

# ON A TRADE-OFF AUTONOMY - SYNERGY IN THE ECONOMIC INTEGRATION IN EU

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## **Abstract:**

*The European construction implies a certain degree of homogenization, both institutional and economic (see, for example, the process of economic nominal and real convergence). But, as it is well-known from theory of systems, the synergy effects come particularly inside the heterogeneous systems. The paper examines such issue, from three perspectives: the abstract supra-systems which integrate distinct systems; the concrete European Union integrated system; the desirable European Union which should maximize the synergic effect of integration. The main conclusion of the study requires the national (at least economic) systems should exhibit some a degree of autonomy (both institutional and economic) in order to reach the greatest beneficial of the integration process for all member states.*

**Keywords:** *European Union, economic integration, synergy, autonomy, optimization.*

**JEL Classification:** *E02, F02, K00.*

## **Preamble**

The problem of an economic integrated system, like European Union (Hooghe et al., 2001) (which the paper will be focused on) can be reduced, from an abstract point of view, to the problem of any integration of systems, no matter their nature or sizes. In fact, the mentioned problem can be described in some steps as followings:

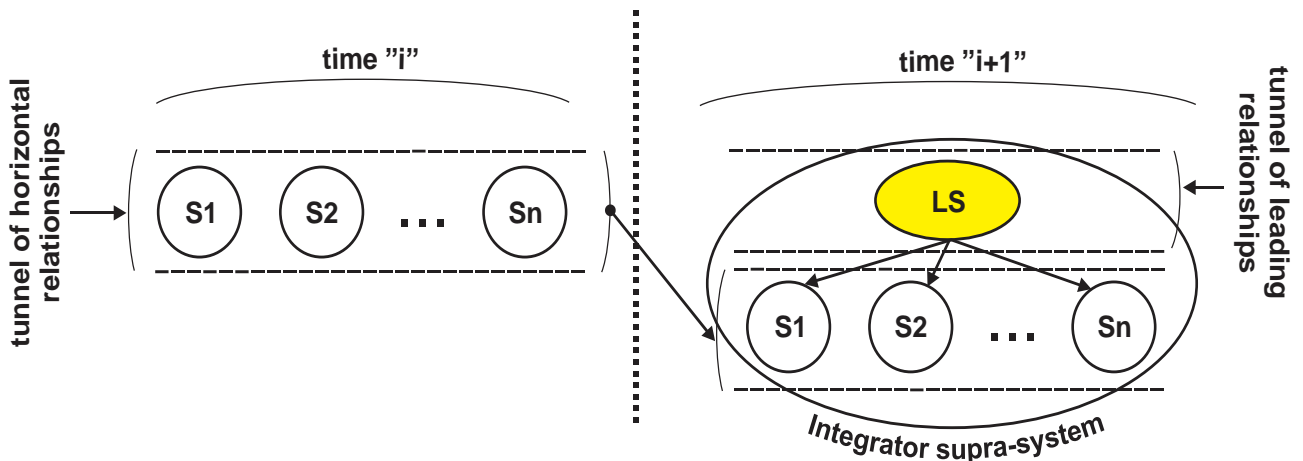
- be given  $n$  systems, no matter their nature and size;
- the  $n$  systems can be integrated in two distinct ways: a) by including them into a unique system that exists separated from the  $n$  systems; b) by putting together the  $n$  systems, by a some procedure, so that, precisely by this putting together a new system is born, namely a system that includes the given  $n$  systems;
- for moment, is not of interest the very causality (or reasons) for which the given  $n$  systems come to be integrated in such a supra-system;
- also, it is not of actual interest here whether such an integration into a supra system has a formal procedure (or decision) or, by the contrary, it is a pure emergent process.

To be observed that, in both cases, a new system becomes of interest and, in both cases too, the initially given  $n$  systems become component elements of the newly born integrator system. Regardless of that the given  $n$  systems were or were not in some relationships (of course, such relationships cannot be than of horizontal orientation<sup>68</sup>), in the new state of entering a supra-system, necessarily occur hierarchical relationships between the integrator supra-system and the integrated sub-systems. From system theory perspective (Luhmann, 2012), we have the process synoptically shown in Figure 1 ( $Si$  means initially  $i$ ;  $LS$  means leading system, which is generated by the very process of integration).

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<sup>68</sup> The horizontal orientation of the relationships between two or more systems means that there are no hierarchy between (or among) them.



**Figure 1 - The abstract process of integration system into a supra-system**

Source: Author

## Paper's Objectives

The paper has three main objectives: a) to provide a logical examination of three concepts involved in the research, namely heterogeneity (vs, homogeneity), synergy (Mele et al., 2010), and autonomy of an integrator supra-system which embeds a number of sub-systems; b) to propose a mechanism through which the autonomy is causally generated by heterogeneity; c) to qualitatively apply the results obtained in the matter of pair heterogeneity – autonomy to the particular case of European Union construction (Calleo, 2003), including the predictable impact of COVID-19 pandemic.

## Methodology

The methodology used to conduct the research is focused on the logical methods and instruments (for example, by using the sufficient predicates when needed concepts are defined or examined in their functioning). Although such a methodology is preponderantly general and abstract, it has, in the same time, the potential to be applicable to any particular case, precisely on the basis of its abstract character.

## Research Organization

The research presented in the paper is organized as follows: 1) a discussion on the issue which put into relation the process of integration of sub-systems in supra-systems (no matter the way by which such integration occurs); b) a proposal for the mechanism to pass from heterogeneity/synergy to autonomy of the sub-systems inside the supra-system; c) a discussion regarding the reciprocal opportunity costs between autonomy and synergy; d) a short addressing of European Union case from the point of view exposed in the paper, namely the needed relationship between heterogeneity/synergy and autonomy of the member states.

## Binding Homogenization by Integration

By integration is mandatorily generated a leading sub-system within the new system born, that is, within the supra-system arisen through integration. Thus, a some degree of homogenization of relationships between driven systems (O'Hara & Biesecker, 2003) must (again, in a binding way) occur, since a new logic or new relationships among the driven sub-systems arises, namely a logic which must put together all sub-systems towards getting a (new) common goal of the integrated system (the supra-system). Of course, such a homogenization is more or less possible to intellectually be established or designed. However, by the very functioning of the integrated system, some degree of it will be generated (if we are speaking about social/economic systems, such a homogenization will be institutionally implemented, in the most part by formal imperative

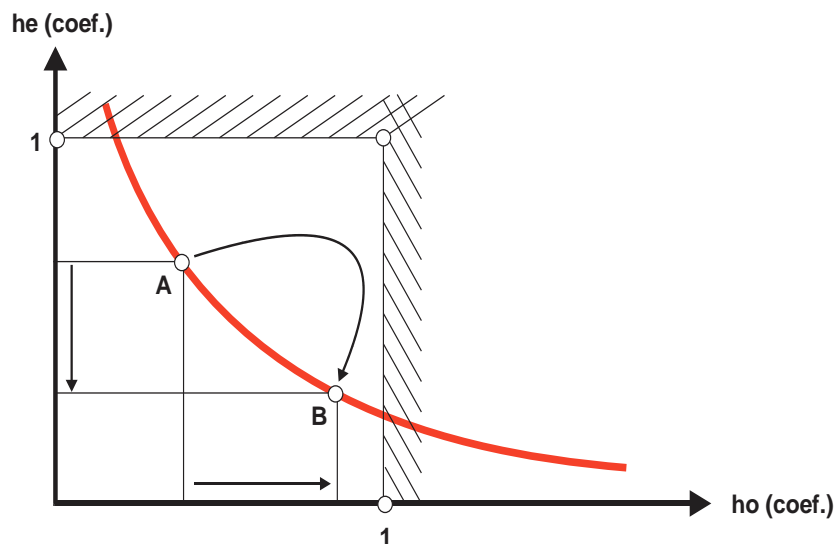
norms). The question that is brought now is: (a) is there an optimum level of the ration between the degree of homogenization and the degree of heterogeneization of the driven sub-systems? And, yes, (b) based on what criterion could be established such a ratio? Below I will present my opinion in that question.

(a) Principled, yes. From the following reasons:

- per se, integration implies to put together, structurally and functionally, a number of systems;
- in order that those systems (*Voicu, 2008*) be integrated, that is, to form a supra-system, it must exist at least a common features of all;<sup>69</sup>
- in the same time, at least one feature must remain distinct regarding each sub-systems, that is, at the supra-system level; this is required by the fact that each sub-system must be observed and registered as distinct from any other sub-system;
- thus, the common feature (or features, after the case) of all sub-systems will be exacerbated, that is, will be made increasingly as common,<sup>70</sup> while the distinct feature (or features, after the case) will become increasingly different among sub-systems;<sup>71</sup>
- the two processes are simultaneous performed and are inversely proportional inter-connected: when one increases, the other decreases and vice-versa;
- a very important peculiarity of the homogenizing/heterogeneizing process is the following: the two phenomena are constrained by the sum of 1 regarding their shares: thus, if we note with  $ho$  the weight (expressed as coefficient or percents) of the homogenization degree of the supra-system and with  $he$  the weight (expressed as coefficient or percents) of the heterogeneization degree of it, then, mandatorily must:

$$ho + he = 1 \text{ (or 100)}$$

- the problem if the relative variation of the two weights are linear or not linear is, also, of significance, thus I will presuppose a non-linear relationship which is modelled by an indifference curve which is downward and convex to origin of the Cartesian system of coordinates in the bi-dimensional space (see Figure 2).



**Figure 2 - Indifference curve between  $ho$  and  $he$  degree variation**

*Source: Author*

<sup>69</sup> As the set theory requires.

<sup>70</sup> This is the very process of convergence in the process of integration, that is, the process of homogenization, in the terminology used here.

<sup>71</sup> This is the very process of divergence in the process of integration, that is, the process of heterogeneization, in the terminology used here.

- based on the indifference curve, it can now be approach the issue of an optimum between  $h_o$  and  $h_e$ ; firstly, it is observed that, since the indifference curve is downward and convex to origin, if the supra-system is preponderantly heterogeneous, that is, the ratio between  $h_o$  and  $h_e$  is very small, then it is necessary that  $h_e$  to decrease less than  $h_o$  increases, so to still remain on the indifference curve; symmetrically, if the ratio between  $h_o$  and  $h_e$  is very high, then it is necessary that  $h_o$  to decrease more than  $h_e$  increases, so to still remain on the indifference curve. This means we could think that an optimum level (in fact, rather an equilibrium point) between the two we weights should be that point in which the marginal variations of  $h_e$  and  $h_o$  are equal. Of course, the precise place of such a point is depending on the curvature (or convexity) of the indifference curve in case;

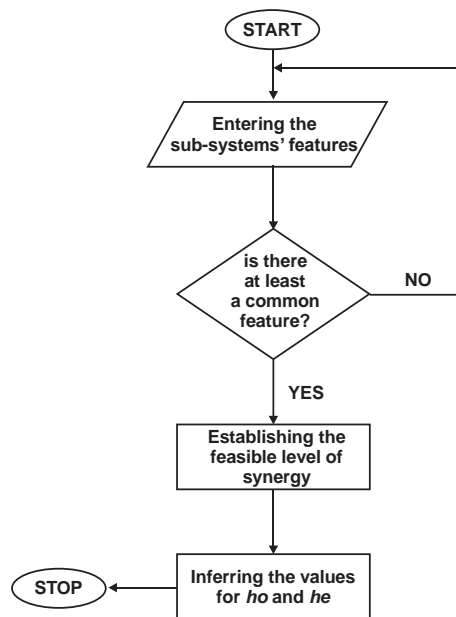
(b)The criterion I propose for the ratio between homogeneity and heterogeneity degrees inside an integrated system (Lin et al., 2017) under a supra-system: the *level of synergy* (as minimum between the possible synergy and the desirable synergy). I will develop below some considerations about this proposal:

- synergy is, as known, one (or more) occurring of property (or properties) at the level of supra-system, which did not previously exist within no sub-system before its integration;
- a problem is arising here: synergy is generated by homogeneity or rather by heterogeneity? I will provide some reasoning:
  - if synergy's property occurs after appearing of the supra-system, and taking into account that the heterogeneity among sub-systems before integration is higher than the heterogeneity after integration<sup>72</sup>, it results that the first cause for synergy's occurring is the homogeneity rising;
  - on the other part, the synergy (like, generally, any property) is generated and maintained by intermediation of relationships between (or among, after the case) entities (systems, phenomena, events and so on); now, it is obvious that the higher the heterogeneity the higher the chance to be developed relationships (of any kind) between (or among) the entities implied;
  - consequently, on the one hand, the homogeneity triggers the arising of synergic property in an integrated system, and, on the other hand, the heterogeneity maintains and replicates such synergic effects;
  - thus, it is obvious that the optimum threshold (if any) between  $h_o$  and  $h_e$  in an integrated system should be based on the synergic effect of the integration in case
- whether the synergic effect (Chicharro & Panzeri, 2017)(more precise, the minimum between the possible and desirable synergic effect, as mentioned above) should be the criterion to establish the ration between  $h_o$  and  $h_e$ , then we must talk about how exactly such an establishment could be done; I think the procedure which is applied must ensure that the synergic effect is neither too high nor to low<sup>73</sup> because, if it is to high, the difficulty to manage the supra-system increases (possible) exponentially, and, if it is too low, the benefit from integration does not justify anymore the integration in case (Figure 3 exhibits a logical scheme to be pursued in handling the issue of the synergy threshold in establishing the ration between  $h_o$  and  $h_e$ ;

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<sup>72</sup> Remind that at least a common property must arise among sub-systems in order that integration be viable, so the new heterogeneity (under the supra-system) mandatorily is less than the old heterogeneity (without the supra-system).

<sup>73</sup> I mention that expressions „too high” or „too low” are not of theoretical (necessary) nature, but of empirical (contingent) one, that is, it is depending on the actual kind of the supra-system in case as well as on the general context (the environment) of that supra-system. Thus, the content of the two qualifications is provided by each historical occurring of the issue.



**Figure 3 - Logical algorithm to establish the ratio between  $h_e$  and  $h_o$ .**

Source: Author

## Passing from Heterogeneity to Autonomy

We have already seen that synergy (Chicharro & Panzeri, 2017) needs heterogeneity inside the supra-system that integrates a number of sub-systems. Now, the question is: how the supra-system passes from heterogeneity to autonomy, so building up the pair autonomy – synergy, which is, in fact, the very theme of this paper. Firstly, we must define, no matter how approximated, the concept of autonomy of a sub-system within an integrator supra-system. I think the following attributes must be accomplished by such a sub-system to bear some a degree of autonomy:

- *structural self-sustainability*, that is, the potential to replicate their basic functions; as the function is always the result of the structure, this comes to require the structural self-sustainability;<sup>74</sup>
- *resilience* to internal perturbations;
- *robustness* to external perturbations;

Based on the three attributes for the property of autonomy, I shall analyse now the logical possibility (or, if the case, the logical necessity) of passing of a supra-system from synergy (or, which is the same, as shown above, from heterogeneity) acquiring to autonomous functioning. This analysis will be provided as follows:

- if some degree of heterogeneity exists inside the supra-system, this means some number of sub-systems are different among them at least regarding a specific features;
- if an internal perturbation occurs at the supra-system level, its propagation will be blocked or, at least, slowed down by the very fact that some sub-systems do not „conduct” that perturbation because their structures which differ from the structures from which the perturbation in case comes;
- even if the perturbation succeeds in the first instance to penetrate the new sub-system, the latter’s heterogeneity compared with the sub-system that acts as input will generate a restoration of the previous state of the sub-system penetrated – which is precisely the content of the property named resilience;

<sup>74</sup> Of course, one could go further and ask more, namely, the attribute of *auto-poieticity*. For the objectives this paper aspires accomplish, such a development is not necessary.

- now, if an external (that is, from outside of the supra-system) perturbation hits the supra-system, no matter through what sub-system, the heterogeneity of these sub-systems will act according to the following „algorithm“:
  - the first impact will be entirely received by the sub-system „targeted“ by the perturbation;
  - when the impact must be transferred from the sub-system impacted to another, the structural heterogeneity will cause either a diminishing of perturbation’s intensity or a reduction of the duration inside which the perturbation acts – so, in other words, will cause a diminishing of the perturbation’s quantity;
  - if the above described phenomenon of diminishing of the perturbation’s quantity is replicated by further passing from a sub-system to another, this diminishing will eventually become equivalents with the disappearing of that perturbation – which is precisely the content of the property named robustness.

Thus, I proved that a given degree of heterogeneity in an integrator supra-system helps (if not, in fact, ensures) to gain the autonomy of the sub-systems in case.

Of course, the next question that immediately can be put is: is there a degree of heterogeneity which maximizes such an autonomy acquiring? Or, equally, is there a threshold of heterogeneity of supra-system above which the autonomy gained from heterogeneity could be compromised? Answering these questions will be, however, postponed for further interventions, because the space constraints for the paper.

### **On the Reciprocal Opportunity Costs Autonomy – Synergy**

Like in the case of any decision, there is an opportunity cost of any choice. In the case of this paper’s discussion, the question is: which is the opportunity cost of ensuring some a degree of heterogeneity (or, likewise, of synergy) inside the supra-system and, reciprocally, which is the opportunity cost of ensuring some a degree of autonomy of the sub-systems embedded into the supra-system? My opinion is the following:

- (a) the heterogeneity increasing of sub-systems leads the supra-systems to renounce to the power of (the unique) leading sub-system generated by the integration process. Thus, the opportunity cost of heterogeneity of sub-systems seems to be the degree of centralism of the supra-system in case;<sup>75</sup>
- (b) the opportunity cost of autonomy is the loss of the synergy provided by homogeneity of sub-systems<sup>76</sup>, that is, the potential power of the leading sub-system generated by the process of integration.

Thus, it seems, in fact, that the reciprocal opportunity costs between autonomy and synergy are reducible to the variation of the decision power of the leading sub-system arisen as result of the process of integration of sub-systems into the supra-system. This „common exchange currency“ between autonomy and synergy in the integrator systems seems to be very interesting from the perspective of analysing particular integrator supra-systems like European Union, because the issue supplies links to the content of the two treaties which European Union is functioning on.

### **What About European Integration Process?**

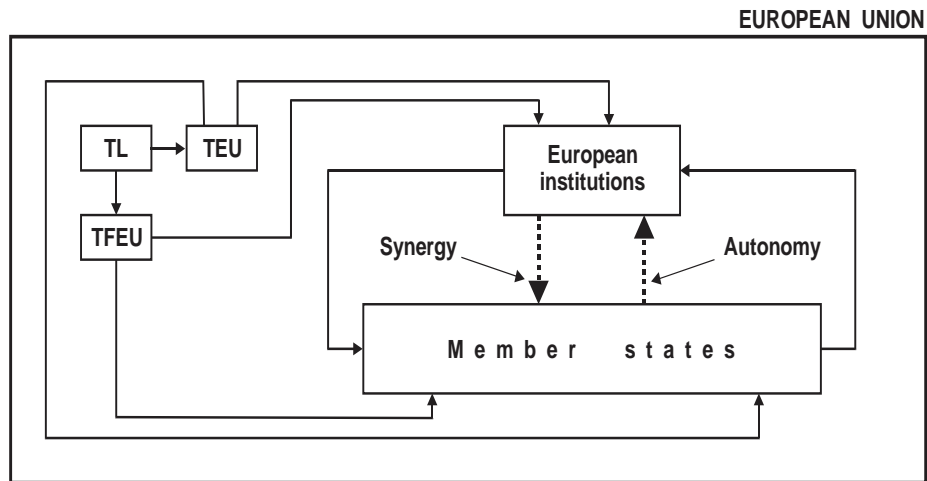
In the terminology used in this paper, European Union is a supra-system that has integrated a number of 27 sub-systems (the member states). From institutional perspectives, the leading sub-system generated by the process of integration consists in the European institutions created in this process: European Parliament, European Commission, European Council and the European

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<sup>75</sup> I remind the reader that synergy is directly (although non-linearly) dependent from the heterogeneity. Thus, in fact, the opportunity cost of heterogeneity is the same with the opportunity cost of synergy.

<sup>76</sup> The suggestion that there is a synergy caused by heterogeneity exactly like there is a synergy caused by homogeneity should be further studied in order to explain entirely the phenomenology of the synergy in integrator systems.

agencies on specific domains of common interest. By the two treaties<sup>77</sup> in force, the prerogatives at the European Union level are shared between the leading sub-system and the member states (*TEU, 2016.*), under three categories: a) prerogatives which is entitled the leading sub-system; b) prerogatives which remain at the member states' disposition; c) prerogatives which are exerted commonly by member states and the leading sub-system or European Union (*TFEU, 2016*). Based on the above results and considerations, the issue of pair autonomy – synergy within European Union can be graphically represented as in Figure 4.



**Figure 4 - How is working the pair autonomy – synergy at European Union level.**

*Source: Author*

## Results and Conclusions

When a supra-system is born by embedding a number of systems, the latter ones must keep at least a specific feature (that is, a feature that is not to be found at other sub-systems in case), and, in the same time, all sub-systems must share at least a common feature which justifies the supra-system forming. Thus, the process of integration sub-systems into the supra-system generates a ratio between homogeneity and heterogeneity of respective sub-systems. Both, homogeneity and heterogeneity cause, at the supra-system level, synergy. Based on synergy, the sub-systems gain some degree of autonomy, concomitantly with some degree of dependence from the leading sub-system which has arose within the supra-system by the very process of integration. In fact, to ensure the autonomy and dependence are the strict conditions of supra-system functioning. Such a mechanism is also found to the particular system of integration in the case of European Union (Piris, 2011). In fact, European Union's problems (including X-exit phenomenon) (Terzi, n.d.) are originated precisely in that ration between autonomy and dependency of member states. The synergy can improve the benefits provided by the integrated system of EU, but, in the same time, dependency from the leading sub-system can bring loses for the member states. The (convenient) equilibrium between the two processes is a question of building up the (institutional) relationship between autonomy and synergy.

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<sup>77</sup> The two European treaties are: 1) Treaty on European Union (consolidated version 2016) – TEU; 2) Treaty on the Functioning of the European Union (consolidated version 2016) – TFEU. The two European treaties are periodically actualized by special treaties agreed inside the European Council (currently, such an actualization is provided by the Treaty of Lisbon – TL).

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