade off
8. Polish SME enter foreign markets with huge difficulties	Shortage of free resources to finance market entry by SME	Insufficient increase of export from SME sector	1) Cost sharing in market entry – returnable instrument, subsidized interest, T 2) Cost sharing in market entry – returnable instrument, subsidized interest, supplemented by broader information on the opportunities of market entry. F
9. Low level interest in R&D by SME	Among numerous reasons: lack of resources to finance high skilled R&D employees	Very low spending on R&D by SME	1) Offering subsidies to labour R&D costs of SME similar to the Dutch WSBO instrument, T 2) Offering subsidies to labour R&D costs of SME similar to the Dutch WSBO instrument plus free advisory services in how to qualify costs properly. F
10. Low level of inner branch cooperation among SME	Individualism, unwillingness to share success effects	Among industrial SME contract manufacturing dominates for the benefit of foreign receivers not inner branch cooperation	1) Offering subsidy to create the cluster which supports inner branch cooperation with freedom to spending the subsidy, Trade off 2) Organization of the cluster aimed at services for its members in export promotion, effect of export promotion equal to subsidy in situation No 1. Trade off

SME development problem	Hypotheses on possible reasons	Impact of the problem on SME development	Proposed decision situation in two versions: Typical – T and Friendly – F.
11. Losing confidence to commercial banks after financial crisis of 2008–2009	Some SME which heavily suffered from currency options are reluctant towards cooperation with private commercial banks	Allocation of credits to SME for capital investment financing is low in comparison to the developed countries	1) Capital investment credit granted by the commercial bank guaranteed by State Bank (BGK), T 2) Capital investment loan with identical parameters granted by Regional Development Agency . F
12. Capital accumulation In Polish SME is very slow	Retained earnings collected by enterprises grow very low to allow dynamic capital investment.	Low level of capital investment In Polish SME	1) Granting credit with subsidized interest supporting collection of retained earnings (organic development credit), T 2) Granting credit with subsidized interest supporting collection of retained earnings (organic development credit) with precise indication that it can be spent only on capital investment . F
13. SME in Poland collect too much turnover funds and have over liquidity of cash – do not invest	Shortage of confidence to public policy forces SME to accumulate cash for uncertain future	Cash resources grow and capital investment is in stagnation	1) Simulation of capital decision situation of the entrepreneur based on his/her experience, T 2) Simulation of capital decision situation of the entrepreneur based on his/her experience and additional advisory services of the effective energy and resources cost control . F
14. SME very rarely enter Warsaw Stock Exchange	High cost of documentation for IPO (initial public offering)	SME sector very rarely collect capital <i>via</i> Stock Exchange	1) Subsidy to elaborate IPO documentation, 2) Subsidy to elaborate IPO documentation supplemented by advisory services concerning risks and protection against enemy acquisition .
15. Shortage of chances and opportunities to develop women entrepreneurship in Poland	Increase in social support for women and shortage of women entrepreneurship support programs make women reluctant to start new businesses	Women entrepreneurship is in stagnation in Poland	1) Starting up women entrepreneurship loan program with subsidized interest, T 2) Starting up women entrepreneurship loan program with subsidized interest, supplemented by advisory services of experienced women-entrepreneurs mentors . F Question only to women.

SME development problem	Hypotheses on possible reasons	Impact of the problem on SME development	Proposed decision situation in two versions: Typical – T and Friendly – F.
16. Majority of SME use copy-paste development model which do not generate high external benefits	Shortage of capital in SME to start up projects which generate high external benefits	Small number of start ups In spheres generating high external benefits (new market entries, new technologies, new products etc.)	1) Capital equity support of Regional Development Agency, T 2) Capital equity support of Regional Development Agency supplemented by free consulting advice on the preparation of business plan submitted to the agency. F

Source: Own study (Kulawczuk *et al.* 2016).

The Table 1 presents the concepts of all 16 examinations. From the formal point of view they were independent decision exercises and were not dependent. The bolded letters in the above table indicate the differences between typical decision situation and decision situations with friendly framing. In two cases No 7 and 10 the trade off situations existed: they included different designs of cost-benefit ratios. This sixteen decision situations tested different hypotheses. Three main tested hypotheses included the following:

- H1. No experience in the use of an instrument by SME increases the efficiency of behavioural impact, and the level of its efficiency may be differentiated among SME segments.
- H2. The behavioural influences aimed at increasing the efficiency of an instrument are not effective, if the nature of an instrument is simple, and its application obvious, *i.e.* if the application of the instrument does not bring any major sense of risk.
- H3. The sense of safeness can be modified as a result of behavioural influences and may have a major impact on financial decision making. The safeness feeling influence may be differentiated in specific SME segments.

In the experimental simulation two questionnaires were formulated with different framing within the experimental simulation (except for two situations). The different framing was defined as either typical or friendly. The typical framing reflected standard Polish reality in offering financial incentives for SME, while the friendly framing included additional non-financial elements, which according to the authors were to increase the assimilability of the incentives. To avoid accusations of bias in the specific versions of the questionnaire (a typical accusation against framing research) it was decided that each sub-group would have the same number of decision situations with friendly and typical conditions. Therefore, every subgroup had 50% decision situations with typical framing and 50% with friendly framing, however in different questions.

We selected the respondents representing small and medium enterprises from the northern and seaside Pomeranian Region in Poland. A team of pollsters contacted representatives of enterprises, mostly personnel of business-economic departments

as well as managers and owners of SME who used educational services in years 2014–2015 (in different forms of adults' learning like master's and postgraduate courses). Half of the randomly selected persons received research questionnaires of the typical version, while the other half received the questionnaires in the friendly version. The method was based on the random unlimited sampling of respondents to each group. Every drawn entrepreneur received one questionnaire to be completed by the management staff. Overall, 105 completed questionnaires in each subgroup were collected.

The selected persons were asked to give answers to the questions containing issues concerning entrepreneur behaviour (*i.e.* how they would behave in a situation) spontaneously. This type of research is called experimental simulation. They were asked to take a decision as if they were to take a decision alone and immediately, which was a considerable simplification. In actual operation of SME, financial decisions are generally taken as a result of analyses and consultation that may take hours or days. However, it is to be emphasized that decisions whether an instrument or a market opportunity are interesting from the point of view of a firm and are worth dedicating time to are taken quickly. According to observations, if a subject matter is considered to be important for an enterprise, it is usually continued. The research involved experimental simulation, which implies that it is not known if both groups would take the same decisions in real life as in the experimental simulations. It was assumed, however, that the readiness to cheat (or change decisions) did not differ depending on belonging to a control or experimental group (it was assumed to be identical in both groups). So the simulation showed realistic differences and the impact of intervention.

We verified the similarity of both groups (105 respondents each) with statistical methods. The verified elements included the similarity of structures, distribution covariance, medium and standard deviations, kurtosis and the inclination of distribution. Moreover, the hypothesis of tests (groups) similarity was verified with the Smirnov-Kolmogorov test. The Smirnov-Kolmogorov tests were applied to analyze the similarities of continuous variable distributions characteristic for the respondents, such as age, job seniority and the period of work in finance. They could have been also applied to a changeable "number of employees in an enterprise", because this number included employed in part time jobs. The tests showed that both groups came from the same population and the differences between the distributions of important properties that characterized respondents were not statistically important (results of Smirnov-Kolmogorov tests were positive – confirming that the both groups come from the same population (in all cases experimental $\lambda_e < \lambda_\alpha = 1.36$ which was a critical value for level of $\alpha = 0.05$). A detailed description of the selection of respondents is given in the polish project research report (Kulawczuk & Poszewiecki 2016).

4. Findings of the research (selected)

The research was very extensive. The Polish language report amounted more than 600 pages. It forces to discuss only the most important findings: positive responses for offers of using financial instruments by SME. The analysis presented below will not take into consideration negative responses and delays or postponements in decision making. If we take into consideration that delayed decisions ‘in mass’ (bulk) have positive expected value it could change the overall picture of decisions outline. The analysis below deals with immediate results of decision making what shows short run policy gains for policy makers. The discussed results are presented in the Table 2 and include: brief instrument descriptions, numbers and percentages of respondents who accepted proposed solutions (positive) and comment whether framing or trade off worked or not. In grey colour we underlined unsuccessful testing, in regular letters neutral and in italic successful one.

Table 2. Positive responses of SME representatives in different variants of decision situations in sixteen tested instruments (Gdańsk, Poland 2014)

Decision situations	Positive responses No. of respondents		Positive responses % of respondents		Observations
	Friendly	Typical	Friendly	Typical	
Situation 1: 1) Typical offer of private VC fund without any guarantees for safe exit from investment, T 2) Offer of public venture fund with guarantee of safe exit from investment (management buyout guaranteed). F	43	26	41.0	24.8	<i>Framing works, SME prefer safer public fund with guarantee of safe exit from equity capital</i>
Situation 2: 1) Typical offer of seed capital entry without the guarantee of safe exit from investment, T 2) Joint venture of public fund with the entrepreneur supplemented by the guarantee of safe exit from the investment. (resembles Islamic banking solutions). F	37	25	35.2	23.8	<i>Framing works, SME prefer safer public fund with guarantee of safe exit from seed capital</i>
Situation 3: 1) Typical credit with 50% capital repayment subsidy like <i>technological credit</i> , T 2) Credit with changeable rate of subsidy from 0 to 100% . Subsidy financed from additional tax revenues coming from new technology production streams. When company performs well 100% credit subsidized. F	39	70	37.1	66.7	Framing is strongly counter-productive: SME prefer simple solutions with less risk

Decision situations	Positive responses No. of respondents		Positive responses % of respondents		Observations
	Friendly	Typical	Friendly	Typical	
Situation 4: 1) Typical turnover credit for the given period, renewed on enterprises request, T 2) Credit line with mixed fees, automatically renewed. F	40	60	38.1	57.1	Framing is strongly unsuccessful: SME prefer more transparent solution and do not like stand by costs
Situation 5: 1) Introduction of auction for own contribution with ranges 1–99%, T 2) Introduction of auction for own contribution with maximum limit of 50% . F	62	62	59.0	59.0	Framing is neutral, no change
Situation 6: 1) Creation of long term group bonds for SME, T 2) Creation of long term group bonds for SME supplemented by information on the exhaustion of remaining funds to generate scarcity impression . F	62	61	59.0	58.1	Framing is neutral, little change
Situation 7: 1) Incentive for systematic savings in saving – credit union for entrepreneurs for determined braches with subsidized interest, trade off 2) Incentive for systematic savings in saving – credit union for entrepreneurs with subsidized interest. Unions can be created by banks . trade off	59	59	56.2	56.2	Trade off is neutral, no change
Situation 8: 1) Cost sharing in market entry – returnable instrument, subsidized interest, T 2) Cost sharing in market entry – returnable instrument, subsidized interest, supplemented by broader information on the opportunities of market entry . F	58	58	55.2%	55.2%	Framing is neutral, no change

Decision situations	Positive responses No. of respondents		Positive responses % of respondents		Observations
	Friendly	Typical	Friendly	Typical	
Situation 9: 1) Offering subsidies to labour R&D costs of SME similar to the Dutch WSBO instrument, T 2) Offering subsidies to labour R&D costs of SME similar to the Dutch WSBO instrument plus free advisory services in how to qualify costs properly. F	83	76	79.0	72.4	<i>Some impact of framing is observed</i>
Situation 10: 1) Offering subsidy to create the cluster which supports inner branch cooperation with freedom to spending the subsidy, Trade off 2) Organization of the cluster aimed at services for its members in export promotion , effect of export promotion equal to subsidy in situation No. 1. Trade off	54	58	51.4	55.2	Trade off is slightly counter-productive: SME prefer subsidies than efforts
Situation 11: 1) Capital investment credit granted by the commercial bank guaranteed by State Bank (BGK), T 2) Capital investment loan with identical parameters granted by Regional Development Agency. F	66	46	62.9	43.8	<i>Framing works, public agency is better perceived than commercial banks</i>
Situation 12: 1) Granting credit with subsidized interest supporting collection of retained earnings (organic development credit), T 2) Granting credit with subsidized interest supporting collection of retained earnings (organic development credit) with precise indication that it can be spent only on capital investment. F	59	54	56.2	51.4	<i>Some impact of framing is observed</i>
Situation 13: 1) Simulation of capital decision situation of the entrepreneur based on his/her experience, T 2) Simulation of capital decision situation of the entrepreneur based on his/her experience and additional advisory services of the effective energy and resources cost control. F	41	33	39.0	33.3	<i>Framing works but in the limited way</i>

Decision situations	Positive responses No. of respondents		Positive responses % of respondents		Observations
	Friendly	Typical	Friendly	Typical	
Situation 14: 1) Subsidy to elaborate IPO documentation, 2) Subsidy to elaborate IPO documentation supplemented by advisory services concerning risks and protection against enemy acquisition.	52	46	49.5	43.8	<i>Framing works but in the limited way</i>
Situation 15: 1) Starting up women entrepreneurship loan program with subsidized interest, T 2) Starting up women entrepreneurship loan program with subsidized interest, supplemented by advisory services of experienced women-entrepreneurs mentors. F Question only to women.	49	38	80.3	64.4	<i>Framing works, mentoring services are highly appreciated by women entrepreneurs</i>
Situation 16: 1) Capital equity support of Regional Development Agency, T 2) Capital equity support of Regional Development Agency supplemented by free consulting advice on the preparation of business plan submitted to the agency. F	52	36	49.5	34.3	<i>Framing works, consultation in business plans preparation is essential for SME</i>

Source: Own study, (Kulawczuk *et al.* 2016).

The research results presented in the above table concern the first round of examinations in this project. They were followed by the second round, aimed at correction of behavioural interventions to achieve higher effectiveness. The examination of experimental and control groups revealed that results of using behavioural interventions differ significantly depending on the offered instrument and proposed framing. Out of all 16 tested framings 9 proved to be effective, in 4 cases neutral and in 3 cases behavioural interventions were counterproductive. The achieved results may not seem fully successful, but the second round of examinations extended the success rate. Behavioural policy interventions were planned by the team of experienced small business consultants and entrepreneurship researchers. Besides, the cases (situations) were also consulted with public administration officers who were responsible for support for SME. All interventions based on common sense but were not limited by exposure to risk. They were not only public policy options but they also reflected innovative approach to SME development. The only uncertain element was the reaction of business on the proposed framings or elements of trade off.

The most important for the research success were the cases with actually working framing. There were 9 positive cases when framing caused the significantly higher interest in using support instruments by SME. If we seek for certain patterns of successful framing it must be underlined that three of the cases in testing (1, 2, 11) gave very convincing results. The framing was based on the change of the supporting entity from the commercial sector to the public sector entity and adding fair approach to exit from investment (or some other fair behaviour) in relation to typical private sector financial institution behaviour. In all such cases entrepreneurs much more preferred public financial institutions than private and fair exit rules than those existing on the market. It shows how significant reputation losses were born by private financial institutions in Poland. If we take into consideration ambitious developmental undertakings required for the future, the better partner for SME are public sector financial institutions: funds, development banks, guarantee institutions *etc.* The bulk of them were privatized in the last 20 years but the final result was negative. It seems that at least a part of public financial sector must be reconstructed in Poland to facilitate development processes of SME. Besides, private banks and financial institutions should change their policies to show more responsibility, more accountability and more fairness to convince customers to come back.

The second pattern of usually working framing was additional advisory services provided for free for applying entrepreneurs. Cases from 13 to 16 showed at least some positive effect of advisory services framing. It is worth underlying that it especially effectively worked towards women. Women more willingly than men changed their minds when they saw responsible advice and mentorship in their developmental undertakings. It allows forming the general recommendation that financial instruments for women should be supplemented by the opportunity to use extensive advice and mentorship services by women for free.

One case with some positive framing results was based on providing more precision of information to beneficiaries (situation 12). In this case framing also worked positively but the results were not as significant as in the previous cases.

In four analyzed cases (5, 6, 7, 8) framing was neutral. It means that from the statistical point of view differences in the number of positive responses in experimental and control groups were insignificant. It means that the treatment group respondents did not notice any difference or any new opportunity offered by the new situation. The invisibility of framing could be explained in the different way in each situation. The first neutral situation (5) was the change in the auction outline. The auction was to set up the rate of own contribution of enterprise to preferential credit. The first variant provided brackets 1–50% and the second 1–99%. The respondents did not see the difference probably the reduction of maximum own share (to 50%) was too low. The all respondents expected something lower. The second neutral framing (6) was based on making the impression of the scarcity of remaining funds to make run for bonds with preferential interest. Probably the information on scarcity was too soft and respondents did not see the difference. The third situation of this type (7) provided different type of creation of credit-savings unions for SME: the first one grassroots creation and the second by banks. Respondents did not see the difference. The last situation in this area (8) provided

framing based on additional information but again the respondents did not see the difference.

In three analyzed cases (4, 5, 10) framing (trade off) was counterproductive and bore negative effects. It means that the number of respondents who were under influence of behavioural intervention and made positive decisions decreased in relation to the group without framing. It seems interesting why some cases framing or trade off generated counterproductive results. The highest level of failure was observed in offering the changeable subsidy rate to preferential credit. Generally entrepreneurs do not accept taking higher risk / higher gain mix and definitely support solutions with lower risk and sure but lower subsidy level. This reflects the prospect theory and other behavioural economics observations. When discussing about subsidies people prefer lower but sure amounts. The second case of the highest level of failure was changing typical working capital credit offer into the credit line with mixed fees: interest from used capital and stand by fees for unused fees. The majority of respondents preferred solution with payment for the total credit amount instead of mixed credit fees which was in fact cheaper than paying interest on total credit amount and using a part of it. Something that influenced respondents' decisions was not to pay for something what is not used (avoiding losing money). Apparent saving on standby fees were lost by expenditures on paying the full interest on unused credit amounts. The third case did not reveal such a big difference like two above discussed but revealed that entrepreneurs prefer subsidies than efforts.

Summing up, the research produced diversified results, majority of proposed framings proved to be effective, the second group were neutral framings and in 3 cases framing was counterproductive. This is a proof that using framing for proposing new solutions which are aimed at increasing the effectiveness of instruments should be very careful. It seems that proposing new solutions require repeating experiments. The cost of using experimental simulations is however very low and much lower than a pilot study which typically requires granting the support to at least 5 to 10 entrepreneurs and observe how they react.

5. Conclusions and recommendations for future research

The research allows forming several conclusions. The overall observation is that it is possible to design framing solutions at regional level which with no or little cost can attract attention of SME and convince them to use ambitious development steps. It is especially important in the environment of enterprises which up to now predominantly have copied external business models and were unable to design own ones. The most of economies of Polish regions are using subcontracting (contract manufacturing or services) model of production where the final products or services supplies are globally managed by external corporations. The Polish regions and municipalities concentrated their efforts on attracting foreign capital companies, not on upgrading the local SME into larger companies which could operate independently

on European or World's markets. This approach is gradually being changed by introducing so called "smart specializations" which are understood as areas important for innovative growth in the EU financial perspective 2014–2020.

The Polish Regions can use the results and methodology of experimental simulations in forming the detailed rules of using financial funds for supporting innovations in SME. Using economic psychology to shape support instruments of SME seems to be a valuable option in strengthening innovation development drivers of Polish regions. The above description of the research in this area covers only a part of examinations and part of achieved results. However it allows forming also several precise conclusions:

1. The research demonstrates that using experimental simulations can produce results which could be practically used in building policy instruments with moderated cost at regional levels.
2. The proposed construction of new support instruments should be based on in-depth knowledge in the area of small business development and on real practice in small business conduct.
3. Success rate of behavioural interventions is higher when the initial confidence of SME to policy is low or very low. Introducing measures basing on reputation building, fair approach to development contracts with SME and transparency typically works.
4. Advisory services supplementing financial programs are a good option to convince more good and ambitious entrepreneurs to participate in the programs fostering innovation. It especially works towards women who can change their minds dramatically when get real attention and care.
5. Better information, training and openness to explain difficulties and solve concerns of SME can also help in attracting new potential participants to the programs.
6. The research results demonstrate that cheaper but complicated, complex and sophisticated instruments attract less attention of SME than more expensive but simpler support instruments. SME as program participants prefer to pay more but for products which are totally understandable for them. This is not positive information because SME lose some of their competitiveness in relation to big enterprises. Therefore more financial training for entrepreneurs is required to assure higher level of understanding of new and innovative business financing techniques. This creates a challenge to educational system. This challenge can be addressed by typical e-learning courses and financial software prepared for SME for free use in business and development planning.

It seems that economic psychology and behavioural economics can assist regional policy makers in increasing the effectiveness of development policies supporting innovation in SME. Public policies should address real needs and design achievable development opportunities which are accepted by societies and beneficiaries. Public policies aimed at business community require at least understanding, collaboration and participation. It seems that participation is a key to the success and can be easily assured by in depth learning the business preferences towards different solutions.

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