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Do we have to fear tax competition among “new” and “old” European countries?

*Thierry Madiès**, *Simon Schnyder*** and *Malgorzata Wasmer****

The purpose of this paper is to study both theoretically and empirically tax competition in the enlarged EU and to provide some insights on ongoing reforms concerning business taxation. We support the idea that even if one can observe cuts in “new” members statutory business tax rates, this should not result in fiercer tax competition between the “core” and “the “periphery” since infrastructure endowments and the existence of agglomeration rents in the core of the EU may prevent (at least partially) activities to relocate to the “new” members.

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El objetivo de nuestro trabajo es estudiar, teórica y empíricamente, la competencia fiscal en los países de la UE, y proporcionar algunas conclusiones acerca de las actuales reformas relativas a la imposición sobre las actividades económicas. Sostenemos la idea de que, a pesar de observar “recortes” en la imposición sobre los negocios de los nuevos miembros, éstos pueden resultar no significativos en el campo de la competencia fiscal entre el “centro” y la “periferia”, mientras las dotaciones de infraestructuras y la existencia de rentas de aglomeración en el núcleo de la UE puedan prevenir, al menos parcialmente, la deslocalización de actividades hacia los “nuevos miembros”.

Keywords: tax competition, business taxation, agglomeration rents

JEL classification: H72, H73, D72, D78

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1. INTRODUCTION

Taxation reforms implemented in the last decade in the new EU-members which resulted in substantial reduction of corporate tax burden raised fears on tax competition in enlarged EU. Decrease in the statutory income tax rates, which does not automatically mean reduction of tax burden, was often offset by broadening the tax base. In 2004 the corporate tax rate of the ten new members was at average 10 percent points lower than in EU-15. Similar results are given by comparison of the effective average tax rates. Introduction of “flat tax” in new EU-members made the European Commission consider harmonisation of corporate tax base while some EU-15 countries plan reduction of their own tax rates.

The literature analyzing the relation between FDI and taxation shows without ambiguity that the capital is indeed sensitive to the taxation differentials between various locations. It appears, however, that lower statutory and effective corporate tax rates do not have large influence on the location of FDI coming from EU-15 to new member states. The reason is that public infrastructure fits much better firms’ needs in the core of Europe than in the periphery and thus it prevents the “old” EU-members from being harmed by tax cuts in the “new” EU-countries. For the same reason, the race to the bottom in new member states may be put in question since tax cuts might result in damaging public budget, preventing them from investing in productive infrastructure.

The paper is organised as follows. Firstly, we present the main features of business taxation in the “new” EU-countries together with the ongoing reforms. Secondly, we offer a brief survey of tax competition literature in order to assess whether theory may explain tax competition between “old” and “new” EU-members, that is to say between countries which are very different in terms of size, infrastructure endowments and GDP per capita. Finally, we provide some empirical evidence about factors which are supposed to impact on location of FDI.

2. BUSINESS TAXATION IN EEC: AN OVERVIEW

We first provide some general insights about tax structure and compulsory taxes in “new” members. Secondly we focus on business taxation. Finally we present the main reforms being undertaken in order to attract new business.

2.1. MAIN FEATURES CONCERNING TAX SYSTEMS AND COMPULSORY TAXES TO GDP RATIO

Since early 90s, as a consequence of system transformation, the countries of Central and Eastern Europe have been undergoing reforms of their fiscal systems, introducing taxes typical for market economy. They have not all followed the same reform model. As a result, we can observe a great diversity of tax rates, tax bases, deductions and allowances applied. However, in all CEE countries, the strong tendency to broaden tax bases and reduce the top income tax rates has been observed in recent years. As far as the tax structure is concerned, the new EU-members have a lower share of direct taxes in total tax revenues than the EU-15. In 2004 this difference between “new” and “old” member countries was around 10 % due to lower tax rates for corporate and personal income taxation in the new member states. However, the low share of direct taxes is counterbalanced by higher shares of indirect taxes and social contributions. In 2002 the share of social taxes in total tax revenues in the Czech Republic (42,4%), Poland (40,9%) and Slovakia (41%) was higher than in all EU-15 countries except Germany (42,3%). On the other hand, there is not much difference between the EU-15 and the new members in the average level of local government taxes of about 10%.

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The total amount of taxes and compulsory actual social contributions as a percentage of GDP in Central and Eastern EU-members is presented in the table below.

Table 1: Overall tax burden (including social contributions) as a % of GDP in 2002

Cyprus	Czech Rep.	Estonia	Hungary	Latvia
32.5	35.4	35.2	38.8	31.3
Lithuania	Poland	Malta	Slovak Rep.	Slovenia
28.8	39.1	31.3	33.0	39.8

Average 10 new EU countries: 34,5

Average EU-15: 41,1

Source: European Commission, 2004

All new EU-members have a lower tax-to-GDP ratio than EU-15. As it can be seen from the Table 1, in 2002 the average ratio level for new members was lower by 6.6 percent points than for the “old” EU-members. Hungary, Poland and Slovenia have an overall tax-to-GDP ratio clo-

se to EU average. The remaining countries characterise considerably lower ratio level with the minimum for Lithuania where taxes represent 28,8% of GDP, which is 12,6 % below EU-15 average. However, the tax burden varies substantially also within EU-15, ranging from 28,6% of GDP in Ireland, to 50,6% in Sweden.

Based on the available data over the period 1995-2002, in some new EU-members like Slovakia, Czech Republic and Latvia, there is an observable decreasing trend in the level of overall tax burden imposed. On the other hand, some other countries like Poland, Cyprus or Malta, experience an increase (European Commission, 2004).

2.2 BUSINESS TAXATION

The new EU-member states, in order to attract foreign direct investments, applied the tax policy aimed at reducing the corporate tax rates as well as improving the functioning of capital markets. While over the period 1995-2004 EU substantially reduced its top statutory corporate tax burden by 6.6%, the new EU-members decreased their rates by 9,1% and at the same time broadened their tax base (e.g. by reducing the favourable special tax regimes) offsetting at least to some extent the effects of the reductions in the statutory rates. In 2004 the corporate tax rate of the ten new members was at average 21,5%, being 10 percent points lower than in EU-15.

The most exceptional case is Estonia imposing since 2000 a corporate tax only on profits distributed to shareholders as dividends. Besides Estonia, Cyprus is the country with the lowest statutory corporate tax rate within the EU-25. However, after the stable rate of 20 - 25% since 1991, the tax reduction in 2003 was accompanied by abolishment of many tax incentives. The highest corporate tax rate of 35% among new EU-members is in Malta. This system applies to both, resident and non-resident shareholders.

Regarding the corporate income tax rate in Latvia, it has been systematically reduced from 25% to 22% in 2002 and finally 15% in 2004. Likewise in Lithuania the profit tax rate was reduced from 24% to 15% in 2002, but at the same time future special tax incentives have been rejected.

The corporate tax rate in the Czech Republic standing for 45% in 1993 was afterwards reduced to 28% in 2004 and is going to decrease even more to 24% by 2006. The tax base is very wide including business, trading and non-business income. Important fact for potential investors is very high level of social contributions borne by employers in the Czech Republic.

A particular case is Hungary, which keeps a single corporate tax rate of 18% already since 1995. Many tax incentives for investors have been annulated in 2003, being however in certain extent counterbalanced by a new tax credit regime for the development promotion.

The corporate tax rate in Poland has been being reduced gradually in the last few years from 34% in 1999 to the current level of 24%. Despite of a clear decreasing tendency, the present rate is still 6.8 percentage points above average corporate tax level in new EU-members.

Slovenia reduced the corporate tax rate from 30% down to the current level of 25% in 1994. Since then the rate has remained unchanged and is 4.8 percentage points above the new EU-members average.

The statutory corporate tax rate in the Slovak Republic was reduced from 40% in 1999 to 29% in 2000 and to 25% in 2002. Due to fiscal reform in 2003 the tax base and tax burden of entrepreneurs and companies has been reduced and a tax credit scheme for investors introduced.

It is worthy to mention that in some countries (Latvia, Poland and Slovenia) there are substantial tax incentives for investors such as special economic zones created in order to accelerate the economic development of particular regions. These incentives usually take the form of income tax exemption, relief in real estate tax, relief in tax on means of transport. For example in Slovenia, the corporate tax rate for companies operating in one out of two special economic zones is 10% instead of 25%. Important fact is a guarantee that the agreed exemptions and preferences will not change as long as the zone exists.

The lower corporate taxation in the new EU-countries makes EU-15 afraid of tax competition in the enlarged EU. However one cannot forget that statutory rate is not the factor which determines the real tax burden. It is reasonable to analyse instead the effective tax rate on corporate income, which takes into account not only nominal rate but also the real tax base. However, since effective tax rates are not directly observed, their influence on the common perception of the real tax burden is limited.

There are different methodologies applied to compute effective corporate tax rates. We can distinguish backward- and forward-looking measures, both using data from firms' financial statements (microeconomic approach) or from national accounts (macroeconomic approach). Each method of calculating the effective tax rate has its shortcomings (Jakubiak, Markiewicz, 2005). Regarding macro approach, applied first by Mendoza et al. (1994) and subsequently by Martinez-Mongay

(1997), the tax rate calculation do not take into account tax burden repartition between different companies as well as institutional differences between countries. They are usually downward biased, underestimating effective taxation. Much more appropriate is therefore using the micro forward-looking approach introduced by King and Fullerton (1984). This method calculates the tax burden for a hypothetical future investment project and therefore is very useful while analyzing incentives and choice of new investment by the companies. The tax system allocation efficiency can be evaluated by the effective marginal tax rate (EMTR), which represents the difference between the pre-tax and post-tax required rates of return. The higher the EMTR, the lower is the incentive to invest.

Another measure applied in this methodology is the effective average tax rate (EATR), used while evaluating a choice between two alternative profitable forms of investment or a choice of a country for foreign investors. The choice depends on the proportion of total profit taken in tax (Devereux, Griffith, Klemm, 2002).

Table 2: Effective average tax rate on corporate income in 2003 (in %)

year	Cyprus	Czech Rep.	Estonia	Hungary	Latvia
2003	16.7	31.9	24.6	24.9	23.4
2004	14.5	24.7	22.5	18.1	14.4
	Lithuania	Poland	Malta	Slovak Rep.	Slovenia
2003	15.4	29.8	34.7	27.4	33.4
2004	12.8	18.0	32.8	16.7	21.6

Source: Schratzentaler, 2005

In 2003 the difference in EATR between accession countries and EU-15 was slightly more than 2%. However, in 2004 the effective average tax rates in new member states have dropped. There is lack of data for EU-15 in 2004, but since the statutory taxes, in the contrary to new EU-members, practically have not changed, we can suppose that EATR in “old” EU have not varied much. The difference in level of EATR in 2004 is estimated for 8.9% (Schratzentaler, 2005).

The results on EATR presented in the table above, as well as the statutory rates described in Table 1, show much stronger tendency of decreasing the tax burden in the new EU-members than in EU-15.

2.3 ONGOING REFORMS

In the last decade most of new EU-members have applied various tax incentives to attract foreign investors and speed up their economic growth. The recent and most remarkable reform in CEE countries is implementing the 'flat tax'. The first country in Europe who decided in 1994 to tax the corporate and personal income at the single flat rate was Estonia. The statutory tax of 26% concerns only distributed profits. The tax on retained profits has been cancelled. Another country which implemented the flat tax is Latvia with a personal income tax of 25% since 1995, clearly below EU-15 as well as new EU-member countries average. In 2003, Slovakia introduced a 19% rate for all personal, corporate taxes and VAT. The interesting fact about Slovakian tax system is that it has one of the highest VAT rate in Europe which assures upholding future government revenues (Economist, 2005). Lithuania also adopted the system of 'flat tax' with a personal income tax rate of 33% in 1994. The top corporate tax rate was 15% in 2004. The flat tax that has been implemented in all these countries has helped to create a competitive market environment, attract foreign investors, boost economic growth and at the same time thanks to certain increase in tax revenues avoid destructive budget deficits.

The increasing popularity of flat tax in Central and Eastern European EU-countries raised fears among EU-15 concerning the tax competition. France and Germany observing an increasing competitiveness of new members, called for tax harmonisation in the European Union and setting the minimum tax rates (Economist, 2005). On the other hand, other countries started considering reduction of their own tax rates. Austria is planning to reduce its corporate tax rate to 25% next year. Greece and Italy are both considering single-rate taxes in the range of 25-30 percent. Greece and Czech Republic also consider introduction of flat taxes. In the Netherlands, the Dutch Council of Economic Advisors suggested implementing a flat tax rate of 40%. In this situation, the European Commission is considering harmonisation of corporate tax base. As long as this project will not transform into tax rate unification, it might find a support also among Central European countries.

3. TAX COMPETITION: SOME THEORETICAL ASPECTS

Theoretical literature shows that tax competition will be more or less fierce depending on elements such as the size of the countries, the presence of agglomeration effects or the quality of infrastructure provided for business.

3.1 THE BASIC TAX COMPETITION MODEL

The numerous models issued from pioneer work of Wildasin (1988, 1989) and Hoyt (1991) have the same theoretical foundations (see Wilson, 1999 for a survey). Public decision-makers are supposed to be benevolent in the sense that their objective is to maximise the welfare of their own citizens. Households are assumed to be immobile and to consume both a private good and a local public good. The latter is financed by a tax on capital. Since capital is assumed to be perfectly mobile across jurisdictions (say regions), when a given government raises its tax rate, net return on capital located there falls and then capital chooses to relocate. Marginal productivity of capital within the region of departure increases, while marginal productivity of the region of arrival decreases. Capital flows carry on until the net return on capital becomes identical everywhere. In the fiscal Nash equilibrium, each region sets its tax rate in a way that the marginal rate of substitution (MRS) between the public good and the private good is higher than the marginal rate of transformation (MRT) between these two goods: The local public good is underprovided at equilibrium. This inefficiency results from the fact that each region sees capital outflow as a cost and does not consider the positive fiscal externality generated for other jurisdictions. Consequently, regions perceive the marginal cost of public funds (MCPF) as higher than it is in reality for the economy as a whole. Furthermore, it can be straightforwardly shown that the higher the local elasticity of capital (in other words, the greater the number of competing regions), the larger the difference to the social optimum (Hoyt, 1991).

3.2 TAX COMPETITION AND THE SIZE OF THE COMPETING COUNTRIES

More important for our purpose are the papers by Bucovetsky (1991), Wilson (1991), Hwang and Choe (1995) and Peralta and van Ypersele (2005). All these papers deal with tax competition issue when regions are not identical anymore. In that case, it is possible for a government to use its fiscal policy to manipulate capital location between regions in order to increase its citizens' well-being (De Paters et Myers, 1994). Bucovetsky and Wilson assume that the asymmetry between regions only results from a difference in population and show that this implies the existence of asymmetric equilibria. In the case where the economy is composed of two regions, the small region (in terms of population) set an equilibrium tax rate on capital which is lower than the big region's (even if by assumption initial capital endowments per capita are iden-

tical). Since all workers are identical in the economy as a whole, total production is not as high as it could be. The inhabitants of the small region get a higher utility level at the equilibrium. Furthermore, if the small region is sufficiently small, its inhabitants will prefer the equilibrium obtained through fiscal competition to the centralised solution implemented by a social planner. Allowing regions not only to differ in terms of population but also through their per capita capital endowments lead to same type of results (Peralta and van Ypersele, 2005) but fiscal cooperation turns to be even more difficult (Hwang and Choe, 1995).

3.3 TAX COMPETITION AND PUBLIC EXPENDITURES

The literature on capital tax competition generally considers that regions only offer a residential public good which benefit the inhabitants of their jurisdiction. However, expenditures on productive activities, including human capital formation, research and development and infrastructure account for a non-negligible part of public budgets (Matsumoto, 2004). Assuming that regions provide public good benefiting business (public input) tax competition may distort the mix of residential public good and public inputs (Keen and Marchand, 1997; see Matsumoto (2000) to provide an interesting case where capital taxation does not distort the mix of these two public goods). Furthermore, as pointed out by Noiset (1995) and Upmann-Bayindir (1998), regions competing for capital may have an incentive to over provide the industrial public good (see Matsumoto (2000) for a discussion of this result). More interesting is another line of research which attempts to combine regional governments' incentives to invest in infrastructures with tax competition. King, Preston and Welling (1993) consider a two-stage game in which regions first choose a level of infrastructure and then participate in a sequential auction conducted by a firm that looks at getting the higher incentives from rival regions when determining the location of a new plant. It is shown that, even if the costs of building the infrastructure are the same in each location, in the pure Nash strategy equilibrium, the regional government choose different levels of infrastructure and the region that chooses the higher level is better off. Justman and Thisse (2001) show, using a two-region model, that by differentiating (horizontally) the infrastructure services they provide to firms, regions can create niches and moderate the ravages of excessive tax competition on regional budgets. In the same way, Justman, Thisse, and van Ypersele (2002) show that regions can benefit by offering infrastructures ser-

vices that are differentiated by quality (vertical differentiation), thus segmenting the market for industrial location. In short, one can expect that public infrastructures being more likely to fit better firms' needs in the core of Europe than in the periphery, it will prevent the old members from being harmed by tax cuts in the new members. Furthermore, one can wonder whether it would be an efficient strategy for new members to engage in a race to the bottom since tax cuts would result in damaging public budget, preventing them from investing in productive infrastructure.

3.4 TAX COMPETITION AND AGGLOMERATION EFFECTS

Previous works supposed that capital is perfectly mobile and that it responds to every marginal variation of the tax rate affecting it. This assumption is questioned by Lee (1997) who considers a two-period model where transaction costs are limiting capital mobility. While the budget needs to be balanced during both periods, the author shows that if tax rates in both periods are compared with the symmetric model without transaction costs, lower tax rates are imposed during the first period, and higher rates later on (similar conclusions are obtained in the context of strategic negotiation models such as Doyle and Winjbergen's model (1994)). If comparing the equilibrium obtained through a Nash equilibrium for the static model, there is even less public good offered in the first period. However, the public good is overprovided during the second period. In the same train of thought, but in a completely different perspective, the existence of increasing returns of scale and of monopolistic competition corresponds to an agglomeration force which makes the idea of mobile factors marginally reacting to slight changes in tax rates illusory¹. Inertia resulting from agglomeration forces implies a situation where fiscal competition does not necessarily lead to tax rates which are "too low" (as it is the case in non-increasing scale returns models), since the mobile factor is concentrated and produces a taxable rent (see for example Baldwin and Krugman, 2004). In short, agglomeration rents enable the core (within certain limits) to raise higher corporate taxes than periphery without risking to drive capital abroad. It appears furthermore that economic integration, characterised by the diminution of transportation costs, reduces the intensity of fiscal com-

¹ See for instance Ludema and Wooton (1998) Kind et alii (1998), Andersson and Forslid (2003), or Forslid and Ottaviano.

petition at first, but increases it later on. Indeed, it has been known for a while that agglomeration effects, and thus the taxable rent, are the highest for intermediate transportation costs –in other words, for costs that are sufficiently low to make agglomeration happen, and sufficiently high for spatial concentration to be a necessity.

4. EMPIRICAL ISSUES: WHAT ARE THE MAIN DETERMINANTS OF FDI LOCATION?

The purpose of this part is to present firstly some empirical papers assessing whether FDI are sensitive to business taxation. Then we check whether quality of infrastructure matters when explaining FDI location. Finally, we wonder whether business tax spreads between “new” and “old” members are sustainable.

4.1 BUSINESS TAXATION AND FDI

The empirical literature on the FDI’s sensibility to the taxation has been comprehensively summarised notably by Hines (1999) and de Mooij and Ederveen (2001). Hines (1999) show that the time-series estimations of the relationship between FDI and business taxation present a tax elasticity of investment of roughly -0.6. The tax elasticity of international investments seems to be a bit higher when the estimates are cross-sectional with values from -1.5 to -2.8. However, cross-sectional studies focusing on investment within the United States show a tax elasticity of around -0.6, which is finally the result of much of the literature. This implies that high tax may generate huge loss of foreign direct investments. De Mooij and Ederveen (2001)² make comparable the outcomes of 25 empirical studies on the impact of company taxes on the localisation of foreign direct investment by computing the semi-elasticities under a uniform definition. They find a mean value of -3.3 on a sample of 315 semi-elasticities, rejecting extreme values.

Using only significant semi-elasticities, they find a mean value of -4.8. Krogstrup (2004) and Winner (2005) study empirically the relationship between country size and capital tax burden. Winner (2005) estimates the impact of capital mobility and country size on the tax burden of capital in a fixed effect model with country and time effects, for 23 OECD countries and the period 1965 to 2000. The tax burden is approximated with the concept of implicit tax rate developed by Men-

² De Mooij R. A. et Ederveen S. (2001) “Taxation and foreign direct investment: a synthesis fo empirical research”, *CPB Discussion Paper*, 003

doza and ali (1994). Country size is measured as a country's population relative to the USA population. The author measures the capital mobility in performing a regression of the domestic investment-to-output ratio on the domestic saving-to-output ratio, where a coefficient of 0 indicates perfect capital mobility. This methodology has been proposed initially by Feldstein and Horioka (1980) to estimate the depth of the international financial integration. The impact of capital mobility on the capital tax burden is significantly negative with a semi-elasticity of -0.18. The impact of the size of the countries on the capital tax burden is significantly positive with a semi-elasticity of 0.017. Both results seem to confirm the results of the theory. It should be noted, however, that the Feldstein and Horioka measure of financial integration is probably not the best approximation of the capital mobility.

Krogstrup (2004) performs a panel data study on the relation between the capital mobility, the sizes of the UE15 countries and their respective corporate tax burden. The author uses both the Mendoza's implicit tax rate and the Devereux and Griffith's effective average tax rate³ as an approximation of the corporate tax burden. The capital mobility is approximated by the measure of the covered interest rate parity (CIP) differentials on 3 month interbank deposit and the qualitative Quinn's 14 point index of financial liberalization⁴. The measure of the country size is performed relating a country real GDP to the total EU real GDP. The country economic size has a positive and significant impact on the implicit tax rate when associated with both measure of capital mobility. Using the EATR, the impact of country size is positive and significant only when associated with the Quinn's measure of capital mobility.

4.2 DO PUBLIC SERVICES AND INFRASTRUCTURE MATTER?

Using a panel of bilateral FDI flows for 11 OECD countries over 1984-2000, Bénassy-Quéré and al. (2003) show that if higher public expenses do not attract more FDI, a higher share of investment in total public expenses increases inward FDI flows. As brought to the fore by the authors, this suggest that a higher provision of public goods improves the attractiveness of a country, and that a higher tax level can be partially

³ Devereux M. P., Griffith R. et Klemm A. (2002) "Corporate income tax reforms and international tax competition", *Economic policy*, 35, 449-496

⁴ Quinn D. (1997) "The correlates of change in international financial regulation", *American Political Science Review*, 91, 531-551

neutralized by the provision of public infrastructures. This result is also supported at sub-national level by Gabe and Bell (2004) who investigate the effects of local fiscal policy on the location decisions of 1873 establishments that began operations in Maine between 1993 and 1995. Using Poisson and negative binomial regression models, their results suggest that a local fiscal policy featuring both high business tax rates and high public spending (mainly productive expenditures) may attract more business than a policy featuring tax cuts together with a low level of public spending.

4.3 ARE SPREADS IN BUSINESS TAX RATES SUSTAINABLE IN THE EU?

Most of empirical papers dealing with FDI show that, even if corporate taxation has a non negligible impact on FDI location, other factors matter such as agglomeration effects or the market potential (see for instance Krogstrup, 2004). In short, the idea according to which tax competition may necessarily lead to a “race to the bottom” is not supported by empirical evidence since infrastructure and other factors matter as well, generating in turn an agglomeration rent which may prevent, at least partially, business to relocate abroad. Interesting is the paper by Gilbert and *alii* (2005) that plots sustainable spread in corporate tax against the degree of integration in line with the new economic geography literature. Their results suggest that at least in the EU-15 the degree of integration has not reached the threshold beyond which existing spread in business tax rates should be reduced.

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5. CONCLUSION

The result that emerges from this short paper is that, despite the widespread view according to which tax competition may lead to a race to the bottom, there is poor theoretical and empirical evidence of such a scenario. Rather, we suggest that FDI location depends on many elements such as the quality of public infrastructure, agglomeration effects and market potential that can compensate higher tax rates in the core of Europe and prevent from huge FDI outflows.

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