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The role of subsidies in promoting Italian joint ventures in least developed and transition economies[1]

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This paper analyses the impact of subsidies for the promotion of Italian joint ventures (JVs) aimed at LDCs and transition economies. The empirical analysis is carried out on a unique dataset of 172 JVs interviewed during 1998 by means of a closed-answer qualitative-quantitative questionnaire. The main finding of the study is that, although there is a significant deadweight component in incentive policy, the subsidized firms are significantly more likely to grow. Moreover, the JVs comprising new firms (which need to grow to survive) also have a higher employment performance than average, as do the (labour intensive) JVs motivated by the search for lower labour costs, and the JVs in east European countries.

I. INTRODUCTION

As of the end of the 1980s, the relative political and economic stability reached by some Least Developed Countries (LDC), together with the liberalization processes activated in Central and Eastern European countries, have permitted a significant acceleration in foreign direct investments (FDI) on a global level. The growth of these investments was very rapid between 1992 and 1995 (18%, 16% and 28% respectively in 1993, 1994 and 1995), followed by a slowdown (−0.7% in 1996), due mainly to a net decrease in investments made by EU member states (−4.6% in 1996).

Italian foreign investments have partly reflected the expansion characterizing other European nations during the first half of the 1990s. The number of employees of foreign firms with Italian shareholders increased from 244 188 in 1986 to 606 266 at the end of 1997 and most of this increase occurred in LDCs or in transition countries, where in 1997 53% of these employees were to be found (see Cominotti *et al*., 1999). If total foreign investments are considered, there is still a gap compared with the other three major European states: the UK invested 3.5 times as much as Italy, Germany 2.5 times as much and France twice as much (in 1994 Italy contributed 3.5% to total world capital stock invested overseas, see Prometeia–Comit, 1998). However, the capacity of Italian firms to invest abroad is considerable, if the investments in LDCs and transition economies are considered alone. When considering central and east European states, for example, Italy is together with Austria the third largest investor after Germany and the USA (see Mutinelli and Piscitello 1997).

This paper analyses the impact of the two main financial instruments for the promotion of Italian joint ventures

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(JVs) aimed at LDCs and transition economies: subsidized credit provided by the Foreign Office in accordance with the law on development aid (art. 7 Law 49/87) and funds provided by Simest and Mediocredito Centrale in accordance with Law 100 of 1990 (officially this is a Public Development Finance Corporation, while in practice the funding is equivalent to subsidized credit). The context for the application of these instruments – which basically provide subsidized credit for financing investments – is significant both as regards the total volume of Italian investment and as regards the volume of the facilities provided. For example, there were approx. 350 JV projects approved by Simest and the Foreign Office at the end of 1998: 300 for Simest and 50 for the Foreign Office.

When one considers that the total number of foreign firms with Italian shareholders in the LDCs and transition economies was approximately 1000 at the beginning of that year (source: National Committee for the Economy and Labour, CNEL), approx. 35% of Italian investments were subsidized. The size of the subsidies is also quite noteworthy; a previous study by one of the authors (Barba Navaretti, 1997) shows that approx. 30% of total capital invested by beneficiary firms was subsidized, and that the subsidy generated a reduction varying between 10% and 20% of the total cost of the investment.

The aims and means of subsidizing are extremely controversial. When credit facilities substitute funds obtainable on the open market for financing investments which would take place in any case, there is simply a deadweight effect, i.e. a net transfer of resources from taxpayers to subsidized firms (see Hansson and Stuart, 1989; Wren, 1996). By means of a descriptive analysis, Barba Navaretti (1997) has in this respect shown how in the case of Italy the firms which have benefited from credit facilities have been mainly large-scale, i.e. those which should not have any problems in finding finance on the market. In contrast, any market failure ought to involve small and medium firms, which have more difficulty than large ones in investing abroad because of financial and managerial limitations (see Buckley, 1979, 1989). This preliminary evidence justifies the doubt that facilities granted to Italian JVs might have a deadweight component.

The present paper analyses the impact of subsidies more deeply, using information from a study carried out over a sample of JVs financed by the promotional instruments described above. Comparing data relative to these JVs with that for other Italian JVs in developing nations which have not received subsidized credit, it has been possible to study the role of the incentives. More specifically, this has enabled us to answer questions such as: how far has the investment really been induced by the presence of the subsidy? Are subsidized firms different from non-subsidized firms? Have the subsidized firms performed better than the non-subsidized firms? Indirectly, these questions enable us to understand whether the subsidies really generate investments which otherwise would not be made, and whether the resources are really devoted to investments with high growth potential. Overall, 172 JVs, ex-novo or deriving from the acquisition of existing plants by Italian firms in LDCs or transition economies, are analysed.

The paper is structured as follows: Section II describes the data used and presents descriptive statistics for subsidized firm profiles, especially as regards their motivation in support of the decision to promote a JV; Section III presents a probit analysis for the relation between the firm profile and the probability of receiving a subsidy; Section IV examines whether the existence of the subsidy or other company features are decisive factors for the performance of Italian JVs abroad; finally, Section V presents some conclusions.

II. DATA AND DESCRIPTIVE STATISTICS

The empirical analysis is carried out on a unique dataset of 172 JVs interviewed during 1998 by means of a closed-answer qualitative–quantitative questionnaire. One hundred and thirty-four of these JVs concern industries in which Italy is specialized (mechanical, textiles, clothing), while the remaining 38 cases are from firms comprised in a mix of industries. Some of the JVs have exploited the credit facilities in accordance with Law 100 and Art. 7 of Law 49. In order to evaluate the impact of the subsidy, these JVs must be compared with a control subsample , i.e. with JVs starting up independently and without subsidies. In our case, 34% of the sample comprises subsidized firms while 66% is unsubsidized. This combination reflects the incidence of subsidies in the population of Italian investors in LDCs and transition economies (see Section I).

As regards the location of the JVs, they are from almost all areas of the world, though many of those studied are concentrated in central-eastern Europe (53 cases, equal to 31%) and the far east (India, China and Far East 51 cases, equal to 30%). Given that generally the investments considered are new, this geographic distribution reflects recent trends in foreign Italian investment: between 1986 and 1998

Table 1. *Composition of the sample*

	Total 172 firms	Subsidized 59 firms	Non-subsidized 113 firms
Mechanical	42%	25%	50%
Textiles	10%	10%	11%
Clothing	26%	14%	32%
Other industries	22%	51%	7%
East Europe	31%	41%	26%
Latin America	17%	14%	19%
Far East	30%	27%	31%
Other	22%	18%	24%

investment in central-eastern Europe grew from 0.6% to 19.9% of the total of overseas firms with Italian shareholders (including firms in industrialized nations), and that in Asia grew from 7.6% to 13% (see Barba Navaretti, 1997).

For two reasons – the availability of only partially complete data and the need to obtain a sample reflecting present relative proportions between subsidized and non-subsidized firms in the reference population – it has not been possible to balance the two sub-samples from an industry and geographic point of view. The firms received a questionnaire aimed at gaining information about the company profile (turnover, employees, investment, motivation, type and effectiveness of subsidy, etc.), relative to both the parent company and the JV.

The first problem considered is the capacity of the incentives to generate additional investments in developing nations. If this is not the case, the companies are using credit facilities to finance investments they would have made anyway at market cost; thus the incentives are a mere transfer of resources from the general public to the owners of the firms (deadweight effect). The answer to this question is broken down into two parts: firstly, the firms were asked some questions directly; secondly, a descriptive and a regression analysis was carried out to find out whether the subsidized firms have different characteristics from the non-subsidized firms.

Table 2 gives the frequency of answers to the questions for the 58 subsidized firms with reference to the influence of the subsidy on their decision to invest. The questions were broken down into several points.

First, this study asked whether the decision to invest was influenced by the availability of credit facilities (in the case of firms limited in their ability to raise capital on the market) and by the availability of the subsidy, which permits a reduction in the cost of financing. The results are rather disquieting: in all cases, the majority of firms replied no and over 90% replied no or partially. This suggests that the firms could have found money on the market (reply regarding the availability of credit) and that the yield expected from the investment was such as to repay the market cost of credit (reply regarding the reduced cost of credit).

Second, this study asked whether the subsidy influenced the choice to invest in a JV rather than a fully owned subsidiary and to invest in a developing nation rather than in an industrialized nation. These aspects are important, in as much as the subsidy is issued partly with the objective of furthering the development of the host nation. The formation of a JV rather than a subsidiary permits greater interaction with local partners. Again, a large majority of firms believes that the subsidies are useless, i.e. maintains they would have invested in a developing nation and in a JV even without the facilities.

Finally, we asked whether the subsidy had significantly influenced the firm's competitiveness. The reply was negative in this case too, confirming the fact that the expected profit margins on the investment were such as to render irrelevant the reduction in the cost of the investment resulting from the subsidy.

These results lead us to suspect that the subsidy represents a mere transfer of resources from the taxpayers to the firms, and that it does not really help compensate any market failures which might hinder investment activity. In order to better analyse this point, it is helpful to compare the characteristics of the subsidized JVs with those of JVs financed in accordance with market conditions. The more similar the groups of firms are, the more valid the hypothesis of a deadweight effect will be.

As a first step, we describe the motivational factors resulting in investment overseas. An initial examination of these factors (Table 3) offers interesting and surprising elements regarding determining factors in the decision to form a JV with a foreign partner. Separating the subsidized and non-subsidized firms (Table 3), the first fact to emerge is that for the former the most important motivation is that

Table 2. *Subsidy and decision to invest*

	Simest				Law 49 of 1987			
	Yes	Partially	No	Tot	Yes	Partially	No	Tot
The decision to invest was influenced by:	%	%	%	%	%	%	%	%
Availability of financial facilities	4.5	29.5	65.9	100	13.3	40	46.67	100
Reduced cost of investment	2.3	45.5	52.3	100	0	46.67	53.33	100
Was a developing nation chosen because of the availability of credit facilities?	2.3	32.6	65.1	100	6.67	40	53.33	100
Was the JV chosen because of the availability of credit facilites?	9.3	30.2	60.5	100	6.67	33.3	60	100
Was your competitiveness influenced by the availability of credit facilities?	6.8	27.3	65.9	100	0	43.0	57	100

Table 3. *Determining factors for a joint venture (Likert scale from 1 to 4, averages, standard deviations in brackets): subsidized and non-subsidized firms**

Determining factor	Total (151)	Subsidized (54)	Nonsubsidized (97)
Market	2.93 (1.29)	3.06 (1.22)	2.87 (1.33)
Labour costs	2.84 (1.17)	2.57 (1.21)	2.99 (1.13)
Barriers	1.93 (1.10)	2.06 (1.22)	1.87 (1.03)
Strategy	1.87 (1.06)	2.04 (1.20)	1.77 (0.97)
Input	1.85 (1.16)	2.06 (1.20)	1.74 (1.12)
Technology	1.83 (1.12)	2.26 (1.17)	1.60 (1.03)
Skills	1.54 (1.07)	1.70 (1.21)	1.45 (0.98)

* *Note:* 151 firms are included, not 172, because 21 did not reply fully to the questions regarding motivation. The questionnaire questions regarding motivation ('what motives caused you to decide to invest abroad?') summarized in the table are the following:
- chance to increase or maintain foreign market penetration (market)
- income deriving from sale of technology, brands, plant, licences (technology)
- guaranteed cheap supply of raw materials/semi processed goods (input)
- reduced labour costs (labour costs)
- need to find loopholes in trade, technical or legal barriers (barriers)
- access to locally-available skills, technology, and know-how (skills)
- reply to similar moves by competitors (strategy)

of the chance to increase or maintain their presence on foreign markets. For non-subsidized firms, the most important factor is reduced labour costs, though the market is still significantly important.

Among other factors considered, subsidized firms put income deriving from sale of technology, brands, plant, licences in third position (straight after reduced labour costs), which is last but one (just before access to locally-available skills, technology, and know-how) for the non-subsidized firms (these results are not surprising, given the low or medium/low technological level of the host nations).

Overall, the motivation of the subsidized and non-subsidized firms does not seem significantly different, though there is a tendency for the subsidized firms to be more influenced by progressive motivation (market and technology). From this particular point of view, the subsidy therefore seems to exhibit a positive discriminating function.

III. WHO BENEFITS FROM THE SUBSIDY?

The next step will be to try to better analyse the differences between the subsidized and non-subsidized firms. The aim of this exercise is to define the 'ideal type' of the subsidized firm, irrespective of the fact that she either applied for any particular subsidy scheme or, in the case she did, had or had not been admitted to the scheme itself. Using a probit analysis, this study estimates the following model:

$$P_{i,j,k}(\text{SUBS} = 1) = a_1 + a_2 X_i + a_3 Yj + a_4 Zk + \varepsilon \qquad (1)$$

Equation 1 enables us to estimate the probability that the JV i set up by the Italian firm j in nation k is subsidized in relation with a series of characteristics of the JV itself (**X**), the Italian firm (**Y**) and the host nation (**Z**). Table 4 describes the variables used and Table 5 gives the regression results. The choice of variables used in the multiple regression is the result of a selection procedure that excluded all the characteristics not theoretically associated with the profile of a subsidized firm and all the characteristics non significantly linked with the dependent variable in the simple one variable regression. From 172, the number of observations is reduced to 104 because of limitations in the availability of fully answered questionnaires.

As regards the host nation, this study considers the income growth rate, the average per-capita GNP and a geographic and cultural proximity dummy (DEAST). The lower the per-capita income and its growth, the lower the nation's ability to attract new investments, and therefore the greater the importance of the subsidy in redirecting foreign investments towards development objectives. Indeed, this is not the case: both variables have little influence, with GROWTH having a significant and positive influence on the likelihood of getting a subsidy; in other words, the subsidized firms do not seem to be directed towards nations different from those in which companies using finance provided by the market invest.

Another important factor when considering the development of the host nation is the share of capital provided by the local partner. The higher this share is, the more local workers can take part in the management of the firm and accelerate the process of know-how transfer. The coefficient of this variable has the expected sign and is partially

Table 4. *Key to variables used in estimating model (1)*

Variable	Description
Subsidy	Dummy = 1 if financing is subsidized = 0 if financed by market
Growth	Growth rate of per-capita income (1995) of host nation
Per capita GNP	Absolute GNP per-capita 1995 (OECD data) of host nation
Deast	Dummy East European nations
Share	Share of JV held by the parent company in 1997
Log employees	Parent company employees logarithm
MKT	Value attributed by the firm to market penetration as motivating factor
LC	Value attributed by the firm to reduced labour costs as motivating factor
Empturn	Labour intensity (employees/turnover) of the JV compared with the parent firm

Table 5. *Subsidy determinants*

Dependent variable: Subsidy	(a)	(b)	(c)
Constant	1.82***	2.18***	2.05***
	(0.70)	*(0.79)*	*(0.80)*
Growth	0.04**	0.04**	0.04**
	(0.03)	*(0.03)*	*(0.03)*
Per-capita GNP	0.00	9.19E-05	7.16E-05
	(0.00)	*(0.00)*	*(0.00)*
Deast	−0.51	−0.544	−0.49
	(0.35)	*(0.35)*	*(0.37)*
Share	−(0.01)	−0.01*	−0.01*
	(0.01)	*(0.01)*	*(0.01)*
Log employees	−0.37***	−0.36***	−0.37***
	(0.10)	*(0.10)*	*(0.10)*
MKT	–	*−0.09*	
		(0.12)	
LC	–	–	−0.04
			(0.14)
Empturn	−0.74	−0.799	−0.81
	(0.79)	*(0.81)*	*(0.80)*
Pseudo-R^2	*0.18*	*0.189*	*0.185*
Log-likelihood	*−52.11*	*−51.10*	*−51.34*
Observations	*104*	*104*	*103*

Note: Standard error in brackets; * = significant at 90% level of confidence; ** = significant at 95% level of confidence; *** = significant at 99% level of confidence.

significant. In this case the subsidy seems to have a positive function in favour of the host nation.

From the parent company's point of view, one can imagine that a typical market failure is linked with the size of the investing firm (higher finance costs and lack of managerial skills, see Section I). In fact, the LOG EMPLOYEES variable enters the Probit estimate with the expected negative coefficient and is highly significant. The subsidy seems therefore to compensate for market failure linked with small size. However, this result should be viewed with caution. If one reasons – as one should in these estimates – in terms of the number of firms with credit facilities, it is true that many of them are medium–small. If however one reasons in terms of investment volume, a large majority of the credit facilities go to large firms (see Barba Navaretti 1997).

Finally, the variables linked with the strategy pursued by the firm by means of the JV are not significant. The fact that a firm is stimulated by market seeking and/or (labour) cost reducing is not reflected in a higher (or lower) probability of obtaining a subsidy. This result means that some caution is necessary when drawing conclusions on the basis of the descriptive comparisons given in Table 3. Similarly, a strategy of decentralization of labour-intensive activities (EMPTURN) does not discriminate.

IV. SUBSIDIES AND PERFORMANCE OF SUBSIDIZED FIRMS

A further research query involves investigating the measure in which investment promotion programmes are able to select investments with good growth potential. On the basis of the data gathered by means of the questionnaires, the performance of the firms studied can be measured either in terms of turnover or in terms of employees. The latter was chosen for two reasons. Firstly, the data regarding the JVs' turnover suffers from intra-firm flows and complex internal price dynamics; secondly, the Italian firms made their investments in nations with different tax systems which may have influenced turnover data (see King and Fullerton, 1984). This study thus chose to take as the JV performance proxy the annual employment growth rate between the initial year and 1997.

The regression analysis followed a stepwise procedure, so that the JV features (size, size of parent firm, industry sector, geographical area, host country's GNP, JV capital shares, existence of subsidy, motivation listed in Table 3) were evaluated in accordance with their impact on the JV's employment growth. The selection of significant variables and necessary checks (fixed effects) led to the definition of the following model, estimated using White's correction for heteroscedasticity.

$$\Delta EMP = \beta_0 + \beta_1 DSUBS + \beta_2 LC + \beta_3 DACQUI + \beta_4 DMEC + \beta_5 DTEX + \beta_6 DCLO + \beta_7 DEAST + \beta_8 DLAT + \beta_9 DFAR + u \quad (2)$$

Table 6 describes the variables used and Table 7 gives the regression results.

Three estimates were made (Table 7): in the first, (a), only industry specific effects were checked for; in the second, (b), geographical areas were also considered, to include the impact of the economic cycle and institutional features of the host nations on JV employment growth patterns; in the third, (c), the LC variable was omitted. From 172 the number of observations is reduced to 67 (70 in (c)), mainly because of the exclusion of initiatives for which it was not possible to calculate the annual growth rate of employment due to a lack of data or because they started up in 1997. The diagnostics of the three estimates is satisfactory, with acceptable values for both the *R* squared and the *F*-test.

The results highlight a possible positive role of the subsidy, which has a highly significant coefficient in all the estimates. The selection procedure for firms entitled for a subsidy thus seems to identify those with the best growth potentialities (the annual employment growth rate is 28% if all 72 firms for which the figure is available are considered, and rises to 64% when considering the subset of 30 subsidized firms). Nevertheless, the fact that the subsidized firms are those with the best dynamics reinforces the presumption that market financing and subsidized financing are interchangeable. Indeed, it can be supposed that performance in terms of growth is positively related to the probability that the firm can finance its foreign investments on market conditions. This result therefore has a double interpretation: on the one hand, the presence of a subsidy seems to increase the chance of employment growth in the JV and therefore increases the benefit for the host nation; on the other hand, the good performance found in the subsidized firm creates doubt that the subsidy may contain a deadweight component (the firm could have obtained the same results with market finance).

Table 7. *Determinants of employment growth in the JVs*

Dependent variable ΔEMP	(a)	(b)	(c)
CONSTANT	−0.55*	−0.44	−0.11
	(0.35)	*(0.37)*	*(0.21)*
DSUBS	0.74***	0.73***	0.69***
	(0.24)	*0.24)*	*(0.22)*
LC	0.17***	0.10*	–
	(0.07)	*(0.06)*	
DACQUI	−0.26**	−0.39**	−0.43***
	(0.13)	*(0.17)*	*(0.15)*
DMEC	0.37*	0.43*	0.39*
	(0.27)	*(0.26)*	*(0.23)*
DTEX	−0.05	0.01	0.04
	(0.25)	*(0.26)*	*(0.23)*
DCLO	0.10	0.16	0.26
	(0.25)	*(0.26)*	*(0.23)*
DEAST	–	0.32**	0.30**
		(0.17)	*(0.16)*
DLAT	–	−0.02	−0.07
		(0.16)	*(0.14)*
DFAR	–	−0.26**	−0.34**
		(0.16)	*(0.15)*
R^2	0.30	0.38	0.36
Adjusted R^2	*0.23*	*0.28*	*0.27*
F Test	*4.26***	*3.85****	*4.23****
Observations	*67*	*67*	*70*

Note: Standard error in brackets, * = significant at 90% level of confidence; ** = significant at 95% level of confidence; *** = significant at 99% level of confidence. Null hypothesis: homoscedasticity; in case of heteroscedasticity (at least at 90% level of confidence) a consistent covariance matrix was used (White's correction).

The negative, significant (even if only at the 95% level) coefficient for the DACQUI variable indicates better employment prospects for the JVs which give rise to new firms rather than those resulting from the take-over of existing firms. This result is consistent with what is stated in the literature regarding post-entry performance of firms (see for example Audretsch *et al*. 1999); newly formed firms

Table 6. *Key to variables used in estimating model (2)*

Variable	*Description*
ΔEMP	annual employment growth rate in the JV between start-up and 1997
DSUBS	dummy = 1 if the firm obtained a subsidy, 0 otherwise
LC	value attributed by the firm to the reduction in labour costs as motivating factor
DACQUI	dummy = 1 if the JV was started up by the take-over of an existing firm or 0 if it was a new firm
DMEC	dummy = 1 if the JV is in the mechanical industry, 0 otherwise
DTEX	dummy = 1 if the JV is in the textile industry, 0 otherwise
DCLO	dummy = 1 if the JV is in the clothing industry, 0 otherwise
DEAST	dummy = 1 if the JV is in Eastern Europe, 0 otherwise
DLAT	dummy = 1 if the JV is in Latin America, 0 otherwise
DFAR	dummy = 1 if the JV is in the Far East, 0 otherwise.

are usually smaller than the best minimum size for the sector and therefore survive only if they manage to grow rapidly during the first years of activity.

The comparison between sub (b) and sub (a) estimates indicates some weakness in the significance of the LC variable when the geographical dummies are included; indeed, the value of the relative coefficient in estimate (b) is smaller that that in estimate (a) and only significant at the 90% level. Overall, the fact that firms started up (or taken over) as a result of the need to reduce labour costs have a higher tendency to grow (in terms of employees) than those which give less importance to this motive, is to some extent supported by the data. This result is not surprising, given that presumably a JV started up mainly with the aim of reducing labour costs should be characterised by labour-intensive processes.

Concerning fixed sector effects, only the mechanical industry dummy has a relatively significant, positive coefficient in all the estimates. This result derives from an increased demand for capital goods in the LDCs and transition economies.

Of the area dummies, only that for east Europe has a significant (though only at the 95% level), positive coefficient influencing the employment growth of the JVs. When interpreting this result, perhaps the availability of low-cost skilled labour is important, being the most attractive feature of transition economies.

V. CONCLUSIONS

The main results of the present study can be summarized as follows:

(1) Most firms declare that the subsidy was not basic to their decision to invest and the way they invested abroad, revealing a significant deadweight component in incentive policy.
(2) In any case, smaller investing firms (with limited access to capital markets) have more chance of belonging to the category of the subsidized firms; in this sense the subsidy partially compensates for market failure.
(3) If the JV performance is measured in terms of employment growth, the subsidized firms are significantly more likely to grow. This result has a double interpretation: on the one hand, the presence of the subsidy seems to increase the JV's chance of employment growth, thus increasing the benefit for the host nation; on the other hand, the good performance of the subsidized firm increases the suspicion that the subsidy may contain a deadweight component (the firm is healthy and could probably have obtained similar results with financing obtained on the open market).
(4) The JVs comprising new firms (which need to grow to survive) also have a higher employment performance than average, as do the (labour intensive) JVs motivated by the search for lower labour costs, and the JVs in east European countries (attractive from an employment point of view because of their endowments of skilled but cheap labour).

Among future lines of research, the most interesting involves the possibility of distinguishing the beneficial effect of the subsidy on performance from the deadweight effect, with the aim of measuring their relative importance. To this end, the construction of new ad hoc datasets is to be hoped for; these databases should have a panel structure, containing information about firms involved in joint ventures, gathered before and after the obtaining of the subsidy.

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