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Abstract

The debate on the CAP after 2020 is mainly focused on making more effective the public expenditure for agriculture. In this regard, the present paper aims to evaluate whether and how the choice of land as a criterion for redistributing aids direct payments affects the ability of the Basic payment scheme (BPS) to enhance farm incomes in Italy. To this aim, a proper quantitative analysis is provided by using the Italian version of the Farm Accountancy Data Network. Main findings show that there are other specific parameters – such as work and value added – that should be taken into account in order to improve the effectiveness of the BPS in enhancing farm incomes.

Keywords: direct payments, CAP, farm incomes, FADN, Italy.

Introduction

The Common Agricultural Policy (CAP) is a complex and multi-objective policy that addresses several sectoral and territorial challenges related to agricultural and rural areas. Due to its specific nature, it is particularly difficult to clearly evaluate whether and in which measure specific goals are achieved, as well as how effectively public resources are used. While Pillar II (Rural Development) is based on specific programmes that are managed at the national or regional levels and realized around specific and measurable objectives, Pillar I follows a different logic.

Direct payments are associated with the compliance of farmers with basic standards concerning the environment, food safety, animal and plant health and animal welfare. Above all, it must be taken into account that at the same time, these payments are aimed towards achieving specific goals. In this regard, the 2014-2020 CAP reform has paid particular attention to defining a list of specific objectives. It has introduced a new scheme with seven components of direct payments, with the aim of improving both the tailoring and targeting of direct payments. Moreover, for the first time, the current programming period (2014-2020) offers a Common Monitoring and Evaluation Framework (CMEF) to measure the performance of the whole CAP (both Pillars I and II). In more detail, concerning Pillar I, Figure 1 shows that each component of direct payment responds to one or more of those specific objectives (European Commission, 2015).



Figure 1 - Intervention logic for direct payments Source: European Commission (2015)

What emerges is that there are four payments that mainly aim to enhance farm incomes (basic payment scheme, redistributive payment, small farmers scheme and voluntary coupled support); one payment with provision of environmental public goods as a priority (greening); one payment for improving agricultural competitiveness; and, finally, one payment whose purpose is the maintenance of agricultural diversity (payments for areas with natural constraints). However, in financial terms, payments aiming to enhance farm incomes absorb approximately 70% of financial resources for the EU-28; therefore, they clearly represent a

strategic objective of Pillar I for the 2015-2020 period. Specific attention must be paid to the basic payment scheme (BPS), as it requires more than 50% of resources available for direct payments in the EU (that is, \in 161.27 billion for the 2015-2020 period). It is nothing more than a scaled-down version of what was the SPS in the pre-2015 CAP. Furthermore, the BPS is operated based on payment entitlements allocated to farmers in the first year of application of the scheme and then activated each subsequent year by farmers.

Such a direct payment system aims to increase both targeting and tailoring of these public aid schemes to improve the effectiveness of the CAP budget. However, the achievement of specific goals for Pillar I need constant monitoring in order to evaluate achievement of results by means of measuring specific indicators and eventually edit or change specific decisions that could produce distortions and/or unwanted outcomes.

Towards this end, the recent Communication of the European Commission "The future of food and farming" has introduced the so-called New Delivery Model (NDM) for the CAP after 2020 (European Commission, 2017). Even though more details are needed in order to better understand the implications of such a new approach, what seems clear is that it represents a completely different way of managing CAP public expenditures, a response to the critique that the results of the current policy are not easily measured. The NDM has the ambition to make the CAP an evidence-based policy, established at the national level but under EU supervision. What emerges from the Communication is the suggestion that member states should bear greater responsibility and be more accountable concerning how they meet objectives in order to achieve agreed-upon results.

In this regard, the present paper aims to contribute to the ongoing debate over the CAP by proposing a quantitative evaluation of the effectiveness of direct payments in Italy, using data from the Italian version of the Farm Accountancy Data Network (FADN). Attention is paid to verify whether and how the BPS is able to enhance farm incomes. Research questions to be addressed are twofold:

Is the application of the BPS in Italy able to effectively enhance farm incomes?

Is it possible to introduce changes in order to improve the ability of the BPS to enhance farm incomes? If yes, what are possible solutions?

This paper is organized as follows. Section 2 briefly summarizes the evolution of public support for farm income within the CAP and reports on the main literature on direct payments, shedding light on the main limitations and shortfalls that have attracted the attentions of several scholars in the last decade. Section 3 describes the methodology and data adopted in order to verify our research hypotheses. Section 4 shows the main results we obtained, and Section 5 contains a discussion on existing literature. Finally, conclusions are illustrated, and suggestions for both policymakers and stakeholders are presented.

Policy and theoretical framework

Farm subsidies were promoted based on concerns for the chronically low and highly variable incomes of farmers. Innovations in terms of farm income support tools included the introduction of direct payments with the MacSharry Reform in 1992. These direct payments have represented one of the most important tools of the CAP, aiming to finally overcome the main shortcomings of the CMOs during the 1960-1990 period, as well as to strengthen the EU's position in WTO agricultural trade negotiations. However, it was only thanks to the Fischler Reform of 2003 that this tool finally gained acceptability in the eyes of international competitors. Indeed, this reform movement went beyond the distortions of productions and market equilibria caused by coupled direct payments, introducing a new system of decoupled aids, called the Single Payment Scheme (SPS). Since 2005, the SPS has represented one of

the milestones of the CAP as a whole, absorbing about two-thirds of its budget. The introduction of the SPS has removed the link between production and subsidies and has increased farmers' freedom to produce in response to market demands. The SPS worked thanks to a system of payment entitlements that only went to farmers actively farming. Decoupled payments were granted, where farmers have eligible hectares at their disposal to activate the appropriate number of entitlements.

The 2013 reform of the CAP replaced the SPS with the BPS, which came into effect in 2015. As already mentioned, the BPS mainly aims to enhance farm incomes. It operates on the basis of payment entitlements allocated to farmers in the first year of application of the scheme and then activated each subsequent year by farmers. Entitlements are activated annually by matching them with a corresponding number of eligible hectares. What clearly emerges, therefore, is that a strong link between entitlements, payments and land is still at stake.

Scholars have increasingly paid attention to this issue. Evidence highlights that since land availability is a precondition for obtaining aid, there are collateral effects that negatively impact the effectiveness of public support for farmers' income, including i) high (and unequal) concentration of direct payments and ii) capitalization of this aid on land prices. Henceforth, a literature review concerning these two issues is proposed.

Distribution of direct payments

With regard to concentration of direct payments, it must be noted that even though the European Commission defends direct payments as a basic income support for farmers, serious concerns have been expressed regarding the inequitable distribution of strongly concentrated direct payments (Allanson, 2006).

There is unanimous agreement on what makes direct payments so highly concentrated and unequally distributed at the farm level. It is the nature of the support, which is largely areabased, that is the main determinant of such an unequal concentration (Severini and Tantari, 2015b). Indeed, distribution of direct payments is clearly driven by the concentration of land, such that the former is as concentrated as the latter: 20% of the largest farms in the EU constitute 80% of agricultural land and production. Such an impact is confirmed by official statistics that highlight how 80% of direct payments are approximately granted to 20% of the biggest beneficiaries in terms of direct payment amounts (European Commission, 2017). There are two types of member states according to direct payment distribution in the EU: those with a low concentration of direct aids (Finland, Netherlands, France) and those with a high concentration of direct aids (Portugal, Italy, Spain). Von Witze and Noleppa (2007) showed that the main beneficiaries of such payments are farms with large cultivated areas, instead of small or medium farms. Moreover, the distribution of direct aid is largely unequal, because high-income farms take a large share of the payments (Allanson and Rocchi 2008; Mishra et al. 2009). In addition to the concentration issue, scholars have also shed light on the role played by CAP in affecting farm income distribution. Several studies have shown that direct payments cause income inequality to decrease (Keeney 2000; Severini and Tantari 2013a; 2013b; 2015a), whereas other analyses have concluded that these aid payments increase income concentration (El Benni and Finger, 2012).

Schmid et al. (2006) claimed that in most cases, direct payments do not prevent a relevant share of European farmers from remaining in the poorest decile of farm income. In this regard, one of the objectives of the 2015-2020 CAP Reform was to improve the distribution of direct income support among farmers by redesigning first pillar payments (Hansen and Offermann, 2016). However, analysing direct payments given in the year 2015 reveals that just 5% of direct payments went to farms with incomes below the median, while 95% of payments went to farms with incomes above the median (Matthews, 2016). The same author

(2017) states that in the debate about the future of direct payments, such a skewed distribution of direct payments, with the main beneficiaries being farms with relatively high incomes, could strongly undermine their justifications.

Capitalization effect

Depending on both farm size and the duration of the tenant-landlord agreement, decoupled direct payments linked to land positively influence land rents because only those who own or have rented eligible land can claim public support (Killian and Salhofer, 2008; Kirwan and Roberts, 2015). Because eligibility for direct payments depends on control over land, these types of aid are capitalised into land value (Matthews, 2017). It entails that payments are transferred in land rents, so that support to actual farmers depends on the share of land they own. Therefore, it is a quite straightforward relationship that the greater the share that goes to land and landowners, the less effective direct payments are as a means of supporting farmers' income.

What emerges is a highly distributive leakage of the benefits of direct payments to non-farm groups that may reduce transfer efficiencies of direct payments. Attempts to quantitatively estimate the so-called "capitalization effect" revealed that it varies from 0.20 to 0.90 for each unit of subsidy given to farmers (Ciaian and Kancs, 2012; Breustedt and Habermann, 2011; Hendrics et al., 2012; Killian et al., 2012; Klaiber et al., 2015; Kirwan, 2009; Patton et al., 2008). Recent evidence confirms that the 2013 CAP Reform caused land rental prices to increase relative to the pre-reform situation. On average, 27% of decoupled payments are channelled to non-farming landowners in the EU after the 2013 CAP reform. It follows that around \notin 10.2 billion per year is expected to be channelled outside the farming sector in the EU in the 2014-2020 period. Such a leakage effect that benefits non-farming landowners implies further income inequalities among farmers in the EU (Ciaian et al., 2017). Moreover, as EU member states move towards harmonised payments, the capitalization of direct payments is expected to increase if it is not accompanied with measures that have an opposite effect.

The capitalization effect clearly reduces the effectiveness of direct payments. It results in increasing the price of land and, as a consequence, in inhibiting the conversion of agricultural land to other uses, as well as inhibiting the entrance of young farmers into the agricultural sector, due to the increased capital outlays required to purchase a farm (Patton et al., 2008). All in all, such an effect inhibits, or at least hinders, income support to farmers, one of the main goals of direct payments (Latruffe and Le Mouel, 2009).

Against this backdrop, what clearly emerges is that direct payments suffer from some relevant distortions that negatively affect their ability to sustain farm incomes. Unequal concentration on the one hand, and distributive leakages on the other hand, hinder the achievement of one of the main objectives of direct payments, that is, enhancing farm income. As a consequence, they have been criticized by both stakeholders and influent think-tanks that propose to overcome such an efficient system of public aid contractually supporting farmers (RISE Foundation, 2017). Other scholars suggest that in light of these challenges, future CAP reforms should aim at designing a decoupled payment scheme in a way that is not the owners of agricultural assets, e.g., land, but farmers who benefit from CAP subsidies (Ciaian et al., 2017).

Notwithstanding, the European Commission (2017) still defends direct payments as a valuable tool, since they represent approximately 40% of EU farm income. However, the European Commission recognizes that improvements are needed in order to increase direct payment reliability. Therefore, since CAP accountability is under discussion and since there is a high level of scepticism around such a policy, an evidence-based approach is a valid solution to increase direct payments' effectiveness.

In this regard, to the best of the authors' knowledge, apart from focusing attention on different adverse effects of the linkage between direct payments and land, analyses of possible solutions to increase direct payment ability to enhance farm incomes have not yet been provided. Therefore, with reference to the Italian case, the present paper aims to test the following hypotheses:

H1. Land is not an effective parameter to enhance farm incomes via BPS.

H2. There are other parameters that can enhance farm incomes and reduce collateral effects currently at stake because direct payments are linked to land.

Material and methods

The exploratory nature of the present paper explains the choice to opt for mixed methods to analyse different aspects affecting the ability of direct payments to enhance farm incomes. The role of land in influencing the allocation and distribution of direct payments is indeed clear. The step beyond is to analyse whether there are other parameters that more effectively sustain farm incomes.

For this purpose an original evaluation is proposed, with explicit reference to the BPS. It is referred to Italy, where BPS absorbs about 60% of direct payment budget (that is about €13.0 billion for the 2015-2020 period) and therefore represents the main component of the new direct payment scheme that is established in order to enhance farm incomes in Italy (Ciliberti and Frascarelli, 2015). More specifically, three well-known methods are used in order to analyse whether there are parameters alternative to land (measured as utilized agricultural area, UAA) that may be used for allocating direct payments to more efficiently enhance farm incomes. Tested solutions are work (measured as work unit, WU) and value-added (VA), as well as ratios obtained by combining them, such as work/land (WU/UAA), value-added/work (VA/WU) and value-added/land (VA/UAA).

For the first step of the evaluation, a correlation analysis is adopted in order to i) estimate the strength of the relationships between farm incomes and the BPS, and ii) compare the Pearson's coefficients according to different parameters are used to allocate the BPS to establish a ranking based on ability to effectively enhance farm incomes.

The second step concerns the decile analysis. By grouping farms into 10% categories according to farm income levels, the distribution of the BPS according to income deciles when different parameters of allocation (land, work, value-added) is measured and evaluated. Again, for each parameter adopted, the inter-decile ratios (better known as the P90/P10 ratio that compares the amount of BPS received in the highest income decile to that in the lowest) are calculated to compare and rank the solutions proposed on the basis of ability to effectively and equally sustain farm incomes.

Last, but not least, the Gini coefficient is applied. It is the most commonly used measure of inequality and is used in the present paper to highlight BPS concentration, when different parameters for allocation of such public aid are used. Even in this case, a ranking of the solutions adopted is proposed based on the ability to equally redistribute the BPS to effectively sustain farm incomes.

Finally, the results obtained by each analysis are summarized in order to allow a final comparison, with the aim to globally rank parameters used for the allocation of direct payments on the basis of their ability to combine both effectiveness and equity in enhancing farm incomes.

As already specified, the abovementioned analyses concern Italy. They are carried out using the Italian version of the Farm Accountancy Data Network – better known as Rete Italiana Contabile Agraria (RICA) – provided by the Council for Agricultural Research and Analysis (CREA). The FADN is a commonly used dataset for the economic assessment of the CAP,

since it is the only source of harmonized micro-economic data that is representative of commercial agricultural holdings in the EU (European Commission, 2010).

The dataset adopted for the quantitative analysis is from 2015, the first year of application of the new direct payment scheme for the 2015-2020 period. The FADN dataset allows for the isolation of the main component of direct payments that is directly aimed at enhancing farm income (e.g., BPS) as well as to investigate structural and economic characteristics, such as cultivated land (utilized agricultural areas), employment (work units) and performance (farm income, valued added). Here, it is assumed that the latter are continuous variables that could be alternatively used as parameters for the allocation of direct payments in order to compare their effectiveness in sustaining farm incomes. Table 1 reports the descriptive statistics of the variables used with reference to the Italian version of the FADN for 2015.

Variable	Code	Description	Unit	N. Obs	Mean	Sd	Min	Max
Farm	FI	Remuneration to fixed factors of farm production (work, land and capital) and to entrepreneur risks (loss/profit) in the	€	Obs. 8042	58303.7	184879.2	-737289.0	6833913.0
Value- added	VA	accounting year. Remuneration to the fixed factors of production (work, land and capital), whether they be external or family factors.	€	8042	88817.3	232975.1	-455478.0	8455839.0
Work unit	WU	Total labour expressed in full-time person equivalent.	n.	8042	1.9	2.5	0.03	68.3
Utilized agricultura l area	UAA	Consists of land under owner occupation, rented land and land in share- cropping.	Hecta re	8042	36.1	59.6	0.2	1258.4
Basic payment scheme	BPS	Payment operated on basis of payment entitlements allocated to farmers and activated each year by farmers.	€	7730	8935.9	31356.5	0.0	1825799.0

Table 1 – List of variables and descriptive statistics of the sample

Source: our elaboration on Rica dataset, 2017

Moreover, it must be noted that the quantitative analyses refer to the entire population of Italian farms thanks to the application of individual weights provided by the FADN. Such a choice allows for the extension of the results in order to provide meaningful implications for policymakers.

Main findings

This section reports the main results obtained by analysing the impact of alternative parameters used for allocation of the BSP in Italy.

To reallocate the budget for the BPS (that is, in the weighted sample, approximately 1.46 million euros) among farms of the RICA dataset, first, all average national values (ANV) for each parameter are calculated (Table 2).

Table 2 – Alternative parameters and average national values of BPS (€)

Parameters	ANV (€)
UAA	247.35
WU	4679.66
VA	0.10
WU/UAA	169059.50
VA/WU	1485.09
VA/UAA	3.63

Source: our elaboration on Rica dataset, 2017

Subsequently, these reference values are used for distributing the basic payment on the basis of each parameter. In practice, the BPS is allocated by multiplying the ANV for the value of each parameter at the farm level. The application of such a procedure caused different distributions of payments at the farm level, with specific impacts on the redistributive efficacy of the BPS.

To evaluate these effects, first, the correlation between farm income and the BPS is measured for every parameter used to allocate this public aid. Graph 1 shows the distributions of the BPS according to the different parameters used.



Graph 1 – Correlations between FI and BPS with different parameters of allocation (UAA, WU, VA, WU/UAA, VA/WU, VA/UAA) Source: Our elaboration on RICA dataset, 2017

What clearly emerges is that there are some relevant differences in the correlations between BPS and farm income levels in the simulated scenarios. This is a first indication that parameters matter in affecting the distributions of the BPS, so if the aim is to enhance farm income, a parameter with specific characteristics should be identified. More in detail, an effective parameter should be weakly correlated with farm income, meaning that the distribution of public support does not provide advantage to the farms with the highest level of income but, conversely, tends to progressively redistribute across farms on the basis of pre-support income level.

Table 3 compares the effects due to the use of alternative parameters for the allocation of direct payment, by ranking values of the coefficient/ratios in decreasing order.

Pearson	's r	p90/p	10	Gini coefficient	
VA	0.96	VA	25.35	UAA	0.72
VA/WU	0.63	VA/WU	9.56	VA	0.67
WU	0.47	UAA	8.95	VA/UAA	0.66
UAA	0.45	WU	3.42	WU/UAA	0.56
VA/UAA	0.20	WU/UAA	0.97	VA/WU	0.46
WU/UAA	0.03	VA/UAA	0.49	WU	0.41

Table 3 – Ranking of alternative parameters for allocation of direct payments based on Pearson's r, P90/P10 and Gini coefficient

Source: our elaboration on Rica dataset, 2017

It reveals that when VA is used as a parameter, the distribution of the BPS is strongly correlated with farm income level (ρ VA=0.96 and ρ VA/WU=0.63). This is because VA is a component of farm income. WU and UAA show correlation effects of medium intensity (ρ WU=0.47 and ρ UAA=0.45), implying moderate relationships with the distribution of farm incomes. Conversely, the VA/UAA and especially the WU/UAA ratios show low and very low correlations, respectively, with farm income levels in Italy (ρ VA/UAA=0.20 and ρ UAA=0.03). Such a finding suggests that by using WU/UAA as a parameter for allocating the BPS, public aid is distributed without specific benefit for farms with the highest level of income. It is therefore straightforwardly concluded that parameters that are inversely correlated with land (like UAA) allow a more equal distribution of the BPS, since income support is scarcely correlated with presupport income levels.

Table 3 also highlights how different parameters adopted in the simulation affected the distribution of BPS in terms of concentrations in the lowest/highest deciles of farm income. Such an analysis is particularly useful to evaluate the contribution of each parameter to equity. As for inter-decile ratio, findings clearly show that when VA is used, the distribution of income support is totally unequal because public support for farms in the uppermost decile of income is about 25 or 9.5 times higher than those for farms in the lowest decile. Similar results occur when UAA is adopted (p90/p10=8.95), confirming that cultivated land is not able to ensure a fair and equal distribution of the BPS. Different results are obtained when WU is introduced, since it allows a more equal redistribution of farm incomes, especially when combined with UAA (p90/p10=0.97). In such a case, farms in the lowest decile of income would benefit from the same amount of BPS as those in the uppermost decile. However, the parameter causing a more equal (and progressive) distribution of farm income is VA/UAA (p90/p10=0.49), since it allows farms in the lowest decile of income to double public resources received compared to farms in the uppermost decile.

Lastly, the analysis of the Gini coefficient (table 3) confirms that UAA and VA (GUAA=0.72, GVA=0.67 and GVA/UAA=0.67) produce a strong concentration of the BPS in the higher decile of farm income (due to strong correlation of these parameters with farm income level). Again, WU allows reduced concentration of public support, but with some relevant differences in terms of both effectiveness and equity. Indeed, whereas VA/WU and WU are scarcely concentrated (GVA/WU=0.46 and GWU=0.41) but strongly correlated with farm income, WU/UAA (GWU/UAA=0.56) is a parameter that fits with both prerequisites useful to ensuring effective and equal support to farm income: it is slightly concentrated, but at the same time, scarcely correlated with farm income. As a result, this latter parameter combines better than others both the prerequisites needed to ensure more effective and equal distribution of BPS in Italy.

Discussion and Conclusions

The analysis based on the Italian FADN dataset can contribute to the debate over direct payment, since it demonstrates that the choice of land as a parameter for both distribution and assignment of the BPS is pivotal in negatively affecting distribution, as well as in limiting the effectiveness of this public support for farm income.

With regard to the first hypothesis tested (H1. "Land is not an effective parameter to enhance farm incomes via BPS"), quantitative evidence highlights that land is an ineffective parameter to sustain farm incomes, since it is strongly concentrated and, above all, strongly correlated with pre-support farm income level. This finding confirms previous evidence about the negative effect of land in allowing effective and equal support to farm income. Moreover, it implies that the debate on internal convergence as a key mechanism for overcoming the distortion related to the historical references used to allocate payments in some member states is not well posed until aid distribution is strongly affected by land distribution. These results also explain why the impact of the application of specific redistributive tools (such as degressivity and capping) in Italy is limited.

Concerning the second hypothesis (H2. "There are other parameters that can enhance farm incomes and reduce collateral effects currently at stake because direct payments are linked to land"), the findings revealed that some alternative parameters can strongly improve the effectiveness of direct payments aimed to enhance farm incomes in Italy. By comparing land (UAA) with other potential parameters referred to as economic (VA, VA/UAA, VA/WU) or structural characteristics (WU, WU/UAA), what emerges is that each parameter strongly influences the correlation of public support with farm income level and distribution according to farm income deciles. Moreover, quantitative analyses clearly revealed that both work and value-added, when combined with land (WU/UAA, VA/UAA), allow more effective and equal allocations of the BPS. This result is because, thanks to these parameters, the BPS is weakly correlated with farm income level since it is mainly concentrated in the lowest deciles of farm income. Such an effect may allow a more equal and effective distribution of public support aimed at enhancing farm income.

Final remarks

The present paper gives interesting insights on the debate about the effectiveness of the component of direct payments aimed at enhancing farm incomes. What clearly emerges is that the linkage between land and public aid strongly affects the correlation with farm income level and the allocation of public support in Italy. Further, the distribution of the BPS follows the

distribution of land, which is in turn positively correlated with farm income. As a result, the BPS has limited effectiveness since it is prevalently concentrated in the highest deciles of farm incomes. Therefore, this unequal distribution is a direct consequence of the use of land (UAA) as a parameter for the allocation of direct payments. However, quantitative evidence shows that these collateral effects could be quite easily overcome by adopting alternative parameters that take into account other economic and/or structural characteristics of farms. In Italy, for instance, a more effective use of the BPS would be possible, thanks to use of the work (WU) or the value-added (VA) parameters for allocation of public support. Both these parameters are also able to foster a more equal distribution of the BPS.

This work provides interesting suggestions for policymakers, even though only circumscribed to the Italian case. Choice of land is pivotal within the debate on the effectiveness of public support of farm income. Indeed, the decision to allocate payments aimed at enhancing farm income on the basis of land distribution causes several distortions: from the capitalization effect to the concentration of public resources among farms with the highest level of farm incomes.

With reference to the Italian case, quantitative evidence highlights that introducing alternative parameters – such as work and value-added parameters – that substitute or combine the current one (land) could be more effective than continuing to focus attention on redistributive tools/mechanisms that can only reduce, but not eliminate, distortions caused by the linkage between land and direct payments. Such a decision is indeed strategic in order to increase the effectiveness and foster a more equal distribution of the BPS, a public support that aims to enhance farm income and accounts for half of the budget of Pillar I.

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