

## Emptiness existence: A free-strategic view

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**Abstract.** We formulate a theorem to always keep within mind on the emptiness existence followed by its mathematical proof, that takes as a base a single axiom named hipoteticity i.e. an element exists *iff* it has a structure.

**Keywords.** Emptiness; Existence; Coalitions; Game Theory.

**JEL.** C70,C71,C72,C79.

### 1. Existence

**Axiom 1[*Hipoteticity*]:**  $\exists i \leftrightarrow \mathcal{S}(i)$   
An element exists if and only if it has structure.

**Theorem 2:**  $\exists \emptyset$   
The emptiness exists.

#### *Proof 4:*

We generate an arbitrary set  $N = \emptyset$  without loss of generality assume that its elements follow the next pattern

$$N = \{1, 2, 3, \dots, j, j + 1, \dots\}$$

note that  $|N| \leq \infty = n$ , where  $|N|$  denotes the number of elements of  $N$  as well known as the cardinality of such set.

Can we write the power set of  $N$

$$2^N = \{\{1\}, \{2\}, \dots, \{1; 2\}, \dots, \{1; 2; 3\}, \dots, \emptyset\}$$

with  $|2^N| = 2^n$ , and we can write the power set of  $2^N$

$$2^{2^N} = \{\{\{3\}, \{4\}\}, \{\{4\}, \emptyset\}, \emptyset, \dots, \{\{1; 2\}; \{1; 2; 3\}; /0\}, \dots\}$$

like this successively until here deducing the inner structure of the emptiness given by such respective pattern, because of contentions following the  $\emptyset \in 2^N$ ; the  $\emptyset, S1$  with  $S1 \in 2^N \setminus \emptyset$ ;  $\emptyset \in 2^N$ ; the  $\emptyset, S2$  with  $S2 \in 2^N \setminus \emptyset, \emptyset \in 2^N$ ;...

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In general the non-random and thus non-random set that is  $V_{i-1}$  that contains the emptiness equal to

$$V_{i-1} = \emptyset \cup \{\emptyset, S_i\}_{S_i \in T_i \setminus \emptyset}$$

$$\text{were } T_i = \begin{cases} 2^N & i = 1 \\ 2^{T_i-1} & i > 1 \\ \text{otherwise} & \end{cases} \mathcal{S}(\emptyset) = \{\dots, V_i, V_{i+1}, \dots\} \text{ and } \exists \emptyset \blacksquare^1$$

### Notes

<sup>1</sup> The emptiness exists is the result whose proof and parallel paths, that could be composed by jumps among them are to always keep within mind.

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