

Puzzle-approach Learning as Means of Raising Economics' production Function

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Abstract

In terms of scientific observation, one can assume that in most countries of the world people follow or "affiliate to"/elect leaders depending on how they understand economic reality and/or sciences. If people understand the economy well, they usually follow leaders with sound economic qualifications and their countries succeed. Economic sciences remain a significant tool for both economic performance and for democracy resilience, as chance to outweigh in the future. This can also be traced out in the stance that, allegedly economic sciences have been losing significance, which might trigger more undesirable consequences if taken for granted. Competition among the schools of economic thought worldwide keeps getting higher, also among the globally renowned scholars. Nowadays' trend of Problem-Based Learning (PBL) in economics matters for future economists' training, but learning should be important not only when the problem already appears. Competitive advantage and future of economic studies should focus on the "niche" how to avoid problems. Should economic studies focus on learning to resolve problems, a situation might appear, gradually but steadily, that situation(s) might be faced when a key principle of economic studies, predictability, is skipped. PBL seems to be stemming from the classically known case studies in economics learning. That was good for the situation when the physical labor accounted for over 80 per cent of the economic operations worldwide. Is this approach plausible so much in a modern economy, with more than 80 percent of intellectual labor?.

Key words Puzzle-Approach Learning, intellectual labor, economics' production function, case studies, economics of education, classical economy, mathematics utility

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Introduction. Literature review

When peoples' understanding of economic sciences leaves much to be desired, they follow populists and/or all sorts of "producers" and propagandists of unreasonable promises. Typical examples of poor economic understanding can be the notions of alleged "negative effects of over-education" (Cicea & Dobrin, 2005, p. 50), instead of the need for *adjustments to qualifications disequilibria*; "market dictatorship" and/or "rigid labor market" (Loghinova, E., 2012, p. 7) - instead of *market as important source of analysis for policy-making*, and the like. Usually one can meet these clichés being broadcasted in mass media, or while reading scientific publications of the poor countries. The market may not function as some sort of "dictatorship", or be "rigid"; the market is an important source of information for analysis, for debates, for critical thinking development and decision-making in pursuit of life quality improvement. *The market is first and foremost a reflection of the quality of education policies and teaching practices*, of how education policies are valorized in various countries, how the latter train and prepare learners to understand, react and perform depending on the information appeared and/or depending on the quality of information; depending on how it evolves and changes. The market should not determine what to teach and how to teach in the education process. *The education strategies and/or system should "predominate" upon the market, not vice-versa*. The market is a reflection of the extent to which

the innovations can be valorized by peoples at large, by means of creativity, and/or whether there are enough societal capacities to *produce their own ideas, inventions and innovations*.

The market is a reflection of the purchasing power of the certain countries' population, and/or benefit from various levels of International Economic Integration (IEI), the latter being an attractive process both regionally and worldwide. Haberler described the decade after 1957 as a period of the "age of [IEI]", and "by December 2008 - 421 Regional Trade Agreements had been notified to the WTO, and 230 of these are still in force" (El-Agraa, Ali M., 2011); although very challenging, IEI keeps being very attractive worldwide.

The market is a source of information about how much the countries and/or companies can (i) produce useful ideas and (ii) if they have capacities to react to the innovations that appear in other countries, and how far they can expand throughout the world, wherever there is economic culture of openness and purchasing power.

The issue of "economics production function (EPF)" raised in 2006, that "the widespread belief among economists of the large effect of economics on society is [...] not based on any convincing empirical evidence" (Frey, 2006), might have been misleading to believe that, the debates about the role and significance of the economic sciences correlates strongly with the diversity of political systems in the world (see the concepts of "political environment", "political ideology" and "political freedom" for a discussion, in Daniels *et al.*, 2019). The author believes however, that the concept of EPF is implied, *inter alia*, not by missing *convincing empirical evidence* on the effect of economics on society, but rather - by the problem of (i) *distribution* and (ii) *lack of skills to adjust to economic disequilibria*, as significant components of the overall economic sciences (see Wealth Inequality in America for a discussion).

Over and above, the author claims that the EPF correlates closer with the attitude and/or openness of many governments towards (i) applying Economics of Education (EE) as both scientific discipline and grounding pillar in their public economic policy-making; and hence, (ii) to what extent they manage to employ, in order to make possible EE contribute to raising the EPF.

Frey's claim of the alleged missing *convincing empirical evidence* (Frey, 2006, p. 2) on the effect of economics on society, was not a sole case. The economic sciences evolvement has been facing much more criticism by many other scholars, and their stance seems to be more than plausible. LSESU Economics Society (2015) - "Too much maths too little history-the problem of economics", McMaken (2015) - "Economists Don't Use Mathematics "the way physicists or biologists or engineers use it", Deist (2016) - "The Broken State of Modern Economics", and Salerno (2016) - "Economics is Broken", are only a couple of criticisms, to mention just a few. Noticeable however is that, all of the above have approached the mistakes committed in *economics teaching and studying*, occurred in the countries hosting the leading educational establishments of economic studies in the world – USA and UK. One more scientific source unveils even longer historical claims about the quality of teaching economics. Keynes (1935, p. 149) in "The General Theory of Employment, Interest, and Money" claims that: "Too large a proportion of recent "mathematical" economics are mere concoctions, as imprecise as the initial assumptions they rest on, which allow the author to lose sight of the complexities and interdependencies of the real world in a maze of pretentious and unhelpful symbols."

Since 1935 to nowadays' quite a few university trainers use excessive mathematics in economic education not because they follow the *aim of valorizing economic education* to the benefit of trainees, and societies at large - that should be major purpose of teaching - but because they *personally like* to use mathematics when "telling stories" in the class (see LSESU, 2015 for a discussion). One of the significant problems of teaching economics to the masses is that, the economics teachers' corps could possibly disregard a, may be "atypical", but scientifically recognized problem, that "... for a significant proportion of [...] children something seems to go wrong once they are 'taught' maths. Either they fail to develop their skills further or they lose even those skills which they have. Furthermore, they develop almost a phobia about anything with a number or an equals sign in it. Even totally straightforward explanations of simple operations cannot penetrate." (Cameron, 2016, p. 121). Thus, making a *strong correlation* between the mathematics and economics seem to be redundant, not least because a significant proportion of citizens seem to be discouraged of learning economics, because they seem to believe "they can't...", once it happens something to go wrong after being unlucky of having a good teacher of mathematics.

On the other hand, a closer look into the historical evolvement of the global economy one could trace out that, there is strong link between the emergence of the Economics of Education as science, in 1950s, and the particular distinct tempo of Global GDP growth (see Munteanu, 2016 for a discussion). The growth has been going from US\$ 4,082 trln. in 1950s to US\$ 80.27 trln.; (approx. 127.8 trln. international dollars in terms of PPP) (Daniels, J. *et al.* (2019) & Global DGP), *i.e.* over 20 times growth, compared to about 4 times in the previous 6,5 centuries.

Despite the fact of particular economic growth of the Global GDP since 1950s to 2019, which might prove unjustified criticism of economic sciences, the latter suggests that the problem is still quite big. The problem lies not so much in the *lack of raising EPF*, but in the extremely diverse quality of economics' teaching, which causes in quite a few cases, a bottleneck for the EPF rather than raising it as development factor, extreme *inequality* being a plausible reason to claim so (see Politizane, 2012 for a discussion). The problem seems to lay mostly in some kinds of *economics' teaching that eventually shape "some sorts of" learning disorder*, instead of motivation and/or attractiveness. The *problem of disequilibria* aggravated even more, because researches are not conducted in most of the poor countries of the world. *Economic disequilibria* is usually left at the latitude of the general observations of the public, interpretations through the angle of poor knowledge and understanding of economic sciences, and thus, creates a lot of tension and causes of potential conflict; at both country level(s) and internationally. Even people in capacity to understand, in most countries, facing a pressing limitation of good statistical data, of their own countries, face a need to infer about income inequalities in their countries mostly *obliquely*, from studies made in foreign countries, say USA, which may be not be always relevant enough for good policy making in a poor country.

The criticism seems to deserve attention indeed in terms of limitations of the *economic valorization of economic sciences*, not least because the problem of excessive economic disequilibria may, still, be a pressing issue, and undermining for the overall global peace and stability; thus, quite a threat to further evolvement of the overall global economy.

1. Economic valorization of learning economics by puzzle-approach

The problem of economic sciences drawbacks has a long-term historical background, and sustainable actions should be undertaken in order to improve its benefits. In his book "The Capital" Karl Marx wrote: "...what distinguishes the worst architect from the best bees is this, that the architect raises his structure in imagination before he erects reality. At the end of every labor process we get a result that existed in the imagination of the laborer at its commencement" (Tucker, 1978). Marx admitted the significance of imagination as an *only human faculty*, but did not seem to raise the point to the level of acknowledging, that imagination can be *cultivated* by means of education. A problem of EPF is the need to teach economic sciences not merely through the angle of knowledge "gaining" and to remember and reproduce big amounts of figures and charts, but rather, through the angle of - what kind of *imagination* do learners get, shaped both based on, and by means of, economic sciences contents and teaching? *Economic education should be focused mostly on the aim to keep training economic logic, in biggest possible dimensions, constructively, rather than mere attaining knowledge of economics.*

Mathematics modeling approach in economic studies, that has been being applied extensively, seems to have been "good" at deepening into the some segments of knowledge, of some narrow aspect(s) of an economic situation; something like Model B, or any of the three clusters on the Model A (Fig. 1), (Ambrose, S. *et al.*, 2010, p. 50).

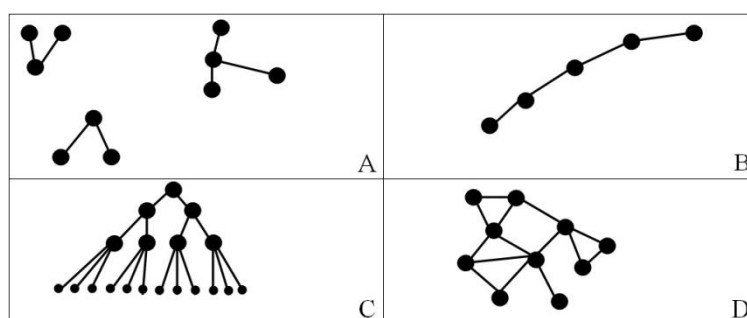


Figure no. 1. Models of knowledge creation

Source: Adapted from Ambrose *et al.* (2010, p. 50)

The approach above, however, did not help make links between those "skill-clusters" into something more consistent, the learners may have not been being guided towards an aim like Model C, without a good understanding/visioning of the "overall envisioned picture of the puzzle", *i.e.* "holistic picture". Or, the aim of economic education is obvious - *better economically assured life quality and peace-keeping*. The approach above does not seem to have developed skills of a good *cause-and-effect analysis relationship* in the economic reality. Developing *sound*

economics learners' imagination, and helping them anticipate potential economic problems like Model C, should also be part-and-parcel of the economics training. Model D suggests some sort of learning that looks like “consistent” too, it is good in terms of making links between the components of a “bigger economic picture”, but it is still quite unpredictable, uncertain, *i.e.* it is not sustainable enough to be plausible to rely upon. *Mathematics modeling approach* in economic studies seems to have been spending much more time on “anticipation”, and less time on defining the root-problem of poverty in many countries, which seems to have implied considerable waste of time and resources.

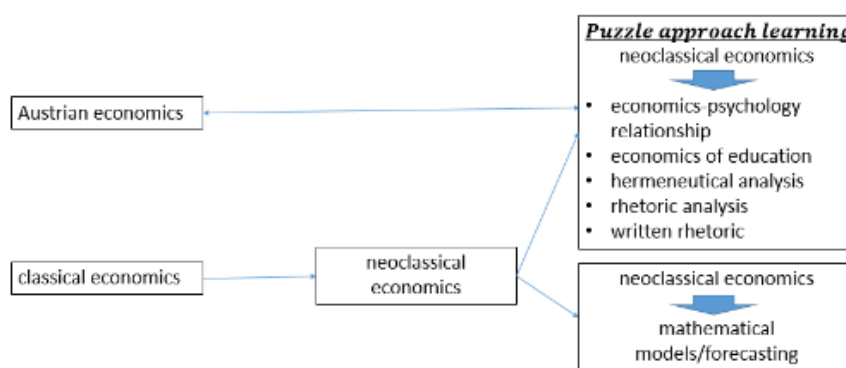


Figure no. 2. Puzzle approach learning model

Source: developed by the author

The Puzzle Approach Learning (PAL) of economics appears as both a *synthesis* and synchronization of the *neoclassical economics* focused on: (i) relationship between economics & psychology, (ii) economics of education, (iii) hermeneutical analysis, and (iv) rhetoric analysis/written rhetoric of economic contents (Fig. 2), which can be started to be built up from/by any of the “piece(s)” of contents. It aims to meet the requirements of nowadays’ pressing situation of extreme economic disequilibria, which makes possible raise the chance of EPF by means of (i) training advanced economic logic of future economists in unpredictable real life situations, and (ii) make possible cover more significant layers of poor countries’ societal groups in learning economics (see also Munteanu, 2018, p. 19, for a discussion). PAL can alleviate the international economic tensions by making more access to economic resources by means of *better clarity* in terms of the aims of economic education, benefits and unavoidable reliance on the *cause-and-effect* understanding of the life quality issues; it can diminish the influence of quite a few religious leaders on the aspects of public discourse about life quality.

The future business class trained with a view to make decisions on foreign direct investments, by taking into account *Returns to (Investment in) Education*, will materially improve the future of International Economic Relations and/or integration sustainability, by means of enhanced skills for decision making, compared to *classically approached* analysis based on 9 indicators only, as suggested by Daniels et al. (2019, p. 167, Table 1). Likewise, the poorer countries in competition for FDI, will feel motivated to keep highest possible rates of RE, in order to be more attractive to investors. This way will unleash many societal inherent human resources that may not have been employed so far, will create better chances for economic development from within of those nations, which may also diminish the need for ODA to countries impoverished by economic culture limitations. A broader discussed and good understanding of the RE for economic analysis, by future decision makers and business class, may entail significant *time saving*, or, a good trend of the RE in a country might easily substitute the need to spend much time on good understanding of at least several of the 9 indicators; for strategic investors, first and foremost.

The *intellectual value* that the study of economics could raise among the students’ category - who like mathematics in economic forecasting - might significantly more raise the intellectual value of the students who eventually would like to study economics based on PAL (Samuelson, 2012).

Table 1. Key Components of Economic Analysis

	<i>Dimension</i>	<i>Specification</i>	<i>Implication</i>
1	Balance of Payments (BOP)	Summary of an economy’s trade and financial	Indicates if a country has sufficient savings to pay for

	<i>Dimension</i>	<i>Specification</i>	<i>Implication</i>
		transactions, as conducted by individuals, businesses, and government agencies, with the rest of the world.	its imports as well as if it produces enough income to finance growth.
2	Deflation	General decline in prices, often caused by a reduction in the supply of money or credit or declining aggregate demand.	Slows economic growth; anticipating lower prices, consumers defer purchases, thereby risking a deflationary spiral. Increases the real value of debt.
3	Foreign Investment Direct	Controlling ownership in a business enterprise in one country by an entity based in another country.	Promotes development, job expansion, industrialization, and exports. Transfers skills and technologies.
4	Income Distribution	The distribution of income among a nation's population; estimated by the Gini coefficient.	Equality opens opportunities whereas inequality promotes debt, stress, and risks.
5	Inflation	The sustained rise in consumer prices measured against a standard level of purchasing power.	Influences interest rates, living costs, consumer confidence, and, ultimately, political stability.
6	Misery Index	The sum of a country's inflation and unemployment rates. The higher the sum, the greater the economic misery.	Higher misery discourages pending and investment in the face of growing austerity.
7	Poverty	Multidimensional condition whereby a person or community lacks the essentials for a minimum standard of well-being and life.	Persistent poverty destabilizes performance and constrains potential. Creates stress points that challenge civil society.
8	Public Debt	The total of a state's financial obligations; measures what the government borrows from its citizens, foreign organizations, foreign governments, and international institutions.	Decreasing debt opens growth opportunities. Growing debt signals increasing austerity, rising taxes, and, if uncontrolled, debt crises that impose political, economic, and social costs.
9	Unemployment	The share of out-of-work citizens actively seeking employment for pay relative to the total civilian labor force.	People gainfully employed testify to the competency of policymakers to sustain a productive economy. Persistent unemployment spotlights government

	<i>Dimension</i>	<i>Specification</i>	<i>Implication</i>
			ineptitude.
		↑	↑
10	Returns to (investment in) Education	RE shows the economic benefits of the population of a country resulting from government investments in education.	Indicates if a country has a productive education system and if the business, and if overall economy of a country, have chances of sustainable development.

Source: Adapted from Daniels et al. (2019).

by means of “*strictly useful*” calculations for analysis for better decision making. By raising the decision making ability (*ibid.*, min. 1.15), it can diminish the gap between the demand for higher quality labor force and unemployment rate in quite a few countries of the world.

Using the RE index for economic analysis might produce significantly more benefits for the overall economic analysis of a country, than, say *misery* and *poverty* indexes, at least.

If, according to Fray (2006, p. 4), the aggregate economics production function, *i.e.* “the state of economy S can be modeled to depend on three input factors: economic theory E, other social sciences O, and additional factors A: $S=f(E, O, A)$ ”,

EPF can be made more convincing for empirical evidence, by the model as follows:

$S=f(E, Ee, O, A)$.

In the latter *Ee - economics of education* – appears as the “core” component, for better acquaintance with the discipline, deeper understanding for better interpretation, and making more effective discussions about education by the business class firstly, before one could expect better quality involvement in discussions about education quality, by the people at large.

A particular complementary stance on this issue was unveiled in February 2014. A group of researchers from the Stanford University, headed by Landy Joshua (Landy et. al., 2014), professor of French and comparative literature, co-director of Stanford’s Initiative in Literature and Philosophy, published the result of a research, which concluded *inter alia* that: “The best we can say about literature is that its effects are not reliable [...] Literary fiction helps us develop additional schemas, other ways of seeing the world different from our own [...]. Does Reading Literature Make You More Moral? [...] literature plays on our emotions instead of giving us rational reasons to adopt new beliefs, so we can easily be manipulated by it. Getting people to change their beliefs based on emotions is not an unambiguously positive thing: “When I do it, it’s called persuasion. When you do it, it’s called rhetoric. When they do it, it’s called propaganda””.

The latter strongly correlates with Samuelson’s definition of economics’ studies benefits, and might suggest how time management of the trainees could be scheduled, in order to gain more benefits by same or less amount of effort. It is building-up chances to avoiding the risk signaled by the World Bank, that: “By 2030, at least half of the world’s poor people will be living in fragile and conflict-affected settings, [that] the impact of FCV is particularly profound on the most vulnerable people and communities, whose livelihoods and economic opportunities are threatened”. A significant component of the Action Plan to address this problem should be, to allocate more money for replacing educational contents for the poor, that produce unreliable effects, *i.e.* a *professionally-designed shifting from literature fiction to more economic sciences*. There are at least several, but worth applying ways that can provide for more chances of duly enhancing investments valorization; the PAL is quite promising in this regard.

Eventual broader use of the PAL could challenge production of many other spillover effects of both social awareness, consciousness, and attention paid to the value of academic degrees, so that *ethnocentric* and/or *polycentric* policies of employment (Dowling, P.J. et al., 2013), might be replaced by taking into account the *international rating of the universities* the candidates get degrees from. This might also enhance resort to more *meritocracy* in international labor market.

Conclusions

1. EPF is not a problem of the invoked “uselessness” of economic sciences, but rather of the lack of good enough teaching of economics sciences, particularly in poor countries.
2. EPF is a significant argument that in order to raise it, Economics of Education should become part-and-

parcel in teachings for all the departments of economic sciences in the countries with critical economic situations.

3. EPF enhances understanding of why Overseas Development Assistance (ODA) should include the assistance of the aim, to raise economics teaching quality in the countries impoverished by economic crises.

4. University trainers of economic sciences should take courses of economics of education, for raising their potential to raise the EPF.

5. PAL helps the learners to better *clarify* the significance of cultivating their imagination in line with, and in the process of, economic studies.

6. Applying PAL in economic studies may not “mandatorily” need *specifically adapted books of economics* for early and mid-aged learners; most of economics learning can be done by means of discussions of scientific and/or media articles, on comparisons between various countries, by gradual and sufficient explanation of various economic terms/definitions that are faced during the studies, for higher level discussions, clarity refinement and idea production.

7. Analysis of FDI decisions by broader understanding and taking into account the RE will considerably curtail violation of Intellectual Property Rights worldwide, and raise the awareness of the importance of investments in idea production and creativity advancement.

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