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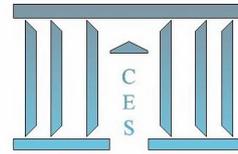
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Estimating Economic Regional Effects of Euro 2012

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Estimating Economic Regional Effects of Euro 2012

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Abstract

In April 2007 Poland and Ukraine were awarded by UEFA to co-host the 2012 European Football Championships. This first 'mega-event' to take place in the transition countries is commonly intended to yield large and lasting economic benefits to the host cities. This point of view is rarely shared by economists, who are aware of misuse of economic impact estimates. In this paper we modify the Keynesian-style multiplier model to investigate the effects of Euro 2012-related spending on local economies. Our goal is two-fold: on the one hand, we can easily investigate the impact on each demand component, on the other hand, we wish to calculate the magnitudes of these multipliers in order to judge the credibility of potential regional welfare benefits. This analysis is strengthened by taking into account the regional supply constraints. Our study also reviews the existent body of work on mega-sporting events and our results are in line with those researches who argue that the true economic impact of these competitions is overestimated by a large margin. Finally, we stress the organizational and institutional dimension of hosting a 'mega-event' by the transition and developing countries that are constantly struggled to tackle the colossal tasks of upgrading stadiums and modernizing airports, rail and road networks and hotels.

Key words: *Economic impact*, *Sports*, *Sport Economics*, *Mega-Events*

JEL classification: *L83*, *R13*

1   Motivation

After long discussions, UEFA narrowed in November 2005 the field of attribution of EURO 2012 to three possible host regions: Italy, Croatia-Hungary and Poland-Ukraine. In April 2007 the final decision was made

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by UEFA concerning location of EURO 2012 retaining Poland and Ukraine. The attribution of EURO 2012 to those two countries was highly political, and had its own objective: to integrate Ukraine with European space (in situation of impossibility for Ukraine to become the EU member). Only in Spring 2009, the definitive number of cities elected to host this mega-event in Poland was known: Warsaw, Poznan, Wroclaw and Gdansk. The choice of Ukrainian cities to host the event is more problematical due to the recent macroeconomic situation of the country and existing delays in infrastructure preparation[1].

Public opinion has quickly been seduced by the optimistic view of large economic spillovers supposed to blast hosting regions and communities. On the contrary, economists are usually skeptical of arguments about beneficial impact of the public provision of infrastructure for sporting events. Most frequently, "agents that endorse the construction of new sports stadia or the staging of mega-events usually do so out of naivety or self-interest"(Rose and Spiegel (2008)). In most cases regions hosting mega-events end up with substantial costs that are only partly compensated by event related revenues (tickets, broadcasting rights, etc.) and with sport facilities to take care of.

In this paper we have decided to take a closer look at Polish regions hosting EURO 2012. Although we are convinced that the only one cent percent relevant economic impact study is *ex-post* audit, we do, however, believe in the importance of *ex-ante* like simulations, as they become extremely useful to ground event related organizational choices. W have chosen to calculate Keynesian multipliers for each hosting region in Poland: if the concept is simple, it was quite difficult to gather specific information at a high level of spatial disaggregation.

The paper is organized in the following way: section one presents a review of both mega-events and multipliers literature; section two describes our model while the next section focuses on data and estimation procedure; section 5 in turn, presents the results which are discussed and commented; the last section concludes.

2   Literature Review

2.1   Literature on "mega events"

There exists a substantial number of studies analyzing the economic impact of mega events[2] (the literature covers not only sport-related events, but also the impact of cultural manifestations, conventions, etc. commonly labeled "hallmark events" (Ritchie (1984)). The methodologies used in economic impact analysis depend on timing (ex-ante, ex-post), time horizon (short-term / long term), space dimension (local, regional,

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[1]In the recent statement M.Platini (President of the UEFA) postponed the final decision about Ukrainian host cities, suggesting however that Kiev would certainly host the final match.

[2]For an exhaustive review of economic impact literature and techniques see Weinmann and Monnin (1999).

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national) and frequently on particular assessment needs of study commissioners. Some commissioned studies often predict large economic spillovers. Even if this kind of work is not designed for the academic audience, its conclusions remain very often influential. For exemple, Humphreys and Plummer (1995) estimate the short-term economic benefits for Atlanta (host city of the 1996 summer olympic games) to be $5, 1$ billion. Similarly Fuller and Clinch (2000) estimation of total economic impact of hosting the 2012 olympics games on Washington-Baltimore metropolitan area would have been $5, 3$ billion. The biggest booster effect to date comes from the Dentsu Institute for Human Studies which estimated benefits of hosting the 2002 World Cup for Japan and South Korea to be, $24, 8$ and $8, 9$ billion, respectively (as recalled by Baade and Matheson (2003)).

Some academic studies are skeptical of economic benefits of hosting mega-events. For example, Baade and Matheson (2002) found that the cities hosting 1994 World Cup recorded $4 billion drop in growth compared to their growth forecast in case the event would not have taken place. Owen (2005) takes an example of Beijing to show that benefits from hosting Olympic Games result from the huge investments that the city would engage independently of the games. It was also noticed that one should not expect consumption boost from spending of local residents, the idea being that event-related spending is just a substitute of other leisure activity or consumption good (Siegfred and Zimbalist (2000), Coates and Humphreys (2003)). It is also claimed that projects associated with sporting events seem to be white elephants, because in most of cases, exclusively event devoted and costly facilities remain unserviceable shortly after a one-time peak demand of just a couple of weeks (Rose and Spiegel (2009)).

The first attempt of evaluation EURO 2012 has already been made by Humphreys and Propokowicz (2004), showing that a simple cost benefit analysis indicates that the costs of hosting the event will exceed the direct economic impact related to increased tourist spending by a wide margin and the presence of positive benefits depends on benefits from factors like improvements in the transportation infrastructure.

2.2 The concept of Keynesian Multipliers and its Use in Economic Impact Analysis

Keynesian multipliers represent a fundamental concept in economic theory. The idea of applying multipliers to regional context was originally manifested by Isles and Cuthbert (1956). Generally speaking, models frequently used by regional economists have little changed since Tiebout (1962). Although much criticized since 70s, multiplier analysis remains a powerful tool, especially when input-output approach fails due to data unavailibility or simply the particular aim of analysis concerns horizontal regional disparities rather than national view. Regional multipliers are used to help evaluate the total impact on a region of an exogenously stimulated change in demand. They have been widely used in the UK and the US to help understand

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the consequences of governmental intervention in a region through transfer payments or investment; and to understand the wider economic impact of tourism, cultural, political or sport manifestation on a region. In the context of sport, economic impact is defined as the economic change in a host community that results from spending attributed to a sport event or facility (Turco and Kelsey (1992)). In most cases, impact analysis were commissioned and undertaken to justify spending of public money; very often those studies report inaccurate results, overestimating wealth effect on local communities[3]. The economic base, sales and employment are among the most commonly used techniques to evaluate the economic impact of a given manifestation.

3   The Regional Multiplier

The equation describing regional economy is given below:

$$Y = C + I + G + X - M \tag{1}$$

where Y is regional income, C is regional consumption, I is regional investment; G is government expenditure, X stands for regional exports and M is regional imports. Some behavioral assumptions are usually made concerning relationships between variables within the model. In our case, the first behavioral relationship is the consumption function, which postulates the consumption dependent on income:

$$C = cY \tag{2}$$

If we take into consideration the disposable income, consumption function becomes:

$$C = cY_{dis} \tag{3}$$

where Y_{dis} is disposable income and is given by the following function:

$$Y_{dis} = Y - t_d Y \tag{4}$$

where t_d is the rate of direct tax (mainly income tax). Consumption is also partly affected by indirect taxation. If t_i stands for indirect tax rate, the consumption function becomes:

$$C = C - t_i C \tag{5}$$

Our simple model considers imports M as imports for consumption from abroad. This is described by the following function:

$$M = mC \tag{6}$$

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[3] The rationale for economic impact analysis as well as impact analysis errors are presented by Crompton (1995).

where m is the marginal propensity to import.

Finally, we assume that investment, government expenditure and exports are exogenously determined:

$$I = \overline{I}, \qquad G = \overline{G}, \qquad X = \overline{X} \tag{7}$$

By substituting equations (2) to (7) into the regional income-expenditure identity (1), we obtain:

$$Y = \frac{\overline{I} + \overline{G} + \overline{X}}{[1 - c(1 - t_d)(1 - t_i - m)]} \tag{8}$$

Thus, the regional multiplier (k_R) is given by:

$$k_R = \frac{1}{[1 - c(1 - t_d)(1 - t_i - m)]} \tag{9}$$

4   Data and Estimation Procedure

Our goal is to propose an estimation of aggregate regional multipliers for the four Polish regions to host "Euro 2012" event. In order to estimate the regional multiplier as expressed in equation (9), we are about to fit each single component of this equation, i.e. the regional marginal propensity to consume, marginal propensity to import, as well as direct and indirect tax rates.

The quality of the Marginal Propensity Method (MPM) relies on the use of reliable data. We were aware of the fact that the ease of the MPM procedure may be compromised by the use of doubtful data. Therefore, we decided to only use the original statistics from the national statistical office (GUS)[4], and the Polish Ministry of Economy. By taking this precaution, the data cohesion is preserved. A detailed description of the variables used for calculation is given below.

4.1   Description of variables

- Regional Income and Consumption Expenditure: In order to guarantee the comparability across regions we have used both national and regional accounts provided by GUS. The national accounts were compiled according to "European System of Accounts ESA 1995" recommendations. This system of national accounts consists of the number of mutually linked macroeconomic accounts, which permit to achieve coherent data on income, i.e., sources of financing expenditures with data concerning production and its distribution between final consumption expenditure and gross capital formation (defined as domestic demand) as well as the external balance of goods and services. Regional accounts are based on the same "ESA 1995" basis. The following positions were compiled in the regional accounts system for each voivodship: the production account and the generation of income account by institutional

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[4]GUS: Glowny Urzad Statystyczny

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sectors and kind of activity, as well as the allocation of primary income account and the secondary distribution of income account in the households sector. The following categories were calculated for regions: gross domestic product (GDP) and gross value added (GVA) by kind-of-activity groups[5]. The regional consumption expenditure comes also from regional accounts and refers to final consumption expenditure of households residing in the region.

- Direct and Indirect Taxes: We have made distinction between direct (affecting income) and indirect taxes (affecting consumption). The Polish National Statistical Office does not dispose of tax-related data. In order to collect missing information, we apply the following computation procedure: first, we have collected the revenues-side data from the state budget[6] (state revenues consist of direct taxes: income taxes and corporate taxes)[7]; second, we have calculated a percentage of direct and indirect taxes on GDP to get direct and indirect tax rate.

- Imports: In order to calculate regional trade flows (and implicitly the Marginal Propension to Import) we have applied the following two-stage procedure: first, we used the GUS data on overall export-import dynamics for Poland; afterwards, we used Gawlikowska-Hueckel and Uminski (2008)[8] calculation of each voivodship share in Poland's external trade to compute their importations.

- Marginal Propensity to Consume (MPC): The MPC is calculated as the ratio between average consumption expenditure of households in the region and their average disposable income. The idea is that the average consumption is a proxy for the marginal one. This assumption excludes the MPC greater than 1, which would mean that the increase in consumption is only partly financed by the increase in income (the other part being financed by credits).

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[5]The grouping of data by voivodships according to kind of activity of the Polish Classification of Activities was conducted applying the local kind-of-activity unit method, i.e., by the place of residence and main kind of activity of the local unit of the enterprise.

[6]this data is provided by the Ministry of Finance, `http://www.mf.gov.pl/_files_/raporty_analizy_statystyki/informacja_kwartalna/kwartalna_grudzien.pdf` , p.15

[7]less transfer payments and European Union subventions

[8]Export/import flows are classified on exporting/importing enterprise's location basis. For more details: `http://www.umww.pl/get/4991a48e2ec54/raport-o-stanie-exportu-w-wielkopolsce.html`, p.8

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5   The Results on Regional Multipliers in Poland and Discussion

Values of the regional multiplier from equation (9) are presented in Table 1 below.

Table 1: Regional Multipliers for Poland's regions hosting "EURO 2012"

Region	Indirect Tax Rate (t_i)	Direct Tax Rate (t_d)	MPC (c)	MPM (m)	Regional Multiplier (k_R)
Mazowieckie	0,12	0,05	0,46	0,61	**1,13**
Wielkopolskie	0,12	0,05	0,44	0,41	**1,24**
Dolnoslaskie	0,12	0,05	0,49	0,34	**1,33**
Pomorskie	0,12	0,05	0,53	0,48	**1,25**

Source: Authors' calculation

The multipliers values lie within the range 1,13 to 1,33, so that the injection impact is rather unified across regions. The common interpretation of Keynesian multiplier is following: the multiplier value for capital region (Mazowieckie) indicates 1,13, that is a 100 million increase in government spending raises regional income by 113 million. Because the tax rates do not vary (same country), the multiplier is sensitive to changes in consumption and especially to changes in consumption of imported goods (or, analogically, to changes in consumption of locally produced goods). Our results on MPM are in line with the literature in the sense that rich regions tend to import more, while poor seems to be more "self-contained".

We found interesting the idea of comparing the multipliers values for regions hosting EURO 2012 with two other Poland's regions that were also candidate to host the event (the regions of Slaskie and Malopolskie with cities of Chorzow and Krakow have not finally been retained by UEFA). The multipliers values for these regions are presented in Table 2:

Table 2: Regional Multipliers for Poland's regions not retained to host "EURO 2012"

Region	Indirect Tax Rate (t_i)	Direct Tax Rate (t_d)	MPC (c)	MPM (m)	Regional Multiplier (k_R)
Slaskie	0,12	0,05	0,7	0,3	**1,61**
Malopolskie	0,12	0,05	0,45	0,78	**1,04**

Source: Authors' calculation

This time, the multiplier value for the Silesian (Slaskie) region is very large. On the contrary, its value is barely significant for the Krakow area. The high multiplier for the Silesian region is partly explained by the high propensity to consume and it is partly due to low per capita income level in this locality. The Silesian region has also a strong mining heritage and a lot of households are financially dependent on this sunset

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industry. Finally, we believe that the multiplier values are not correlated with the size of regions, as long as all six regions are similar in terms of population.

6 Further Analysis

Having commented the multipliers values for Poland's regions, we wish to make some more general comments on proper way of interpreting multipliers's values. As it is in macroeconomic theory, the assumption behind the multiplier is that when injection of money is made into economy it is circulated again, increasing the economic impact of the initial spending. But during each of these rounds, only a part of the money received will be spend on the regional economy, the rest will leak out. Although we have made hypothesis about local tax rate and propensity to consume from abroad, we cannot exclude some important leakages due to intermediate consumption or capital transfers. It should be remembered that evaluating multiplier effect have to be based on net value of initial injection. Clearly, one have to take into account only spending that would not have occurred in the absence of the mega-event perspective. Thus, only "fresh money" raise and expand the local economy.

Another important issue related to the evaluation of multiplier effect is that the impact size should be corrected by incorporating the value of opportunity cost (Crompton, (1995)); economic impact studies frequently consider all factors of production as having zero opportunity costs to the community in terms of what they could produce if invested elsewhere in the economy. Therefore, the multiplier effect become overestimated. Consequently, it seems that every time the decision to invest money is made, the value of the best alternative should be accounted for.

A particular attention has also to be given while forecasting the shift in consumption during the event. The raise in internal demand is very often overestimated by attributing the consumption peak during the event to spending made by supporters from abroad and occasional tourists. It seems rather that local residents are very active during the event taking place in their region, spending more but still "local" money. More generally, measuring event-related spending remains complicated also because of the fact that it is impossible to exclude "time-switchers" (people who cancel their trip to a destination because of the mega-event taking place there) and "casuals" (people who already are in the region hosting a mega-event and decide spontaneously to take part in the event instead of doing something else). These examples of crowding-out mixed up with other supply constraints associated with visitor's displacement may however be partially ignored due to the very particular characteristics of the mega-events: Firstly, mega-events are well-known so far in advance that all other manifestations can easily be rescheduled to avoid any conflict with these mega-events; In addition, even if some displacement will occur, it is likely to be "sufficiently small so that it

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will be counterbalanced by the existence of local residents who will divert into the region some spending that they would otherwise do outside of the area as a result of being attracted to these mega-events occurring in their back yard" (Seaman, (2007)).

7 Conclusion

In this paper we have undertaken a multiplier analysis applied to Poland's regions. This is the first calculation to date focusing on the regional level of disaggregation. Aiming at presenting the alternative way of discussing possible beneficial effect of EURO 2012 to take place in four Poland's regions, we have also found an interesting proof of Poland's regional development patterns.

We have found the multiplier value ranging from 1,13 to 1,33 for all four regions hosting EURO 2012. In addition to multiplier mechanism, these values show rather smooth view of those Polish regions with small interregional disparities. This is rather expected finding, which confirms the positive opinion about the way Poland develops. This seems to testify that public expenditure does play a role in the convergence process (that has become substantially strengthened after Poland's entry to the E.U., making the country enjoy the access to the structural funds). The low values of multiplier neither denies beneficial effects of additional spending nor doubts on useless of investing in these regions; small multiplier does not tell us that it is not worth investing money in a particular region, but only that it is less probable that the effects of an additional spending will remain in this particular region where projects are precisely undertaken [9]. As pointed out by Faggian and Baggi (2003), the regional spillover effects are likely to be important because of the higher degree of globalization of the whole economic system. Therefore, additional spending on infrastructure associated with preparation for EURO 2012 is very likely to yield positive yet pan-regional economic effects.

In addition to the optimistic message expressed above, we wish to close with some cautions. First, a bit of carefulness is required regarding the "push" effect caused by supporters and tourists' spending during the event. Second, if the massive investing in general infrastructure is highly desirable, there is no doubt that clear plans about using the post-event special infrastructure heritage (like stadia, sport villages, etc.) have to be made long in advance so as they have no chance to become a pitfall for public purse's spending. Finally, claims of non-economic benefits are indeed extremely difficult to verify, therefore, they should not been used as a valid argument of gaining public support by regions competing for the right to host a mega-event.

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[9] Recently, there has been a passionate debate among economist arguing to qualify the multiplier's values "big" or "small"; For instance, Barro (2009) analyzes long time series of the US GDP data responding to spending stimulus. He finds no empirical evidence supporting idea that spending multipliers exceed one; On the contrary, there is empirical support for the proposition that tax cuts boost growth.

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