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# AN ANALYSIS OF THE IMPACT OF SOCIAL AND ENDOGENOUS CAPITAL IN RELATION TO COOPERATION NETWORKS IN THE MATO-GROSSENSE AMAZON: THE CASE OF FAMILY FARMERS IN THE MUNICIPALITY OF CLÁUDIA

***[1]Barbara Tairine Campos Gireli and [2]Alexandro Rodrigues Ribeiro**

[1]Departamento de Logidtica do Instituto Federal de Mato Grosso, Master in Economics-Universidade Federal de Mato Grosso, MBA em Gestão de Pessoas – UNICESUMAR, Administrator pela UNEMAT; [2]Departamento de Economia Universidade Federal de Mato Grosso, Especialista em Gestão Ambiental pela PEP/UFRN, Mestre pela UERN, Doutor pelo NAEA/UFPA

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****Corresponding author:***
***Taslim Ahmad***

## ABSTRACT

Small companies increasingly need to seek efficiency and effectiveness in competitive markets, cooperation networks are shown as an option for these, because when they are organized into networks it is possible to optimize resources in search of better results. The present study aimed to carry out an analysis using the Propensity Score matching method, to identify the impact of social and endogenous capital on the group of rural farmers who are or are not part of a cooperation network. In this way, the questionnaire was applied to farmers in the settlements of the Amazon biome in Mato Grosso, located in the municipality of Cláudia-MT. Bearing in mind that cooperation networks can generate a competitive advantage for their participants and that social and endogenous capital have more expressive rates of return than conventional capital, the results showed that farmers who participate in cooperation networks have higher levels of social and endogenous capital.



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# INTRODUCTION

Cooperation networks proved to be an alternative for small and medium-sized organizations to gain prominence from the second quadrant of the 20th century, making structures small and not very competitive, but efficient and effective (CASTELLS, 2010). They play a unique role in family farming, as cooperation networks can provide more significant stimuli for the formation of social and endogenous capital. Having in mind that such stimuli provide more expressive rates of return than when conventional capital is stimulated[1], providing prominence to small properties when they come together.Schultz (1961), Romer (1986) and Lucas (1988), elucidated studies that focus on understanding the growth rates that could not be explained by conventional capital and technological increment, such rates were discussed as the stimulus of human capital that is capable of generating social capital. In relation to endogenous capital, this is presented as a propellant of economic development, valuing local and regional characteristics through stimuli to Local Productive Arrangements (APL), with local and regional development as an externality. The primary objective of endogenous development is related to factors of social well-being, in the economic, social and cultural sphere, influencing the productive factors, having indexed their strategies based on heterogeneous factors regarding the development process, as each society needs to have their economic and social characteristics preserved and worked on in this process (BARQUERO, 2002). It is necessary to understand whether farmers who are part of a cooperation network have a higher social and endogenous capital development index than farmers who are not part of it. Therefore, the objective of carrying out the analysis through the Propensity Score Matching is to identify the impact of social and endogenous capital in the group of rural farmers with the same characteristics that are or are not part of a cooperation network, or be the treated and control group, allowing differentiated evaluation between then. In this way, an approach was carried out regarding the stimuli of social and endogenous capital, in the cooperation networks located in the municipality of Cláudia-MT, which is located 606 km from the capital Cuiabá-MT, belonging to the Amazon biome of Mato Grosso.

1Bourdieu (1985) defines social capital as the aggregate of actual or potential resources linked to the possession of an institutionalized network of more or less common knowledge.

Small Brazilian farmers suffer a series of contingencies, such facts make them have difficulties in accessing technological packages, selling production, among others. In this sense, cooperation networks play a unique role for them because, by organizing themselves in these structures, farmers can reduce transaction costs, thus increasing their competitiveness.

**Social Capital and Endogenous Development:** Theories that refer to economic growth and development seek to explain such phenomena, however, in the neoclassical economics model, despite its great contribution in this regard, there is yet a series of complex and multifaceted contingencies related to growth and development rates, the question caused a gap and questions for new studies with regard to the growth and development of nations. The model presented by Solow (1956) sought to contemplate economic growth attributing these rates to an exogenous technological coefficient, as a key variable to understand how economies grow and develop over time. In order to capture the complexity of such an exogenous technological factor, new approaches emerged such as those from Schultz (1961), Romer (1986) and Lucas (1988), which sought to understand and incorporate the growth and development of nations, which do not was due to the increase in conventional capital.

We can note the growing concern among scholars, since factors such as investment in conventional capital, was not able to ensure the development of nations, causing the first questions and studies to arise regarding human capital and social capital.However, explaining such particularities proved to be an immense challenge at the time, Schultz (1961), in his work on investment in human capital, reports such difficulties, since the human factor could end up being seen only as mere material, and there was still a series of multiplicity of the perception of investment in human capital. In his view, investment in human beings was rarely incorporated into the formal core of the economy, as these normally stick to conventional capital[2]. The neoclassical model that contemplated conventional capital was harshly criticized by several economists such as Lucas (1988), in his work on the mechanics of economic development, the reported that neoclassical models are incapable of portraying economic development and the strong impact of international trade that it induced fast movements towards capital-labor relations and factor prices. The acquisition of knowledge and skills ends up not being seen as social capital [4]. When we talk about social capital, this, through a technical change, may be able to break the paradigm of increasing returns and long-term growth, given that in the absence of technological change, per capita production should converge to the steady state in the long run, in this way social capital can be seen as a model of technological and endogenous equilibrium (SCHULTZ 1961). When analyzing the level of schooling of family or non-family farmers, and its percentage according to the level of education that make use of technical assistance, as a way of explaining the formation of social capital of these farmers. It is possible to notice similarity in the results, and that only the old primary, elementary school and EJA[3] 1st and 2nd grade family farmers receive more technical assistance than non-family farmers, however the difference between family farmers and non-family farmers family members who receive technical assistance or not is less than 2% in all groups, except when we talk about farmers who have graduated or who have a master's or doctorate, these have a difference of up to 11.53%, and non-family farmers are the ones who receive greater technical assistance. It is also noted that regardless of whether they are family farmers or not, the higher the level of education, there is an increasing trend line, that is, farmers with higher levels of education receive more technical assistance. That said, it is necessary to emphasize the importance of the level of education and the use of technical assistance to foster human capital, so that it is able to generate social capital, thus changing the income rates of a region, resulting in greater income levels when compared to investing in conventional capital. A series of eventualities have been noted in relation to market dynamics, as well as the process of industrialization and new conjunctures in the local and regional economy, in this way the Fordist model proved incapable of sustaining such diversities, thus gaining prominence as capital. social and endogenous development.During 1988 to 2002 was experienced, the formation of a new paradigm, this refers to the endogenous development. Through the dynamics of markets and institutions, they provide greater flexibility in the accumulation and regulation of capital, providing political, industrial and regional changes (BARQUERO, 2002). The stimulation of the endogenous capital of traditional communities through technology, can be shown as a driver of economic development, stimulating APL[4] and resulting in regional development. In this sense, there was an expansion of knowledge about the Amazon biome as well as traditional communities, thus providing advances in the scientific and technological frontier.Barquero (2002) reports the importance of capital accumulation in the endogenous development process, for this purpose it is necessary to organize productive systems, as it is independent of issues such as size of organizations and location. In order for capital accumulation and endogenous development to occur, it is necessary to strengthen a local production system, where it is able to establish a relationship with other authors in its surroundings, with these clients being collaborative suppliers.Endogenous development allows for a paradigm shift to occur, in this sense the accumulation of capital plays a fundamental role, for this purpose it is necessary that public and private institutions are strengthened, and consequently the consequences will lead to regional development.

Filho (2001), corroborates the definition of endogenous development, where it can be understood as a process of economic growth, however it must have the continuous ability to add value and regional absorption, so that it is capable of generating unfoldings. and retention of the economic surplus generated in the local economy. As a result, the expansion of employment, and local income. Corroborating this approach, The Institute of Applied Economic Research (IPEA, 2012), developed a conceptual analysis of Amartya Sen's approach, which refers to knowledge as freedom in the approach, it emphasizes the fact that expanding personal capabilities through a governance system, are seen as the ends of the development process, and consequently the process of freedom[5]. Therefore, it is evident that the simple characteristics of growth and development, do not support such approaches regarding social capital and endogenous development, since it seeks the characteristics of economic growth and development, but in a way that has the stimulus of capital. human being, so that it is able to generate social capital, and as a way of gaining competitive advantage, seek the stimulation of regional and local characteristics, thus having a strengthening of the economy as well as the strengthening of its local productive arrangements and regional culture.

# MATERIALS AND METHODS

As for the nature of the present study, it is an applied research having a mixed methodological approach, contemplating aspects of the quantitative and qualitative method. Croswell (2002), argues that the quantitative method aims to examine the relationship between variables, being fundamental as a way of answering the problem in a way that can reduce to a set of variables, controlled through a statistical analysis project, so that ensure measurements and observations in order to test and validate the theory. Regarding the qualitative, according to Reis (2008), it intends to employ various knowledge claims, investigation strategies and data analysis. The method addressed by the study is the *Propensity Score Matching,* however for this purpose a priori a human and endogenous development index was developed.

[2] In Schultz (1961) approach, conventional capital can be understood as non-human capital.

[3] Youth and Adult Education

[4] Local Productive Arrangements

[5] InAmartya Sen approach, freedom is seen as a process of non-deprivation of rights, especially fundamental rights, so the more developed a particular group the nation becomes, the more freedom it becomes.

In this way, the definition by Neiva (2000) was used to define these indices according to the equation:

$$I = \frac{1}{M}\sum_{J=1}^{m}\left(\frac{1}{n}\sum_{j=1}^{n}\left(\frac{Eij}{Emaxi}\right)\right)$$

*I*= It is about each indicator;
*Eij* = Score of the *i-th* variable of the indicator;
*Emaxi* = Maximum score of the *i-th* variable;
*i* = variables that make up the indicator;
*j* = producers;

Subsequently, the estimation was continued through the *Propensity Score Matching* in relation to the indicator, considering that its approach allows comparing a set of variables that received a certain treatment, and variables that do not receive the treatment, they may become described as $Y_i(0)$ and $Y_i(1)$, where *Matching* is intended to reduce the causal effect, at the moment it reduces bias through a non-random selection of the treatment. In the case of the present study, the method estimates the impact of cooperation networks on the social and endogenous capital indicator. Bernal and Pena (2011), describe the impact estimation with the comparison of the treated and control group covered by the following equation:

$$E(Y_i(1)|Di=1) - E((Y_i(0)|Di) = 0 \quad (2)$$

Being:

$Y_i(1)$: this is the potential outcome when the individual*i*, receives treatment;

$Y_i(0)$: this is the potential outcome when the individual $i$, does not receive treatment;

Such a model is intended to estimate a mean dose response , obtaining the mean treatment effect (ATT), since we assume that the remaining y is the counterfactual, $E((Y_i(0)|Di) = 1$ , we get:

$$= E(Y_i(1)|Di=1) - E((Y_i(0)|Di=1) + E(Y_i(0)|Di=1) - E((Y_i(0)|Di=0) \quad (3)$$

For the construction of the sample, the population of 484 families constituted by the Keno and Terra de Viver settlements was considered, considering a sampling error of 5%, and a confidence level of 90%. In this way, the application of 128 questionnaires was established as a sample.

# RESULTS AND DISCUSSION

**Characteristics of the Surveyed Families:** The characteristics of families when we talk about family farmers, it is a fundamental point to understand the conjuncture in which they find themselves, providing a better understanding of the research problem.When analyzing the education and age of the interviewees, we noticed that 48.48% of the interviewees are over 51 years of age, it is also possible to see that 53.84% of the illiterates are over 66 years of age, while the range of 31 to 40 years old corresponds to 18.18% of respondents and this age group complete higher education training, with a share of 46.15%. Still, when we talk about the illiteracy rate found in the research, it is 9.84%, and the national rate in agricultural establishments is 15.45% according to the Agricultural Census (2017), this fact can be explained by the fact that there is a school within the settlement, and transportation to it is also guaranteed by the municipal government of Cláudia (IBGE 2019). That said, the formation of human capital is a significant factor for local and regional development and the formation of cooperation networks. Schultz (1961), Romer (1986) and Lucas (1988), elucidated works that try to understand growth that could not be explained by conventional capital and technology, such achievements were discussed as the stimulus of human capital that was capable of generate social capital.

In this sense, Barquero (2002) reports that the greater investment in human capital is capable of producing an increase in knowledge, which spreads through the productive system, this fact would result in external school economies, which benefit the economy as a whole, thus occurring endogenous development. Human capital cannot be acquired like conventional capital, having as a necessary condition a stable growth rate or an expanding workforce, in the absence of such an assumption human resources are limited to a slow process that requires a long period of maturation. However, the obsolescence of human capital due to technological advances that have occurred in recent decades has as a long-term solution an institutional change in the regular education system (BARQUERO, 2002).

As for the birthplace of the families surveyed, they have great diversity, covering a total of 14 states, with one of the families of the patriarch interviewed came from Argentina. We can see the highlight in the families originating in Paraná, these correspond to the largest portion of the interviewees, in the case of a total of 48 families, soon after we have the families originating in the state of Mato Grosso, corresponding to 21 families, in the state of Mato Grosso do Sul. There is 16 families, Minas Gerais 8, Maranhão 7, Rio Grande do Sul, Bahia and Santa Catarina have 5.The observed migration is explained by the national integration project towards the economic vacancies, this project advertised mainly in the southern region of the country (CÂMARA DE CLÁUDIA, 2020). The regional aspects of a given group can be crucial factors for the formation of the group's knowledge, thus having the endogenous knowledge, which has been perpetuated due to itscharacteristics and the environment to which they were exposed, so that when correctly stimulated by cultural and regional identification, it can become a factor of competitive advantage.

**Table 1. Experience with Agriculture**

| | Frequency | percentage | Accumulated value |
|---|---|---|---|
| first experience with agriculture | 28 | 21.21% | 21.21%% |
| already had experience with agriculture | 104 | 78.79% | 100% |
| Total | 132 | 100 | |

Source: Prepared by the authors.

Another crucial point for understanding the characteristics of the surveyed families is their experience with agriculture, asking whether the place where the interviewees live is their first experience with agriculture. It was found that 104 people who were interviewed already had some experience with farm, while 28 of them never had any experience they use the experience acquired in the past, as can be seen in Table 1, thus reinforcing the importance of empirical knowledge for the formation of endogenous capital.

***Production Structure:*** The structure of the production chain within the settlements it is a factor of competitive advantage or disadvantage, relating directly to the local production system, so that it is able to establish relationships with the actors in its surroundings. In this sense, agglomerations of economies have advantages, due to the prcatleimity of the agents, and normally such a structure involves some type of productive specialization in the region. Also remembering that each territory requires specificities as instruments, in order to ensure the proper functioning of the local economy, thus increasing competitiveness, providing the diffusion of innovations, organizational capacity, qualification of human capital and flexibility of the production system (BARQUERO, 2002; JOSEPH et al. 2011).
The MT REGIONAL program (2014) developed a study with the aim of identifying the regional vocation together with the production chains, in the region called Alto Teles Pires, which includes the municipality of Cláudia, namely:

**Table 2. Average Difference Test Having Being Part of a Cooperative and or Association as Variable**

| Control | | | Treaties | | difference | |
|---|---|---|---|---|---|---|
| Social index and endogenous | .5171627 | .0225374 | .6112815 | .0210689 | -.0941188** | .0308169 |

Source: Prepared by the author using STATA software; Note: * significant at 1%, ** significant at 5% and *** significant at 10%.

**Table 3. Variables Used in the Model for Pairing**

| Variables | Average | Std. Dev. | Min | Max |
|---|---|---|---|---|
| Illiterate | .0984848 | .2991042 | 0 | 1 |
| 6th to 9th Year of Elementary | .1060606 | .3090882 | 0 | 1 |
| Incomplete High School | .1287879 | .3362411 | 0 | 1 |
| Medium Complete | .1590909 | .3671542 | 0 | 1 |
| Graduated | .0984848 | .2991042 | 0 | 1 |
| Catle | .6742424 | .4704426 | 0 | 1 |
| Source of income | .75 | .4346623 | 0 | 1 |
| Passion fruit | .2575758 | .438965 | 0 | 1 |
| First experience with agriculture | .2121212 | .4103676 | 0 | 1 |
| Children (any age) | .9090909 | .288575 | 0 | 1 |
| Spouse | .8106061 | .3933139 | 0 | 1 |
| Property | 1,030,303 | .5787509 | 0 | 4 |
| Time in settlement | 805,803 | 3,230,152 | .08 | 14 |
| Age | 4,876,515 | 1,381,053 | 17 | 81 |
| Association or cooperative | .5151515 | .5016743 | 0 | 1 |

Source: Prepared by the author.

**Table 4. Impact of Associations and Cooperatives on the Share Capital and Endogenous Index**

| Matching Method | index of social and endogenous | T statistic | Treated | Control |
|---|---|---|---|---|
| Nearest Neighbor (2) | 0 .61128** | 2.43 | 68 | 64 |
| Ties | 0 .61128 | 1.55 | 68 | 64 |
| LLr | 0.61128 | 1.41 | 68 | 64 |
| Radius | 0 .61128* | 3.97 | 68 | 64 |
| Kernel | 0.61213*** | 1.68 | 67 | 64 |

Source: Prepared by the author using Stata software; Note: * significant at 1%, ** significant at 5% and *** significant at 10%

**Table 5. Probit Radius Regression**

| Variables | Coefficient | Std. Err. | z |
|---|---|---|---|
| Illiterate | -0.7823223*** | .4324722 | -1.81 |
| 6th to 9th Year of Elementary | -1,121,473* | .441359 | -2.54 |
| Incomplete High School | -.1765502 | .410794 | -0.43 |
| Medium Complete | .0243059 | .3871236 | 0.06 |
| Graduated | .1401751 | .4442134 | 0.32 |
| Catle | -.62562** | .2754576 | -2.27 |
| Source of income | .0440657 | .2848518 | 0.15 |
| Passion fruit | .1891198 | .2827647 | 0.67 |
| First experience with agriculture | -.8002358** | .3287739 | -2.43 |
| Children (any age) | .0123148 | .4680509 | 0.03 |
| Spouse | .1074553 | .3285231 | 0.33 |
| Property | -.2880621 | .2394048 | -1.20 |
| Time in settlement | .02027 | .0398141 | 0.51 |
| Age | -.0609192 | .0972651 | -0.63 |
| Constant | 1,037,865 | .8529064 | 1.22 |

Source: Prepared by the authors; Note: * significant at 1%, ** significant at 5% and *** significant at 10%.

**Table 6. Average Difference, Before and After Matching, in the Treatment and Control Group**

| | Before *Matching* | | | After *Matching* | | |
|---|---|---|---|---|---|---|
| Variables | Treatment | Control | p>\|t\| | Treatment | Control | p>\|t\| |
| Illiterate | 0.07353 | 0.125 | 0.47 | 0.07353 | 0.125 | 0.325 |
| 6th to 9th Year of Fundamentals | 0.05882 | 0.15625 | 0.070 | 0.05882 | 0.15625 | 0.112 |
| Incomplete High School | 0.11765 | 0.14063 | 0.696 | 0.11765 | 0.14063 | 0.747 |
| Medium Complete | 0.16176 | 0.15625 | 0.932 | 0.16176 | 0.15625 | 0.944 |
| Graduated | 0.11765 | 0.07813 | 0.45 | 0.11765 | 0.07813 | 0.548 |
| Cattle | 0.58824 | 0.76563 | 0.030 | 0.58824 | 0.76563 | 0.082 |
| Source of income | 0.76471 | 0.73438 | 0.69 | 0.76471 | 0.73438 | 0.743 |
| Passion fruit | 0.27941 | 0.23438 | 0.558 | 0.27941 | 0.23438 | 0.635 |
| Firs experience with Agriculture | 0.13235 | 0.29688 | 0.021 | 0.13235 | 0.29688 | 0.047 |
| Children (any age) | 0.91176 | 0.90625 | 0.913 | 0.91176 | 0.90625 | 0.929 |
| Spouse | 0.80882 | 0.8125 | 0.957 | 0.80882 | 0.8125 | 0.965 |
| Property | 0.95588 | 1.1094 | 0.128 | 0.95588 | 1.1094 | 0.188 |
| Time in settlement | 8.3982 | 7.6966 | 0.214 | 8.3982 | 7.6966 | 0.306 |
| Age | 4.3235 | 4.4375 | 0.672 | 4.3235 | 4.4375 | 0.718 |

Source: Elaboration based on research data.

swine productions, fruit and vegetable farming, sheep farming, honey production, dairy farming and fish farming. In this way, it is possible to see, in Figure 3, the production of the settlements in the municipality of Cláudia, and that such production is in line with the regional vocation. In relation to the stimuli of the productive systems, the institutions have a fundamental role in the production of the farmers.When conducting an interview with EMPAER[6] in the municipality of Cláudia, it was observed that PRONAF funding is mainly aimed at dairy cattle, and according to the secretary of agriculture, the main cultures stimulated in the municipality are limited to dairy cattle, as it is within a short circuit and income from milk guarantees the cost of living for farmers and fruit trees, as it is possible to sell them for most of the year. In the perception of Vergara (2004), a social transformation only occurs when there is beyond the predispositions when there is an organizational agent to trigger it. Regarding the productive structure, the presence of soybean production was also noted in a large number of lots in the settlements of the municipality, since these farmers lease their lote or part of it to farmers in the region, being possible to count 87 lots in the settlement. Keno that are focused on agro-export monoculture, in most cases these lots do not have a residence, being grouped in a large area to allow the planting of crops such as soy, rice, corn. It is possible to see in the national context a reduction of 0.1% in leased land when comparing the 2006 and 2017 censuses, however the area of this modality increased by 4% in the same period (IBGE, 2019).

## ANALYSIS OF INDICATORS

The *Propensity Score Matching method* has unique characteristics, allowing to estimate the effect of the average treatment, for the analysis it was necessary to have a treated group and a control group, the treated group in the present analysis corresponds to the farmers who are part of a network cooperation and control is about the farmers who do not.The parametric test is the comparison of two means of unpaired data, thus being an important point when we want to investigate whether the mean of two groups are statistically equal, because when we have equal means between the two groups the analysis proves to be unfeasible by correspond to the two equal groups. Thus, the T Student test was adopted as a way of comparing the scores of the unpaired means of the social and endogenous capital indicator, as seen in Table 2. Table 2 showsthatthere is a significant difference in averages between the treated and control groups, this difference shows that farmers who are part of a cooperation network have a greater indicator of social and endogenous capital than those who do not, thus proving the importance of cooperation networks. Subsequently, the variables for the pairing were chosen, which is a point of great relevance when using this method. The pairing is performed in a non-random manner in order to build the *counterfactual* with similar characteristics for the two groups, thus seeking to compare the similar ones through the control variables, that is, the treated group (farmers who are part of the a cooperation network), with the control group (farmers who are not part of a cooperation network) only when there is a *matching* between the two groups according to the selected variables. Thus, observations need to have a statistically equivalent counterfactual so that we can measure the impact of treatment,in this way, it is possible to see through Table 3 the choice of control variables.

Table 4 depicts the level of significance of the application of the PSM, with the aim of measuringthe ATT, as a way of analyzing the robustness of the results.*Nearest Neighbor matching was* applied with *two neighborhoods, Radius, LLr, Ties and Kernel.* From these data, it is possible to notice that three of the five matching algorithmspresented significant data, it is also necessary to emphasize the fact that the values of the notes, that is, the ATT, were positive, which makes it possible to see that the farmers who are part of an association and/or cooperative network have a *score* on the social and endogenous development indicator 61.2 higher than those that do not participate, considering that the treated group corresponds to 68 families and the control 64 when using the Radius algorithm. Such positivity shows a score of 61.2 higher than farmers who are not part of a cooperation network, demonstrating that farmers participating in cooperation networks have a higher level of social and endogenous capital, the externalities generated by such an index can be understood as fundamental factors for the growth, development and freedom of these farmers, as endogenous factors as well as human and social capital expand personal capabilities, generating higher rates of return than conventional capital, in addition to the ability to add value and regional absorption in a way that generates developments and retention of the economic surplus (BARQUERO, 2002; FILHO, 2001; IPEA, 2012; SCHULTZ, 1961).

After that, Table 5 presents the Probitregressionwith the Radius method, since it presented the best matching. When analyzing the difference in means the treated and control groups that were used to estimate the impact of the cooperation network, it is noted that the most relevant variables for the model are: illiteracy, 6th to 9th grade of elementary school, ow and first experience with agriculture, with up to 10% significance. These variables are directly related to growth and development factors, since the level of education is linked to the formation of human capital, in relation to the first experience with agriculture, this is related to the endogenous factors of the research in relation to the knowledge generated in a determined group according to its characteristics, finally the livestock activity is related to the stimulus of public institutions. These variables had a better matching for the model. However, the other variables are justified by the matching they provide, thus making the matchinga better modeling for the analysis when comparing treated and control. Table 6 depicts the pairing data before and after *matching,* one can notice the heterogeneity in the means before matching, and soon after matching we see little reduction in bias, this fact is justified by the size of the counterfactual. When analyzing the model, we can see that cooperation networks plays a considerable role in relation to the social and endogenous capital of farmers, this fact is in matchs with the contributions of Castells (2010) where he states networks are capable of adding value through interaction and information flow. It should also be noted that the analysis showed that the ATT, that is, the average effect of the treatments, is 61.23 a considerable value.In this way we can see that the farmers have characteristics that provide them with a competitive advantage, considering that the constructed indices are even to estimate the social and endogenous capital. According to Barquero (2002), the main objective of endogenous development is based on factors of social well-being, in the economic, social and cultural sphere. In a way that influences the productive factors, having indexed it's strategies based on heterogeneous factors regarding the development process, since each society needs to have its economic and social characteristics preserved and worked on, in this process. The same author also makes a series of contributions regarding social capital and its importance for local and regional development. Thus, we can see that farmers who are part of a cooperation network already have a process that Barquero (2002) called human capital maturation, when compared to those who do not, and this process is capable of generating knowledge and social capital.

**Considerations:** The formation of social and endogenous capital is a challenge for institutions because they have considerable rates of return, in addition to this factor, it should be noted that social capital is not a short-term process, and that endogenous capital has the ability to add value and regional absorption, thus promoting development. It is possible to see cooperation networks as an alternative to generate more considerable stimuli in relation to social and endogenous capital. That said, the present study identified a difference in the indicator of social and endogenous capital, this factshowed that the surveyed farmers who are part of a cooperative network have a social and endogenous capital index 61.21 higher than those who do not, demonstrating that farmers with the same characteristics when being part of a cooperation network are more likely to the stimuli of social and endogenous capital. Such stimuli provide a paradigm shift for small rural farmers who suffer constant pressure from large landowners in addition to their need for technological packages, but

[6]Empresa Mato Grossense de Pesquisa Assistencia e Extensao Rural

social and endogenous capital as exposed by Barquero, Filho, IPEA and Schultz (2002; 2001; 2012; 1961), generate freedom, that is, the expansion of the personal capacities of these small farmers who are often marginalized, when they organize themselves into networks, they are able to change the course of their growth and development, as they are able to add a more significant value of social and endogenous capital , triggering development and growth not only for itself, but at the local and regional level. This information can help institutions that work with the stimulation of social and endogenous capital, due to the fact that by showing that farmers when they are organized in cooperation networks have higher rates, it raises a series of hypotheses regarding the methodology addressed to such stimulus. Therefore, a deeper investigation into the factors that foster social and endogenous capital is in order, to understand whether the same occurs through institutions that focus on cooperation networks, and/or the cooperation network itself that seeks to form of social and endogenous capital.

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