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Unpacking the Myth: Are Cooperatives the Engine of Local Growth?

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- This study conducts a deeper analysis of the economic impact of cooperatives. It applied to explore the relationship between cooperative presence and key local economic indicators, which are GRDP growth, open unemployment rate, and average household consumptions at regional level.
- To explore the impact of cooperatives thoroughly, we utilize three proxies: (1) the total number of cooperatives in each regency or municipality, (2) the density of cooperatives relative to the regional household, and (3) the number of households who have received credit from cooperatives
- Using two methods, Ordinary Least Squares (OLS) regression and Propensity Score Matching (PSM) the results suggest that the presence of cooperatives is not consistently associated with significant improvements in regional GRDP growth or household consumption. While the associations are generally positive, they are not statistically robust in this dataset.
- However, the regional existence has a modest negative association with the unemployment rate. The association is strongly significant when using the number of households that received credit from cooperatives as a proxy, implying that cooperative-based financing may support micro-entrepreneurship, self-employment, or small business continuity (especially in the informal sector) thus increasing employment opportunities.
- When disaggregated by cooperative type, Savings and Loans Cooperatives (Kospin) show a significant correlation with reduced unemployment, highlighting their potential as financial enablers. In contrast, Village Unit Cooperatives (KUD) do not exhibit the same pattern, likely due to their broader and less targeted operational scope and the structural disadvantages faced by rural areas in which they operate such as limited market access and economic diversification.
- Finally, it is important to note that this study primarily reflects short-term relationships. Future research using panel data is recommended to better assess long-term causal dynamics and further clarify the economic role of cooperatives in regional development.

Background

Inclusive economic development requires institutions that are not only economically efficient but also socially embedded and democratically governed. Their inherent characteristics such as democratic governance, shared ownership, and community-rooted participation fulfilled these requirements. Empirical evidence shows that cooperatives are effective vehicles for poverty alleviation, financial inclusion, and local empowerment. Globally, cooperatives have shown that they can help reduce poverty, support small businesses, and create jobs in areas that are often left behind by large corporations or centralized government programs (Birchall, 2003; Majee & Hoyt, 2011). Particularly in developing economies, cooperatives are known to enhance the economic resilience of low-income groups and serve as engines of grassroots development (Birchall, 2003; International Labor Organization (ILO), 2003). In this sense, cooperatives are powerful tools for promoting inclusive economic growth that reaches the grassroots level.

In Indonesia, cooperatives have long been part of the country's economic system. The idea of cooperation and mutual help (*gotong royong*) are deeply rooted in Indonesian culture. Guided by the spirit of Pancasila and Article 33 of the 1945 Constitution, the national vision for economic governance has always emphasized collective ownership, cooperation, and democratic control of production resources.

In recent years, the Indonesian government has started to pay more attention to the potential of cooperatives. In the 2025–2029 National Medium-Term Development Plan (RPJMN), cooperatives are mentioned as key players in driving inclusive economic development, supporting Micro, Small, and Medium Enterprises (MSMEs), and strengthening community-based economies. The plan encourages cooperatives to modernize, adopt digital tools, and move into productive sectors like agriculture, fisheries, and the creative economy.

To support this direction, the government is also working to revise the Cooperative Law (Law No. 25 of 1992), which has not been updated in over 30 years. The goal is to make cooperatives more professional, transparent, and business-oriented, while keeping their core values of solidarity and mutual benefit. A better legal framework will help cooperatives operate more effectively and compete in today's fast-changing economy.

Alongside these policy changes, a new movement called Koperasi Merah Putih has emerged. This initiative brings together communities, social entrepreneurs, and cooperative leaders to build a new model of cooperatives that reflects national identity, digital innovation, and economic sovereignty. Koperasi Merah Putih aims to empower local producers, such as farmers, artisans, and small enterprises by organizing them into cooperatives that can manage their own value chains, access better markets, and increase their income.

This movement is important because it shows that cooperatives are not just about small-scale survival, they can be part of a larger strategy to create a fairer, more democratic economy. By helping people to organize, share resources, and build collective power, cooperatives can give local communities more control over their economic future. This is especially relevant as Indonesia works toward achieving the Sustainable Development Goals (SDGs), including reducing inequality, creating decent jobs, and promoting economic inclusion.

The rise of Koperasi Merah Putih reflects a broader narrative of reclaiming cooperative identity as a way for communities to manage their own economy. It mobilizes collective agency at the grassroots level, enabling communities to retain greater control over production, distribution, and surplus allocation. More importantly, it offers an institutional platform for MSMEs and informal sectors to participate meaningfully in the national economy.

Literature Review

Cooperatives, as economic and social institutions, have long been recognized for their unique capacity to combine business efficiency with community welfare. Rooted in the principles of mutualism and self-help, cooperatives operate under a distinct theoretical and operational model that sets them apart from traditional for-profit enterprises. The theoretical foundation of cooperatives, widely taught in academic cooperative studies, is based on values such as democratic member control, voluntary and open membership, economic participation, autonomy, education, and concern for community (International Cooperative Alliance (ICA), 1995). These principles serve not only as ethical guidelines but also as structural elements that define the cooperative enterprise model.

From a business model perspective, cooperatives are member-owned, and member-governed enterprises designed to meet the common economic, social, and cultural needs of their members. Profits are either reinvested into the organization or distributed equitably among members based on their participation, rather than capital share. This distinguishes cooperatives from investor-owned firms where control and profit are proportionally distributed based on capital ownership. According to Zeuli and Cropp (2004), cooperatives generate economic returns while strengthen social ties, making them a mix of business and social organization that balances both objectives.

There are several types of cooperatives, typically classified based on the nature of their membership and services. These include producer cooperatives (e.g., farmer cooperatives), consumer cooperatives (e.g., retail or housing), worker cooperatives (owned and run by employees), credit unions or savings and loan cooperatives, and multi-purpose cooperatives that integrate several services under one institutional roof. Each type responds to specific member needs but operates under the same foundational principles.

Beyond their structural characteristics, cooperatives are increasingly acknowledged for their broader role in economic development. A publication by ILO (2003) emphasizes that cooperatives can play a transformative role in generating employment, providing essential services, and fostering community resilience. In rural areas, agricultural cooperatives help smallholder farmers gain better access to markets, inputs, technology, and financial services. They enhance productivity, stabilize incomes, and reduce rural poverty by aggregating resources and enabling collective bargaining power (Okonkwo et al, 2022).

In the urban context, cooperatives respond to challenges associated with rapid urbanization such as access to housing, employment, financial inclusion, and social protection. According to the ICA (2015), urban cooperatives, particularly housing and worker cooperatives, can improve access to affordable living and promote decent work conditions in the informal sector. Worker cooperatives have proven to be effective in generating jobs in sectors often neglected by the formal economy, including domestic work, waste management, and home-based manufacturing.

Overall, the literature suggests that cooperatives are uniquely positioned to promote inclusive and sustainable development. Their ability to mobilize local resources, generate collective benefits, and foster participatory governance makes them essential actors in both rural and urban development strategies. However, their success depends on enabling legal frameworks, adequate capacity-building, and integration into broader development policies.

In recent years, a growing body of empirical literature in Indonesia has explored the role of cooperatives in enhancing the performance of MSMEs, improving community welfare, and facilitating access to credit, particularly in rural and urban areas.

Several studies have shown that cooperatives play a critical role in supporting MSMEs by providing access to working capital, input materials, market potential, and technical assistance. For instance, Tri Utami et al. (2024) examined the linkage between cooperative membership and MSMEs performance in Central Java and found that participation in cooperatives positively correlates with increased business productivity and income growth, particularly among microenterprises operating in traditional and home-based sectors. The cooperative model facilitates economies of scale in procurement and marketing while creating a platform for shared learning and entrepreneurial collaboration.

Access to finance is another key area where cooperatives serve as important intermediaries, especially in underserved rural markets. A study by Sarwoko (2009) highlights the significant role of Savings and Loan Cooperatives (KSP/USP) in expanding financial access for MSMEs in rural areas of Malang District. Over the 2006–2008 period, these cooperatives demonstrated growth in membership, capital, and business volume, with nearly 80% of their loans directed toward MSMEs working capital. As a result, cooperatives help fill a critical financing gap for MSMEs that are typically excluded from

formal financial institutions.

In the broader context of community development, empirical studies suggest that cooperatives contribute to household welfare improvements through increased income stability, asset accumulation, and empowerment. The study by Devanty and Saskara (2017) highlights the significant role of women's cooperatives in empowering women through access to finance, training, and collective support in Bali. Their findings show that cooperatives not only improve household income stability but also enhance members' skills and social cohesion, contributing to broader community welfare.

Taken together, the Indonesian literature confirms that cooperatives have a meaningful role in supporting MSME growth, improving access to credit, and enhancing community welfare. However, these benefits are contingent upon a supportive ecosystem that includes capacity building, regulatory reform, financial innovation, and digital transformation.

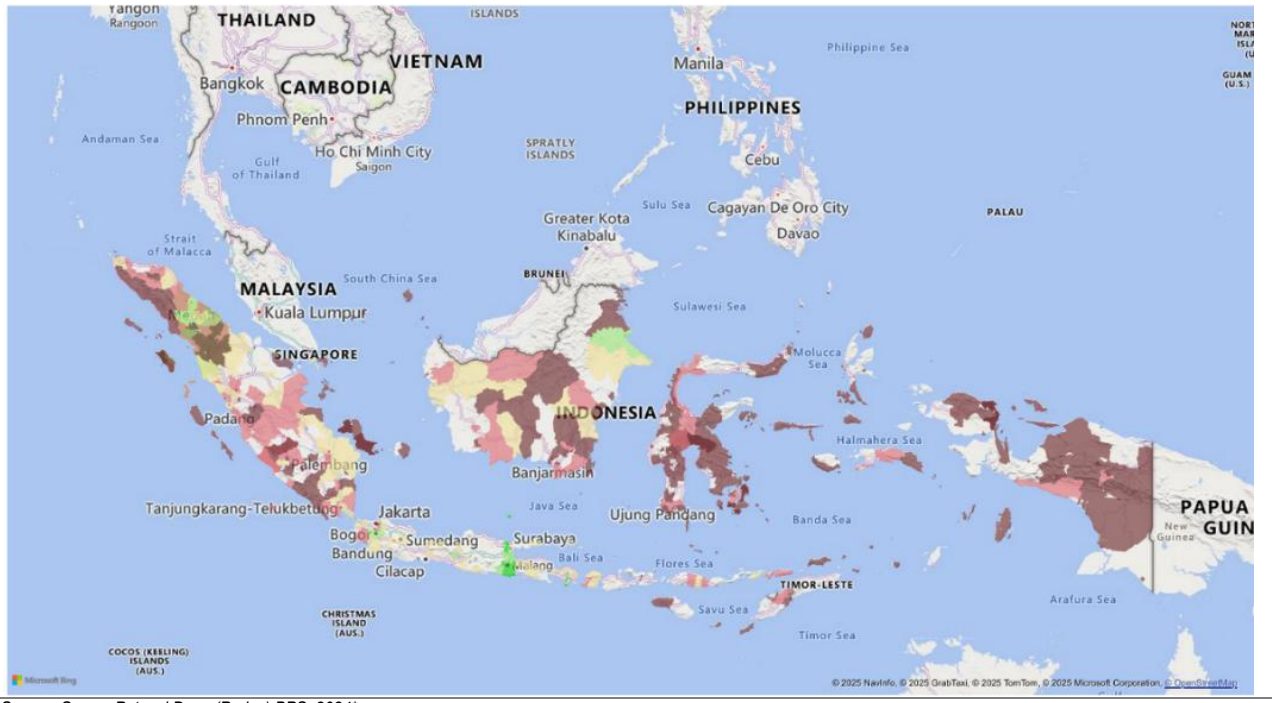
Economic Impact of Cooperatives

In mapping the impact of cooperatives on regional economic growth, this study utilizes data from SUSENAS, SAKERNAS, and the Village Potential Survey (PODES) by Statistics Indonesia (BPS), aggregated at the regional level of districts and municipalities, encompassing a total of 514 regions. The cooperative units surveyed from the PODES dataset amount to 51,505 units, with an average of 91 cooperatives per district. The highest concentration of cooperatives is found in Wonogiri, which also has the largest number of villages compared to other districts. Conversely, there are several regions, particularly in Papua, that do not have any cooperatives at all. This dataset represents nearly half of the total number of cooperatives reported by the Ministry of Cooperatives in 2023, which stands at 130,119 units. A comprehensive mapping of the cooperative distribution is presented in **Exhibit 1.**

As an initial step in assessing how the number of cooperatives in each district or municipality correlates with key local macroeconomic indicators, we employ four-quadrant scatter plots. In these plots, the horizontal axis represents the number of cooperatives, while the vertical axis alternately displays monthly average household consumption at regional level, Gross Regional Domestic Product (GRDP), and the regional open unemployment rate.

The quadrant framework is based on a median split of each variable, categorizing regions into four distinct groups. Quadrant I (High-High): areas with both a high number of cooperatives and strong economic indicators. Quadrant II (Low-High): areas with fewer cooperative but strong economic outcomes. Quadrant III (Low-Low): areas lagging on both cooperative numbers and economic performance. Quadrant IV (High-Low): areas with many cooperative but weaker economic outcomes.

Exhibit 1. Number of Cooperatives per Regency in Indonesia (2024)
The color represents the number of cooperatives from low to high accordingly from red to green

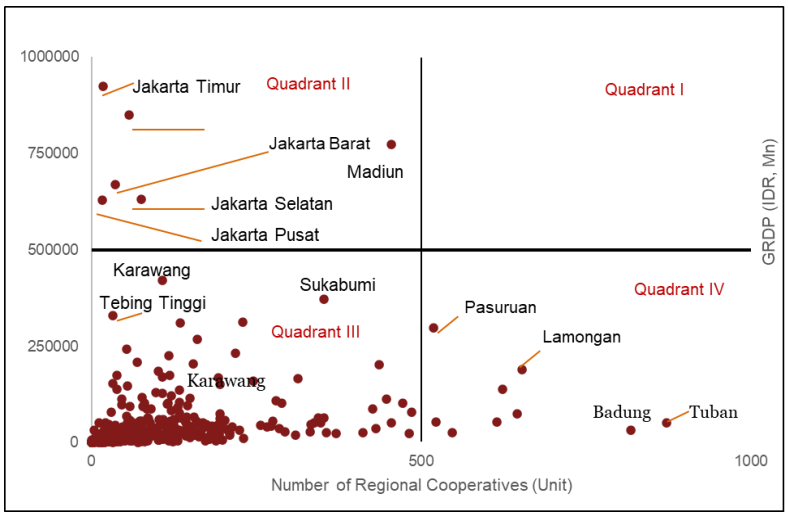


*Source: Survey Potensi Desa (Podes) BPS, 2024**
**Survey observation is village unit and the data aggregated to regency unit*

The first analysis in **Exhibit 2**, looks at cooperative numbers correlate with greater household welfare, using average monthly household expenditure at regional level as a proxy. Most districts fall into Quadrant III, indicating both a low number of cooperatives and modest household consumption. The data does not suggest an intuitive positive relationship; interestingly, a notable number of districts fall into Quadrant II, where household spending is relatively high despite having few cooperatives. This suggests that high consumption levels are not necessarily driven by cooperative presence. Meanwhile, only a handful of districts are in Quadrant I, where both cooperatives and household spending are high. Theoretically, this quadrant would reflect successful cooperative-driven welfare improvements. Yet, its scarcity suggests that the number of cooperatives alone does not consistently explain differences in economic wellbeing across regions' number of cooperatives and modest household consumption. This suggests a broader pattern where many regions have yet to see either cooperative growth or improved household spending.

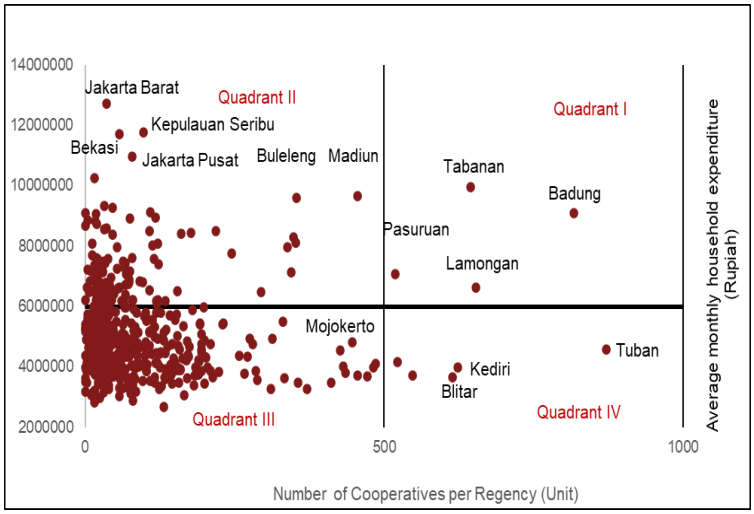
We apply the same approach to other economic indicators, such as regional economic output, as measured by GRDP in **Exhibit 3.** Once again, most districts cluster in Quadrant III (low on both cooperative activity and economic output) highlighting a dual constraint in many areas. No district appears in Quadrant I, indicating that even where cooperatives are numerous, they do not necessarily coincide with high GRDP. On the contrary, several high-GRDP districts have relatively few cooperatives (Quadrant II), suggesting that local economic output is not strongly tied to the cooperative sector.

Exhibit 2. Number of Cooperatives and Average Monthly Household Expenditure



Source : Susenas, Podes (2024), IFG Progress Analysis (2025)

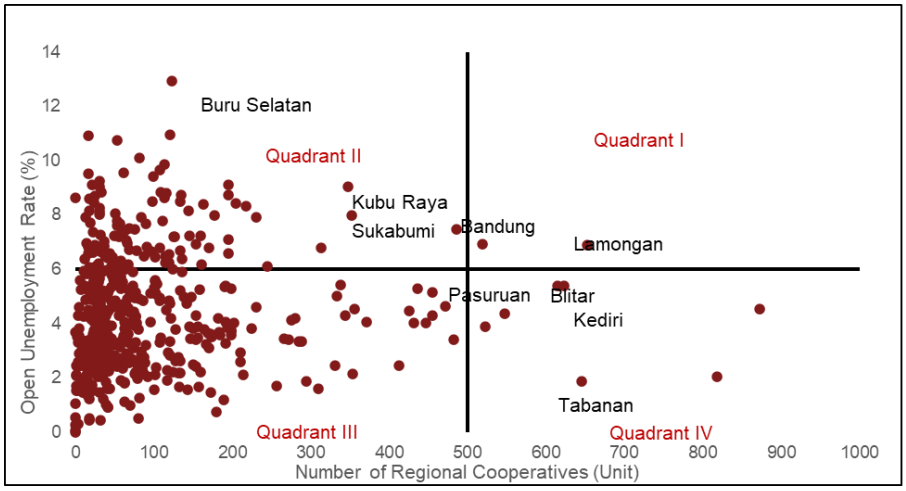
Exhibit 3. Number of Cooperatives and Gross Regional Domestic Product (GRDP)



Source : CEIC, Podes (2024) IFG Progress Analysis (2025)

A similar pattern emerges for the unemployment rate, where most regions fall into Quadrant III, areas with few cooperatives and low unemployment rate (**Exhibit 4**). Some regions with many cooperatives still report high unemployment, while others with few cooperatives show better labor market outcomes. This points to the possibility that cooperatives are not currently a major driver of job creation at the local level. One likely explanation is that most cooperatives are neither workers-based nor production-based cooperatives, but instead function as savings and loan or consumer cooperatives, which are less labor-intensive as shown in **Exhibit 5** that savings and loan cooperatives (*koperasi simpan pinjam*) dominate the cooperative landscape across districts.

Exhibit 4. Number of Cooperatives and Unemployment Rate

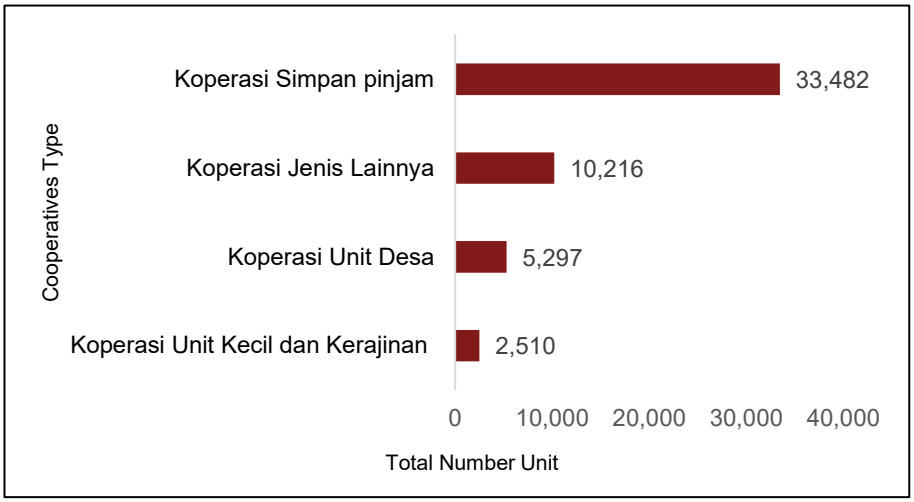


Source: Sakernas, Podes (2024), IFG Progress Analysis (2025)

Further, we delve deeper into our analysis on the economic impact of cooperatives. Building on previous descriptive analysis, two methods applied to further explore the relationship between cooperative presence and key local economic indicators, namely GDRP growth, open unemployment rate, and average household consumptions at regional level. The first one was conducted using Ordinary Least Squares (OLS) regressions and then followed by a Propensity Score Matching (PSM) analysis.

Nonetheless, all results in this study should be interpreted with caution, as it may reflect correlation rather than direct causation. There is a possibility of reverse causality, since OLS and PSM rely on observational data and do not fully address endogeneity concerns, the findings indicate an association but do not establish a definitive causal effect. Nonetheless, given the cross-sectional nature of the available data and the absence of natural experiments or valid instruments, OLS and PSM remain among the most appropriate and widely accepted methods to explore these relationships. While not causal, they provide valuable insights into the associational patterns between cooperative development and regional economic outcomes and can serve as a foundation for more rigorous causal studies in future research.

Exhibit 5. Number of Unit Cooperatives based on type (Unit)



Source : Podes (2024), IFG Progress Analysis (2025)

First, we run the regression analysis to seek the relationship between cooperatives (numbers of cooperatives per regency/municipality and cooperatives density per regency/municipality) and GDRP growth as shown in **Exhibit 6**. We define three specifications; all varied in independent variables included. The first one focusing on the nominal numbers of cooperatives existence in each regency/municipality, the second one focuses on the density of the cooperatives which means the cooperatives existence per 100 households, and the last one focusing on the amount of people that received credit from cooperatives. The model includes several control variables, and the details are displayed in **Appendix 1.**

None of the three models find a significant association with district-level GRDP growth, whether measured in absolute terms or density (**Exhibit 6)**. These findings align with previous descriptive analysis insights, that is while cooperatives are present in some high-output districts, their scale or nature does not appear sufficient to influence aggregate regional production. The weak statistical relationship may reflect the relatively limited economic footprint of many cooperatives, particularly savings and loan cooperatives, which dominate the landscape but may not directly contribute to productive output (*see* **Exhibit 5**).

Exhibit 6. OLS Regression Result Cooperatives and GRDP Growth

VARIABLES	(1) GRDP_Growth	(2) GRDP_Growth	(3) GRDP_Growth
jumlah_koperasi_kab	-0.000		
	(0.000)		
density_jlhkoperasi		-0.016	
		(0.013)	
Penerima_Kredit_Koperasi			-0.005
	(0.005)	(0.005)	(0.005)
commercialbank_kab	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)
prop_kab_work_primer	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)
income	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)
member_art_kab	0.006	0.007	0.006
	(0.005)	(0.005)	(0.005)
access_credit_kab	0.000	0.000	
	(0.000)	(0.000)	
econ_facility_kab	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)
			0.000
			(0.000)
Constant	0.141	0.135	0.136
	(0.092)	(0.091)	(0.092)
Observations	511	511	511
R-squared	0.012	0.014	0.009

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Source : IFG Progress Analysis (2025)

The second OLS regression was conducted to see the impact on the unemployment rate. In this model, we also applied some covariates that were adjusted slightly (**Exhibit 7**). Unlike previous regression, the results reveal some statistical relationship between cooperatives variables and unemployment rate. The first variable of interest shows a

negative and slightly significant relationship. This is consistent with the idea that cooperatives can serve as alternative employment generators in regions where formal job creation is limited, as shown how formal workers and the unemployment rate is insignificant in the control variables, implicating informal workers is dominant absorber employment in sample observation. However, the modest association (significant at 10% level) between them makes the result should be interpreted with greater caution.

Exhibit 7. OLS Regression Result Cooperatives and Unemployment Rate

VARIABLES	(1) Unemployment Rate	(2) Unemployment Rate	(3) Unemployment Rate
jumlah_koperasi_kab	-0.001*		
	(0.000)		
member_art_kab	0.365*	0.400*	0.396*
	(0.214)	(0.208)	(0.212)
land_Own	-0.000	-0.000	-0.000
	(0.001)	(0.001)	(0.001)
formal	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)
educ_facil_kab	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)
Indus_Own	-0.002***	-0.002***	-0.002***
	(0.001)	(0.001)	(0.001)
upskill_facil_kab	0.005***	0.005***	0.005***
	(0.001)	(0.001)	(0.001)
income	-0.000	0.000	-0.000
	(0.000)	(0.000)	(0.000)
prop_kab_work_primer	-0.056***	-0.057***	-0.055***
	(0.004)	(0.004)	(0.004)
density_jlhkoperasi		-2.427***	
		(0.932)	
Penerima_Kredit_Koperasi			-0.011***
			(0.004)
Constant	5.591***	5.766***	5.485***
	(0.738)	(0.728)	(0.734)
Observations	514	514	514
R-squared	0.446	0.455	0.449

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Source : IFG Progress Analysis (2025)

The final variable of interest, average household consumption per month, log-transformed to normalize the monetary values, shows a negative and statistically significant coefficient. These coefficients seem counterintuitive, but geographical factor may help explain this (**Exhibit 8**). One possibility is that many cooperatives tend to be in rural or economically weaker districts where incomes per household are lower. Subsequently, many of the cooperatives might act as community safety nets, rather than

economic growth engine. If more cooperatives located in rural areas, cooperative loans are most likely used by low-income households for basic needs or emergencies, rather than for productive investments. So, the higher number of credit recipients possibly signal that people borrow more because of lack income, rather than using it for investment, especially in areas where there are only a few of financing alternatives

Exhibit 8. OLS Regression Result Cooperatives and Average Household Consumption

VARIABLES	(1) ln_Expend_kab	(2) ln_Expend_kab	(3) ln_Expend_kab
ln_jumlah_koperasi_kab	-0.059***		
	(0.009)		
ln_density_jlhkoperasi		-0.059***	
		(0.009)	
Penerima_Kredit_Koperasi			-0.001**
			(0.001)
prop_kab_work_primer	-0.006***	-0.006***	-0.006***
	(0.001)	(0.001)	(0.001)
member_art_kab	0.013	0.016	0.019
	(0.027)	(0.027)	(0.026)
land_Own	-0.000**	-0.000**	-0.001***
	(0.000)	(0.000)	(0.000)
access_credit_kab	-0.000	-0.000*	
	(0.000)	(0.000)	
work	-0.000	-0.000	0.000***
	(0.000)	(0.000)	(0.000)
commercialbank_kab	0.001***	0.001***	
	(0.000)	(0.000)	
Constant	16.079***	15.982***	15.980***
	(0.106)	(0.103)	(0.096)
Observations	511	511	514
R-squared	0.521	0.520	0.405

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Source : IFG Progress Analysis (2025)

Furthermore, to deeply explore the effect of cooperatives we decomposed the equation by the cooperative's unit, particularly for Saving and Loans Cooperatives (*Kospin*) which account for approximately 65% of all cooperatives in Indonesia and second larger unit, which is village cooperatives unit (KUD) account for 10% of total cooperatives (PODES, 2024). The result is presented in **Appendix 2**. The results for Saving and Loans Cooperatives (Kospin) are consistent with our main findings for total cooperatives, showing a beneficial effect on reducing regional unemployment, expenditure and not significant in affecting GRDP Growth. Interestingly, however, Village Unit Cooperatives (KUD) show a positive and significant association with regional unemployment, and their impact on monthly household expenditure is statistically insignificant. This contrasts with the effects observed for Kospin and cooperatives in general.

This finding further highlights the role of Kospin as cooperative-based financing, which are more directly linked to the creation of self-employment opportunities and the

enhancement of small-scale business productivity such as through delivering accessible financial services, particularly savings and microcredit, to individuals and micro-enterprises, consequently contributing to lower unemployment in the regions where they operate. This interpretation is also supported by earlier regression results, where the variable representing cooperative credit recipients (*Penerima_Kredit_Koperasi*) shows a stronger and more significant association with reduced regional unemployment compared to the variable representing the number of cooperative units (*jumlah_koperasi_kab*) (see **Exhibit 8**). This suggests that the functional role of cooperatives, particularly in credit provision, may be more important than their mere presence in influencing local labor market outcomes.

This stands in contrast to the counterintuitive results observed for Village Unit Cooperatives (KUD), which exhibit a positive association with unemployment and an insignificant relationship with household expenditure. Unlike Kospin, KUDs are typically multi-purpose cooperatives that were originally established to support agricultural production, distribution of farming inputs, marketing of rural commodities, and basic service provision in rural areas. Their operations are deeply embedded in structurally disadvantaged regions, where economic activities are limited, market access is poor, and opportunities for diversification are constrained. Thus, their effectiveness in reducing unemployment may therefore be limited. It may also the reason why it does not significant to household expenditure.

Additionally, to rigorously assess the impact of cooperatives on regional economic growth, this study applies Propensity Score Matching (PSM). This method allows for a more accurate estimation of the Average Treatment effect on the Treated (ATT), isolating the effect of cooperatives by comparing regions with similar socioeconomic profiles. To estimate the propensity scores, a logistic regression model was first fitted using several socioeconomic and structural variables using the same control variables we used in the OLS Regression analysis to ensure robustness result, the result displayed in **Appendix 3.**

Specifically, we use cooperative density defined as the number of cooperatives per capita or per hundred residents as a proxy for the regional presence of cooperatives. This metric more accurately reflects the extent to which cooperatives are accessible and embedded within the local economy, as it adjusts for variations in population size across districts. Districts with cooperative density above the national average are categorized as the treatment group (treatment = 1), while those below the average are classified as the control group (treatment = 0). Following the estimation of the propensity scores, the study employs nearest-neighbor matching with one match (1:1) and imposed a common support condition to ensure comparability.

First, GRDP before matching suggest that treated districts had slightly lower GDP growth compared to control districts, with a difference of -0.003, but the result is statistically insignificant (**Exhibit 9).** After controlling observable covariates using PSM, the ATT

estimate becomes -0.004 and becomes insignificant. Thus, this result indicates no evidence that high cooperative density leads to higher (or lower) short-term GDP growth. These reinforce more that statistically this study does not find clear relationship between GRDP Growth and the cooperatives presence both using direct relationship in OLS and after controlling the observable characteristics using PSM. Which could also explain descriptively that GRDP growth rates remain relatively similar between the two groups: 0.0732 in treated districts and 0.0763 in control districts in **Exhibit 10.**

Exhibit 9. PSM Result

Variable Sample	Treated	Controls	Difference	S.E.	T-stat
Model 1: Regency Gross Domestic Product (PDRB)					
Unmatched	0.073	0.076	-0.003	0.003	-0.910
ATT (Matched)	0.073	0.077	-0.004	0.005	-0.750
Model 2: Unemployment Rate					
Unmatched	3.912	4.565	-0.652	0.199	-3.280
ATT (Matched)	3.976	4.527	-0.551	0.291	-1.900
Model 3: Average Monthly Expenditure Household					
Unmatched	5.12e+06	5.17e+06	-4.95e+04	1.44e+05	-0.340
ATT (Matched)	5.14e+06	4.95e+06	1.91e+05	1.70e+05	1.130

Source : CEIC, Podes (2024), **IFGP** Research (2025)

For the unemployment rate, unmatched results suggest that districts with high cooperative density have a significantly lower unemployment rate by approximately 0.652 percentage points compared to controls. This difference is statistically significant and in line with our OLS result. The negative sign and magnitude hint at a potentially beneficial role of cooperatives in reducing unemployment, as presented in the unmatched ATT result. However, after matching, the difference reduces to -0.551 and becomes marginally insignificant. This weakens the robustness of our initial findings, suggesting that the modest causation between cooperative presence and lower unemployment may instead reflect underlying regional labor market dynamics where cooperatives are more likely to emerge in areas with stronger informal employment. Thus, cooperatives may exert a small indirect effect by facilitating entrepreneurship, supporting microenterprises, or easing access to informal job opportunities that are otherwise underserved by the formal economy.

Exhibit 10. Descriptive Control and Treated Group PSM

Indicator	Control (Low Coop Density)	Treated (High Coop Density)	Interpretation
Unemployment Rate (%)	4.56	3.91	Treated districts show lower unemployment, suggesting positive labour market effects of cooperatives.
Annual Household Expenditure (IDR)	4,671,201	4,678,616	Slightly higher spending in treated areas, indicating improved household

			welfare and consumption but not significantly different.
PDRB Growth	0.0763	0.0732	Similar growth rates suggest cooperative presence has limited direct impact on regional GDP growth.

Source : *CEIC, Podes, IFGP Research (2025) **

Lastly, the indicator of Household Monthly Average Expenditure matching has no significant difference in district expenditure between treated and control groups. After matching the ATT is positive, which means districts with higher cooperative density spend 191,000 IDR more on average than matched control districts, but it statistically insignificant at conventional levels. Descriptively, as displayed in **Exhibit 10** treated districts show a slightly higher figure at 4,678,616 IDR, compared to 4,671,201 IDR in control areas, although the difference is relatively small. Taken together, there is no clear relationship between existing regency cooperatives and the increase consumption, as the OLS suggest that the causal relationship is negative and the PSM fail to prove that the causality is positive. Overall, we conclude that the cooperatives presence is failed to increase the household consumption at district level. The summary result between the OLS and PSM further could be seen in **Exhibit 11.**

Exhibit 11. Summary Result Ordinary Least Square (OLS) Regression & Propensity Score Matching (PSM)

Economics Impact Indicator	OLS Regression	Propensity Score Matching	Conclusion Effect
PDRB Growth	No statistically significant association between number of cooperatives and Gross Regional Domestic Product (GRDP)	No evidence that high cooperative density leads to higher (or lower) short-term GDP growth before and after matching.	*Statistically do not have causation.*
Annual Household Expenditure (IDR)	Increase in number of cooperatives does not lead to increase in average household consumption per month.	Failed to prove that the number of cooperatives leads to increase in average household consumption per month	*Negative* *Number of Cooperatives ↑ → Household Consumption ↓*
Unemployment Rate (%)	Cooperatives variables and unemployment rate has negative and slightly significant relationship especially for Saving and Loans Cooperatives.	Before matching covariates, increase cooperatives existence significantly associate with low regional unemployment rate, but after matching the effect is not significant.	*Positive** *Number of Cooperatives ↑ → Regional Unemployment Rate ↓* **Especially significant to Saving and Loans Cooperatives*

Source : *CEIC, Podes, IFGP Research (2025) **

Conclusion

In conclusion, this study offers an in-depth analysis of the economic impact of cooperatives. This study aims to explore relationship between cooperative presence and key local economic indicators, which are GRDP growth, open unemployment rate, and average household consumptions at regional level. To explore the impact of cooperatives thoroughly, we utilize three proxies: (1) the total number of cooperatives in each regency or municipality, (2) the density of cooperatives relative to the regional household, and (3) the number of households who have received credit from cooperatives

Employing two methods, Ordinary Least Squares (OLS) regressions Propensity Score Matching (PSM), this study has found that regional cooperative presence could not significantly associate improvement in regional economics activities, as it's not statistically proven that cooperative existence is associated with GRDP growth, and increasing household consumption. However, the regional existence has a modest negative association with the unemployment rate. The association is strongly significant when using the number of households that received credit from cooperatives as a proxy, implying that cooperative-based financing may support micro-entrepreneurship, self-employment, or small business continuity (especially in the informal sector) thus increasing employment opportunities.

Furthermore, after disaggregating by cooperative type, we found that Savings and Loans Cooperatives (Kospin), which account for 65% of all cooperatives, are associated with a significant decrease in the regional unemployment rate. However, the finding for Village Unit Cooperatives (KUD) contrasts with this result, as it is typically multi-purpose and often operates in structurally disadvantaged rural areas, where market access is limited and economic diversification is constrained that is challenging to their effectiveness in reducing unemployment rate.

Overall, higher cooperative density is not significantly associated with improvement in regional economics activities, as it's not statistically proven between the association of cooperative existence with higher or lower GRDP growth and increasing in consumption for short term period, for this context as of 2024. This does not suggest ineffectiveness, but rather that their contributions may be more long-term, indirect, or multidimensional, such as through improvements in equity, resilience, social capital, or employment not necessarily captured in GDP growth metrics alone. Policymakers are therefore encouraged to adopt multidimensional evaluation frameworks that incorporate social impact indicators such as poverty reduction, employment stability, women's economic empowerment, and access to financial services.

In light of Indonesia's recent initiative to develop Koperasi Merah Putih, it is essential to ensure that the ambitious formation of over 80,000 village and urban cooperatives translates into tangible economic impact. To achieve this, several strategic policy directions must be pursued. First, the government must go beyond administrative

formalities and ensure that each cooperative has a clear, functional, and productive purpose. Priority should be given to models with proven success, such as savings and loan cooperatives (Kospin), which have demonstrated statistically significant effects in reducing unemployment by supporting micro-entrepreneurship and informal sector activity. Cooperatives should not be formed merely to meet numeric targets but must deliver real value through services such as access to credit, market aggregation, and input distribution, all tailored to the specific needs of local communities.

Second, a differentiated and regionally contextualized strategy is crucial. Evidence from this IFG study shows that one-size-fits-all models, particularly the underperforming Village Unit Cooperatives (KUD), are ineffective in disadvantaged rural areas. Therefore, cooperative policy should be tailored by regional economic typology: for instance, agriculture-heavy areas should focus on agribusiness value chains, whereas peri-urban areas may benefit more from microfinance-based cooperatives. This requires local planning agencies and BUMDes to be involved in co-creating cooperative formats that reflect real grassroots demand.

Third, cooperatives should be linked to national strategic priorities, particularly food security (*ketahanan pangan*), as emphasized by President Prabowo. Integrating cooperatives into the national food system through partnerships can strengthen their role in stabilizing supply chains, improving access to farming inputs, and strengthening local distribution. Fourth, to build credibility and sustainability, robust governance and transparency mechanisms must be institutionalized. Each cooperative should adopt a standardized legal and digital framework that mandates regular reporting, financial transparency, and member participation. The establishment of a national digital dashboard can enable real-time monitoring of cooperative performance, credit disbursement, and regional disparities.

Fifth, the government must invest in capacity building and co-creation. Establishing a training academy is key to equipping cooperative leaders and members with the financial, managerial, and digital skills needed to sustain operations. This should be complemented by access to blended financing, combining LPDB loans, CSR matching, and potential public-private partnerships, especially in remote or underbanked regions. Lastly, underperforming legacy cooperatives such as KUDs should not be ignored but instead reformed and repurposed. Dormant KUD assets can be revitalized to serve as specialized arms of the new Merah Putih cooperatives, such as logistics hubs, warehousing centers, or community stores.

Further, we are concerned that this study primarily captures short-term causal relationships between cooperatives and regional economic outcomes. The use of panel data in future research is recommended to better capture longer-term and more robust causal dynamics. While regression analysis provides evidence on the role of cooperatives, the insignificant results obtained from the Propensity Score Matching (PSM) analysis suggest a need for further investigation into the association between

cooperative presence and reductions in regional unemployment rates. Additionally, the ambiguous relationship observed between declining household consumption and marginally higher expenditure in regions with more dense cooperatives warrants further exploration

Appendix

Appendix 1. Statistic Descriptives

Variable	Obs	Explanation	Mean	Min	Max
GDRPGrowth	511*	Gross Regional Domestic Product	.075	-.116	.356
Unemploymentrate	514	Regional Unemployment Rate	4.345	0	12.917
EXPEND kab	514	Average Household monthly consumption	5157703.8	2662031.5	12718021
jumlah koperasi kab	514	Number of cooperatives unit	100.204	0	4449
Coop KOSPIN 1	514	Number saving and loan cooperative	65.14	0	4191
prop kab work primer	514	Proportion workers on primary sector	43.402	.256	99.899
commercialbank kab	514	Number of commercial banking units at regency level	57.088	1	668
econ facility kab	514	Number of economic facility units at regency level (market, store, etc)	8315.759	56	71176
member art kab	514	Average number of household members at regency level	3.076	2	5
land Own	514	Number of households who has land	519.735	38	1169
formal	514	Average Household monthly consumption	118318.67	61	1466139
educ facil kab	514	Number of school facility units at regency level	1648.726	24.5	23959.199
Indus Own	514	Number of households who has small and micro business	158.206	0	626
upskill facil kab	514	Number of up-skilling facility units at regency level	84.156	0	523
income	514	Total workers' monthly income at regency level	5.257e+11	8.610e+09	7.734e+12

**There are 3 districts that do not have GDRP as the data is not available*

Appendix 2. Regression Result Based on Cooperatives Type

VARIABLES	(1) GDRPGrowth	(2) ln_Expend_ kab	(3) Unemploy Rate	(4) GDRPGrowth	(5) Unemploy Rate	(6) ln_Expend_ kab
Coop_KOSPIN_1	-0.000		-0.001*			
	(0.000)		(0.000)			
ln_Coop_Kospin		-0.067***				
		(0.012)				
Coop_KUD_1				-0.000	0.011*	
				(0.000)	(0.006)	
ln_Coop_KUD						-0.009

						(0.011)
	(0.005)	(0.029)	(0.216)	(0.005)	(0.219)	(0.035)
land_Own			-0.000		-0.001	
			(0.001)		(0.001)	
formal			0.000		-0.000	
			(0.000)		(0.000)	
educ_facil_kab			0.000		0.000	
			(0.000)		(0.000)	
Indus_Own			-0.002***		-0.002***	
			(0.001)		(0.001)	
upskill_facil_kab			0.005***		0.005***	
			(0.001)		(0.001)	
income			-0.000		0.000	
			(0.000)		(0.000)	
prop_kab_work_primer	0.000	-0.005***	-0.056***	0.000	-0.057***	-0.004***
	(0.000)	(0.001)	(0.004)	(0.000)	(0.004)	(0.001)
commercialbank_kab	0.000	0.001***		-0.000		0.001***
	(0.000)	(0.000)		(0.000)		(0.000)
econ_facility_kab	0.000	-0.000***		0.000		-0.000***
	(0.000)	(0.000)		(0.000)		(0.000)
ln_income	0.002	0.076***		0.004		0.029
	(0.003)	(0.025)		(0.003)		(0.028)
unemploymentrate	-0.002*	0.008		-0.002*		0.018***
	(0.001)	(0.006)		(0.001)		(0.006)
Constant	0.015	13.708***	5.598***	-0.040	5.670***	14.728***
	(0.088)	(0.653)	(0.743)	(0.085)	(0.742)	(0.765)
Observations	511	498	514	511	514	435
R-squared	0.016	0.486	0.446	0.023	0.445	0.345

Appendix 3. Logistic Regression for PSM

Treatment	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
member_art_kab	.323	.456	0.71	.479	-.57	1.216	
land_Own	-.002	.001	-1.67	.095	-.005	0	*
formal	0	0	-3.96	0	0	0	***
educ_facil_kab	0	0	-0.76	.447	0	0	
Indus_Own	-.002	.001	-1.52	.128	-.005	.001	
upskill_facil_kab	.005	.002	2.14	.033	0	.009	**
prop_kab_work_primer	-.007	.01	-0.69	.489	-.025	.012	
Penerima_Kredit_Ko~i	.042	.01	4.19	0	.022	.062	***
density_KUR	.064	.034	1.87	.061	-.003	.13	*
Constant	-.895	1.558	-0.57	.566	-3.948	2.159	

Mean dependent var	0.337	SD dependent var	0.473
Pseudo r-squared	0.192	Number of obs	514
Chi-square	41.871	Prob > chi2	0.000
Akaike crit. (AIC)	84115.535	Bayesian crit. (BIC)	84157.957

*** p<.01, ** p<.05, * p<.1

Appendix 4. PSM Robustness Check Balance Table

Variable	% Bias (Before)	% Bias (After)	Bias Reduction	Variance Ratio (After)	Comment
member_art_kab	16.4%	-1.7%	89.9%	0.51*	Good bias balance; variance ratio just under concern
land_Own	-26.6%	-5.2%	80.6%	0.89	Strong improvement
formal	-42.6%	-2.7%	93.7%	1.21	Excellent balance after matching
educ_facil_kab	-8.9%	8.9%	No reduction	1.09	Switched sign but still low bias
Indus_Own	-7.5%	-11.6%	Bias worsens	0.80*	Acceptable but not improved
upskill_facil_kab	-24.1%	-26.6%	Worsened	0.81	Bias slightly worsened post-match
prop_kab_work_primer	13.4%	13.1%	Marginal	0.76*	Remains imbalanced; not well improved
Penerima_Kredit_Koperasi	43.4%	12.4%	71.4%	1.03	Substantial improvement
density_KUR	20.7%	-9.2%	55.4%	0.96	Good balance after matching

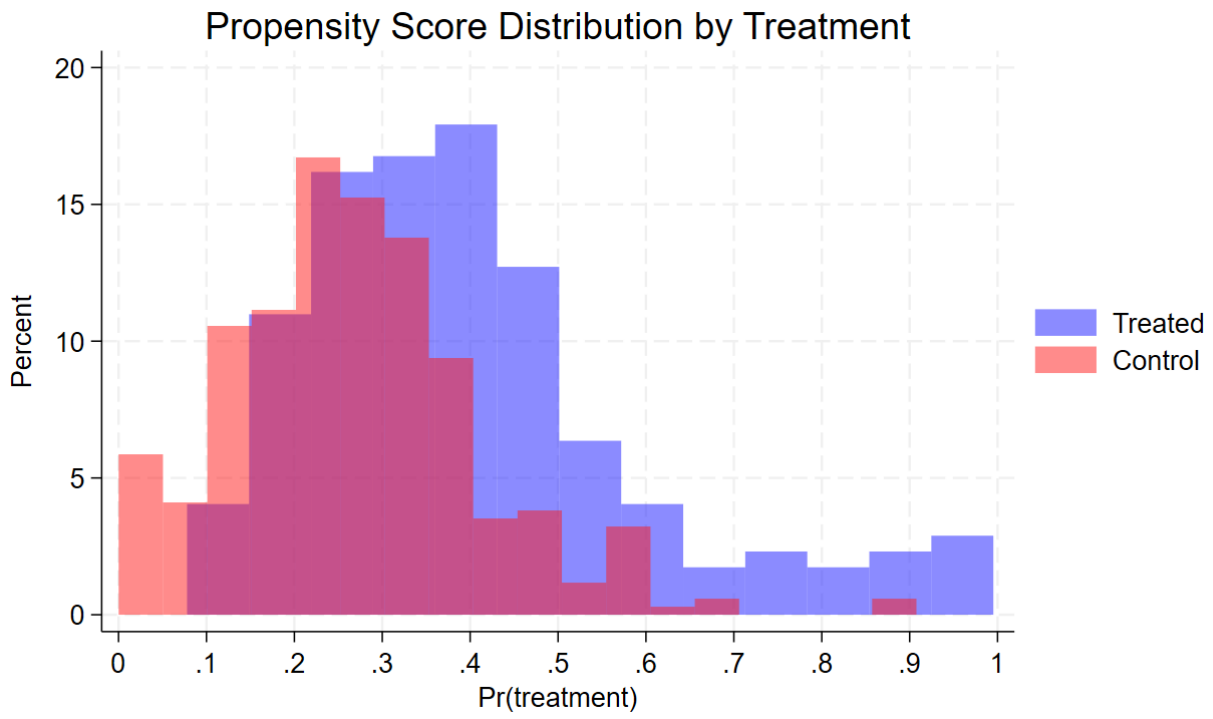
Variables showed substantial reduction in bias, notably member_art_kab, land_Own, formal, and Penerima_Kredit_Koperasi. Some variables such as educ_facil_kab, Indus_Own, and upskill_facil_kab still retain moderate bias, although their variance ratios remain within acceptable limits (between 0.74 and 1.36).

Appendix 5. PSM Robustness Check Balance Table

Metric	Unmatched	Matched	Interpretation
Ps R^2	0.120	0.036	Substantial reduction in explanatory power of covariates after matching
LR χ^2	79.12	16.41	Sharp drop in joint significance of covariates
p > χ^2	0.000	0.059	Post-matching covariates no longer jointly significant → Good balance
Mean Bias	22.6%	10.1%	Close to <10% threshold
Median Bias	20.7%	9.2%	Improved to under 10%
Rubin's B	75.9%*	44.6%*	Reduced, but still slightly above 25% caution threshold
Rubin's R	1.27	0.79	Within recommended range [0.5–2]
% of Covariates with Variance Ratio Concern	33%	33%	Indicates minor but consistent imbalance in some variables
% Bad	0	0	No severe imbalance

Post-matching p-value (0.059) indicates that the covariates as a group no longer predict treatment assignment, which satisfies a core condition of PSM. Rubin's B (>25%) remains moderately concerning, but Rubin's R is well within bounds, and no covariate exhibits extremely poor variance ratios. No covariate falls into "bad" category, and 67% are well-balanced.

Appendix 6. Propensity Score Distribution based on Treatment



Treated Group (Blue) are the districts with above-average cooperative density. Most of them have moderate to high estimated propensity scores, especially clustered between 0.3 and 0.6, with a noticeable tail stretching up to 1.0. Control Group (Red) are the districts with below-average cooperative density. They tend to have lower estimated propensity scores, mostly in the range of 0.1 to 0.4, with very few controls exceeding 0.6. 2. Treated Group Dominates Right Tail (0.6–1.0) excluded from analysis because no suitable match exists vice versa for control group in left tail.However, we could argue that overlap is reasonably strong where treated and control units have similar propensity score to justify causal comparisons for the majority of districts.

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