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DISCUSSION PAPER 40

Is there a premium in the size of nations?[1]

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Abstract

This paper examines the size premium of nations. Using panel data for more than 200 countries over 50 years we estimate a size premium (in terms of being small) in a variety of key economic and socio-economic indicators of performance of countries. We find that small countries are richer, have larger governments, but are also more prudent in terms of fiscal policies. Smaller countries seem to be subject to paying higher absolute and per capita cost of provision of essential public goods, which may affect their socio-economic performance in terms of health and education. In terms of economic performance small countries seem to do better than large countries, by compensating for smallness with relying on foreign trade and foreign direct investment. The latter, however, comes at cost of higher vulnerability to external shocks resulting in higher volatility of growth rates.

Keywords: Country size, Premium, Economic performance, International trade

JEL codes: C23, F15, F43, O52

1. Introduction

Scale economies is one of the main advantages characterizing large countries, which increases growth and welfare. New trade and new economic geography theories include agglomeration effects suggesting that economic activity will more likely concentrate close to large markets (Krugman, 1991; Krugman and Venables, 1995; Fujita, Krugman and Venables, 1999). Similarly, scale effects are generic to endogenous growth models implying that size of the economy affects the long-run growth rate (Aghion and Howitt, 1998). Most prominent scale effects, however, are nested in the public economics. Alesina and Spolaore (1997, 2003) list five benefits of large population size: (i) lower per-capita costs of public goods; (ii) cheaper per-capita defense and military costs; (iii) greater productivity due to specialization; (iv) greater ability to provide regional insurance; and (v) greater ability to redistribute income within the country. But there is also a cost related to large countries. In particular, large countries have more diverse preferences, cultures, and languages. This heterogeneity of preferences may generate significant political and economic costs. However, so far little evidence exists on measuring these costs.

Yet, according to IMD, among top 10 most competitive countries in the world in 2012 there are only 3 big countries and only 5 among top 20. Thus, in contrast to the theory, smallness does not seem to translate into economic underperformance. There are several reasons making small countries more flexible in terms of governance. The most important, though, seems to rest in the lower degree of cultural and political diversity that may lead to higher ability to reach political consensus regarding vital economic policy issues. Small countries can also insure against some disadvantages of smallness with membership in supranational organizations and trade blocs. The latter, in particular, seems to be the central point of departure for small countries – they overcome the handicap of small national markets by extensive trade links with bigger markets. This in turn enables them to reap the scale effects in at least some of the sectors, in which they specialize.

Empirical analysis so far was unable to find unambiguous support for the importance of size, neither positive nor negative. A number of different studies in the compendium published in 1960 (Robinson, 1960) tested for the impact of economies of scale on country performance and found them to be mostly unimportant. These findings were later confirmed also using more recent data by Damijan (1996), and Salvatore, Svetličič and Damijan (2001). Barro and Sala-i-Martin (1995) provide limited evidence of a scale effects on growth. Alesina, Spolaore, and Wacziarg (2004a, 2004b) test whether the effect of size on growth depends on country openness, but find only moderately supportive evidence. Rose (2006) searches for the impact of size on many country characteristics and finds that small countries are richer and more open to international trade than large countries, but are not systematically different otherwise.

The purpose of this paper is to analyze and estimate the existence of a size premium of nations in terms of a number of economic and socio-economic indicators that measure the level and quality of development of countries. In particular, we investigate the impact of country size on the level of income, long-run economic growth, volatility of growth, openness to trade and foreign direct investment, budget and current account balance, size of government and public debt, inflation, standard of living, income distribution, health, education, infrastructure development, level of democracy and corruption, and a number of other socio-economic indicators. To this end, we use a comprehensive database on a large number of key economic and socio-economic indicators for more than 200 countries between 1960 - 2010. Using a panel data approach we tease out a premium of size (smallness) in a variety of key dimensions spanning over more than 35 socio-economic indicators.

We find that, after controlling for a number of country-specific fixed effects, small countries are different. Country size is important in a number of ways, though not in a way to enable the conclusion that it is for good or bad. We find that small countries are richer, have larger governments, but are also more prudent in terms of fiscal policies and run smaller public debts. Small countries seem to pay higher per capita cost of provision of essential public goods and seem to get less for a penny in terms of performance in the fields of health and education. This does not hold for military spending, where small countries display lower spending and lower tendency to engage in armed conflicts. Smallness also does not result in bigger income inequality, lower democracy or bigger corruption. Essentially, small countries are shown to insure against smallness of domestic markets by relying on foreign trade and foreign direct investment. This, however, increases their vulnerability to external shocks and results in higher volatility of growth rates.

The outline of the paper is as a follows. The next section briefly reviews the literature in the field and summarizes testable hypotheses. In section 3 we discuss our empirical approach and the data. Section 4 presents and discusses the results. The last section concludes.

2. Literature review

2.1. Overview of literature

As mentioned in the introduction, country size may be important due to potential scale effects in the economy and in particular in the area of the provision of public goods, such as social security and defence. Out of five benefits of a large population size as listed by Alesina and Spolaore (1997, 2003) and Alesina, Spolaore and Wacziarg (2005), four of them are being nested in the public and political economics fields.

First, Alesina and Spolaore stress that fixed cost of producing certain public goods will lead to higher per-capita costs in smaller countries. In particular, this relates to a monetary and financial system, a judicial system, infrastructure for communications, policy and crime prevention and public health. As shown by Alesina and Wacziarg (1998) the share of government spending over GDP is decreasing in population, which means that larger countries will have smaller governments and vice versa.

Second, a large country can realize cheaper per-capita defense and military costs as well as reduced probability of suffering foreign aggression. This effect is ameliorated by the fact that small countries can enter into military alliances, though they may be achieved at some cost, i.e. at some form of compensation.

Third, larger countries can easier come up for cross-regional externalities by centralizing the provision of certain public goods that involve strong externalities. One can think of this argument as of larger countries having a greater ability to provide insurance to regions affected by negative shocks (e.g., natural catastrophes) or to provide some common policies (such as policies to address the global climate change, etc.).

Forth, larger countries have a greater ability to provide insurance to regions affected by imperfectly correlated adverse external shocks. This means that in case of adverse external shocks entities may be better served as regions within a large country by receiving fiscal and other transfers from the center than as having to fight against the shocks as small independent states. This is in particular true in the light of the current recession in European Union where the ability of individual small member states of the Eurozone to handle the economic shocks, which is further tightened by the imperfect monetary union, is clearly smaller than that of the regions within some bigger member states. This argument can be generalized in the sense that larger countries have a greater ability to redistribute income between regions, i.e. from richer to poorer regions. Though, this could as well lead the richer regions to be willing to secede and so partition a large country in smaller ones. Moreover, a straightforward consequence of this secession argument could lead to the proposition that smallness is endogenous to richness. In other words, in equilibrium small independent countries will be those who can afford to maintain the cost of smallness. Small countries, hence, will tend to be richer.

Fifth, large countries may benefit greater productivity gains due to specialization and competition effects associated with a larger domestic market. This theoretical advantage of size goes back as far as to Adam Smith's statement about the advantages of the division of labor, which is limited by the extent of the market. The importance of the market size is crucial to three recent strains of literatures: the *new trade theory*, the *new economic geography* and the *new growth models*.

Increasing returns to scale play a crucial role in the *new trade theory*, which was pioneered by Krugman (1979 and 1980). The source of these increasing returns is the existence of fixed costs in the production of differentiated goods. The advantage of larger markets is that they can host more firms and hence allow for more varieties of goods. Alternative but similar approaches can be found in Ethier (1982) and Helpman (1981). In the four models the degree of diversification is always determined by indivisibility of input factors via a zero profit condition for producers of the different varieties. The determining factor of this degree turns out to be the size of the economy, which is identical to the size of the country in the case of autarky. Thus, the new trade models predict that small countries could compensate for their smallness by becoming more open to trade. This prediction has been supported by the empirical evidence; for instance, Alesina and Wacziarg (1998) and Alesina (2003) as well as many other papers.

The new trade theory was mainly designed to explain trade patterns between countries, especially intra- and interindustry trade. However, the new economic geography models go one step further. They aim at presenting a unified theory of trade patterns and geographical localization of production. But still they build on the same assumptions as models of the new trade theory, i.e. the existence of increasing returns to scale. However, in order to obtain economically meaningful results these models add the assumption of varying levels of trade costs for at least some goods.

Two influential papers in the *new economic geography* are Helpman and Krugman (1985) and Krugman (1991).[1] In this literature there is what has been termed as '*home market effect*' by which the proportion of manufactures in the larger countries is larger than their proportion in terms of population. In addition, the larger country is expected to enjoy higher real wages and welfare if the trade costs are not close enough to zero. The empirical literature linked to the new economic geography is usually more focused on a few countries and the impact of lowering trade barriers or removing countries' borders than to study the impact of home market effect.[2]

Scale effects are also generic to the *endogenous growth models* (see Aghion and Howitt, 1998). Some of the ideas motivating this new growth theory go back to the 1960s, but the formal models were pioneered by the work of Romer (1986, 1987, 1990a) and Lucas (1988). The major sources of increasing returns in Romer (1987) are specialization and product differentiation and so the growth rate is directly proportionate to the stock of human capital in the economy. Romer (1990a) also incorporates research spillovers, which are also positively affected by the size of the economy. In the three classes of endogenous growth models

[1] See Ottaviano and Puga (1998) for a survey of the theoretical papers.

[2] See Overman et al (2003), Redding (2010) and Damijan and Kostevc (2012) for a review of empirical literature in the field.

discussed by Jones (1999), there are what he calls 'strong scale effects', which is that "*the size of the economy affects either the long-run growth rate or the long-run level of per capita income*". Moreover, other growth models have also stressed that a larger market size enhances growth by raising the intensity of product market competition (see Aghion and Howitt (1998) and Aghion et al (2002).[3]

The predictions of these theoretical works, however, contrast with the lack of empirical evidence in favor of the scale effect. As mentioned earlier, small countries can insure against some disadvantages of smallness by engaging extensively in international trade. Extensive trade links with larger markets enable small countries to specialize and achieve the economies of scale in (at least) some sectors, and hence to benefit from more intense competition abroad.

On the other hand, there is little evidence also of the costs of size. Alesina and Spolaore (1997, 2003) mention that for very large countries administrative and congestion costs may be a limit to size. A second and more relevant limitation on the size of countries lies on the heterogeneity of the individuals' preferences. When a country is too large the selected public goods and adopted policies may not satisfy everybody's preference very well, which may also lead to less democratic participation. The cost that a heterogeneous population produces has been evidenced by Easterly and Levine (1997), La Porta et al. (1999) and Alesina et al. (2003), who showed that ethnolinguistic fractionalization is inversely related to economic and political success as well as various measure of quality of government.

The effect that country size may have on economic performance have been empirically assessed by a number of studies, starting with the volume edited by Robinson (1960) and Kuznets (1960), and followed by many other studies that looked into a particular aspect of the country size effects (see Michaely (1962), Pearson (1965), Khalaf (1974), Streeten (1993), Damijan (1996), Barro and Sala-i-Martin (1995), Salvatore, Svetličič and Damijan (2001), Alesina, Spolaore, and Wacziarg (2004a, 2004b), etc.). These studies typically find that smaller country size is likely to be associated with higher concentration of production structure, higher trade openness, higher commodity and geographic concentration of trade flows, larger government and larger balance of payments volatility, but fail to find significant relationship with the level of development (as measured by per capita GDP).

Most recently, Rose (2006) has taken a snapshot view of economic and socioeconomic performance of small countries. He studied a number of different indicators and, except for trade openness, could not confirm that size has any significant effect on any of the considered variables.

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[3] Finally, several papers have stressed the pro-competitive effects of a larger market size, i.e. size enhances growth by raising the intensity of product market competition (see Aghion and Howitt (1998) and Aghion et al (2002).

This lack of empirical evidence in favor of the mainstream "*large-is-better*" view has generated an alternative and growing literature looking at the advantages of smallness in terms of both economics side as well as political side. For instance, in an early work and with a focus on small countries Easterly and Kraay (2000) find that controlling for location, small states have higher per capita GDP. They claim that this is mainly due to a productivity advantage and suggest that this is evidence against the idea that small countries suffer from an inability to exploit increasing returns to scale. In addition, they also find that small countries do not have different per capita growth rates than other countries, though these rates are more volatile. They attribute the latter to the small countries' higher exposure to trade shocks.

Another interesting study in this area is Hines (2005), who finds that tax havens countries enjoy higher GDP per capita and also higher GDP growth. According to Hines, a distinctive feature of tax havens is their smallness: "*The populations of seven of these countries exceeded 1 million in 1982, and these are referred to as the Big 7; other tax haven countries are known as Dots*." Hines (2005, p. 77). Blanco and Rogers (2011) also find evidence that tax haven policies have a positive effect on economic growth. However, they go one step further and suggest that the observed favorable growth in tax havens may be driven by factors related to size rather than by (endogenous) tax haven policies. That is, they recognize that geographic size is an important factor in the non-random assignment of tax haven policies among countries. This view finds support in the works of Bucovetsky and Haufler (2008), Kanbur and Keen (1991) and Winner (2005), whose models show that low tax rates may be advantageous for small countries. As a consequence of this lower tax rate, smaller countries have the potential to attract more foreign direct investment. This is confirmed by Hines (2005) and also Head and Ries (2008), who find that foreign direct investment shares for small countries are larger than their GDP shares.

Alesina and Spolaore (2005) and Olsson and Hansson (2011) show evidence of a negative relationship between the size of country territory and the strength of rule of law for a large cross-section of countries. They argue that large countries tend to be endowed with sizeable potential rents from lands and mines, which makes self-interested autocratic rulers less interested in promoting strong private property rights and protection against expropriation. Other studies in the field focused their attention to micro–states or small island states. For instance, Anckar (2002) finds that these states do better in terms of democracy than the average country. However, this opinion is not universally accepted and Srebrnik (2004) demonstrates that the evidence is not conclusive.

In the same line of research, several studies hypothesize that larger countries will have a higher tendency towards redistributional policies. For instance, based on the strand of political science literature (e.g. Grossman and Iyigun, 1997; Fearon and Laitin, 2003), Campante and Do (2008) propose that in non-democratic countries a large population and high population density leads to

more redistributive policies. This is mainly due to the fact that higher population size and concentration is hypothesized to lead to a higher probability of revolutions. The governing elites, hence, may insure against social unrest and potential political turmoil by employing more redistributive policies, resulting in lower income inequality.

2.2. Testable hypotheses

Based on this overview of theoretical and empirical studies, one can establish several potential relationships between size and particular economic and socioeconomic indicators of country performance. An inexhaustible list of hypotheses that can be empirically tested includes following:

1. small countries will have relatively bigger governments; i.e. the share of government spending in GDP is decreasing in country size;
2. small countries will have smaller military spending relative to GDP and will be less likely engaged in armed conflicts;
3. small countries will have a lower ability to handle adverse economic shocks in terms of the ability to help regions that are proportionally more affected, which may imply either lower long-run average rates of growth or lower stability of overall economic growth rates;
4. bigger relative government spending and lower ability to handle adverse economic shocks in smaller countries may adversely affect their public finance balances and levels of public debt;
5. small independent countries will be those who can afford to maintain the cost of smallness, implying that small countries will tend to be richer in terms of GDP per capita;
6. market size enhances growth by raising specialization and intensity of product market competition leading to greater productivity benefits of large countries, which in turn implies that small countries may be subject to lower long-run average rates of growth;
7. large countries will have it easier to accumulate larger stocks of human capital in the economy, which implies that the (secondary and) tertiary school enrollment and public expenditure for education and R&D relative to GDP will be larger in large countries,
8. small countries can compensate for their smallness by becoming more open to trade;
9. due to the lack of domestic productive capital, small countries will be more open to inflow of foreign direct investment (FDI);
10. due to higher openness in terms of trade and higher propensity to net capital inflows, small countries are more likely to be subject to the current account deficits;

11. country size is associated with higher heterogeneity in terms of individual preferences as well as with higher ethnolinguistic diversity, which may potentially lead to less democratic participation;
12. large countries will have lower propensity to maintain rule of law, which in addition may lead to more autocratic regimes and to more widespread corruption practices;
13. large population and high population density may lead to more redistributive policies and to lower income inequality.

In the next sections, we will empirically account for the validity of most of the above empirical relationships between country size and performance by using very abundant data on different indicators of country performance for more than 200 countries.

3. Empirical approach and data

This paper engages in a similar endeavor as Rose (2006), i.e. it searches for the impact of country size on economic and socio-economic performance of countries as it was teased out in the literature so far. We investigate the impact of size of nations on a number of economic and socio-economic indicators that measure the level and quality of development of countries, including level of income, long-run economic growth, openness to trade, budget and current account balance, size of government and public debt, inflation, standard of living, income distribution, health, education, infrastructure development, level of democracy and corruption, and a number of other socio-economic indicators. To this end, we use a comprehensive database on a large number of key economic and socio-economic indicators for over than 200 countries for the period 1960 - 2010.

Though we use a similar dataset, our approach diverges from the one used by Rose (2006) in two important aspects. *First*, while Rose estimates the impact of size on country performance using a continuous variable of size (size of population), we use a semi-parametric approach. We do this by regressing a set of continuous variables measuring country performance on a set of categorical indicators of country size. In other words, we divide countries either into two size classes (small and large) or five size classes according to the size of population. The reason for this approach is that economic structure and economic performance of countries do not necessarily correspond to the continuous distribution of size as measured by the population as some, in particular public goods are indivisible by its nature. Provision of certain public goods or types of production requires a certain threshold in terms of size. A good example of this may be independent military service or monitoring of national airspace that may be prohibitively expensive for micro or tiny states. In other words, increasing

population by a certain percent might not necessarily result in a linear increase of overall government expenditure in GDP, public expenditure for education and health or some other variable. The provision of certain public goods may require a jump from a certain size class to another. By using a fully parametric approach it is easy to overlook this kind of structure in the data.

And *second*, we are interested in showing whether there exists something akin to a premium of size. Can we show that a class of small countries exhibits a certain positive (or negative) premium regarding the level of development or degrees of openness, etc.? Can we show that a class of micro countries with less than 1 million of population reveals a certain negative premium in terms of size of government? It is our goal to analyze whether such premia of size exists in a variety of indicators of country performance. And if so, what is the exact premia of being a micro, small or large-sized country? Using the econometric approach, we will tease out a premium of size (smallness) in a variety of key dimensions. The estimates of the premia provide the main novelty and contribution of this paper.

We first present the empirical approach to estimate the size premia and then proceed with discussion of the datasets used.

3.1. Empirical approach

We study differences in performance between countries of different size by computing a size premium, defined as the ceteris paribus percentage difference in a particular performance indicator between countries in different size classes. We compute the premia using a number of economic and socio-economic performance indicators that we will present in the next subsection. The size premia are computed from a regression of log performance indicators on the corresponding categorical variable indicating size class and a set of control variables:

$$\ln Y_{it} = \alpha + \beta\ Size_i + \gamma\ Control_{\mathrm{it}} + \mu_i + \mu_t + \epsilon_{it}, \qquad (1)$$

where Y_{it} is a particular performance indicator for country i in year t. *Size* is defined as a time–invariant dummy variable taking value 1 if a country belongs to a certain size class and zero otherwise. We use two different sets of size classes. In the first approach, we use a 15 million of population as a dividing line between small and large countries. This threshold is often suggested by the literature as the most appropriate one. Here, *Size* assumes value of 1 if a country has less than 15 million of population and zero otherwise. In order to tease out heterogeneity in performance of both country groups in terms of size, in the second approach we refine the measure of size by allowing for five distinct size classes. We use more or less standard bounds of country size as found in the

literature. *Micro* country is a country with less than 1 million population. *Tiny* country has population between 1 and 5 millions, while *small* country has population between 5 and 15 millions. *Medium*-sized country is a country with population between 15 and 40 millions, while a country with more than 40 millions of population is classified as *large*.

Two important notes have to be made regarding the construction of these country size group dummies. *First*, for each of the three country size groups that refer to small countries, the particular binary dummy variable takes value of 1 if a country belongs to a particular group, missing value if a country belongs to one of the two other groups of small countries, and zero otherwise. This means effectively that a comparison group for any of the three small countries' groups is always the groups of medium and large countries only.[4] We proceed similarly with the size dummy variables for groups of medium and large countries, where the comparison group is always the three small countries' groups combined. Though this procedure leads to losing a number of observations in regressions and is taxing for estimation of standard errors, it does the job at more correctly comparing smaller countries to bigger countries and vice versa.

And *second*, in constructing the size dummy variables we use the median value of population over the period 1960 – 2010. This is to prevent countries from switching between different size classes as countries grow over time in terms of population.

[*Insert Table 1*]

As shown by Table 1, almost three quarters of all of the countries in the world (165 out of 214) can be classified into a broad category of small countries with population less than 15 million. The biggest group among small countries (64) are classified into the subcategory "micro", followed by the subcategory "tiny" (52) and "small" countries (49). In the group of larger countries there are two equally sized subcategories consisting of "medium" (24) and "large" countries (25). Interestingly, over the period 1960 – 2010 micro countries have grown the most by almost tripling the average size of population, while the largest countries "only" doubled their population.

Control variables include a number of country-specific fixed effects. The most prominent among country-specific fixed effects is level of development (measured with logarithm of real GDP per capita in 2005 constant $), which was shown in the literature as the single most important country characteristic that in many aspects determines its long-run performance. Second group of country fixed effects consists of a set of dummy variables indicating country's geographic

[4] For example, assigning the value of a dummy variable for a group of tiny countries to 1 and zero otherwise, would effectively define not only medium and large countries as a comparison group, but also micro and small countries.

location. These include log of distance from equator (in kilometres), binary dummy variables for landlocked country and for island-nations, regional dummies for developing countries (for Latin America, Sub-Saharan Africa, Middle East-North Africa, East Asia, South Asia and Europe-Central Asia). Third group of country fixed effects controls for other income, cultural and historical characteristics of countries. Here, we include a dummy variable for High Income countries (OECD), OPEC dummy and language dummy variables for countries that speak either English, French, German, Dutch, Portuguese, Spanish, Arabic or Chinese. These language dummies control for specific cultural similarities among independent countries. In addition, we also control for the "age" and "dependence" of countries by including two dummy variables for the date of establishment of a country and a variable for historical dependence ties. These controls include a binary dummy variable for countries created after 1800 but before 1945, dummy for countries created post-WW2 as well as a colonial dependency dummy. The latter covers the previous colonial status of a country as well as controls for long-lasting institutional effects and special monetary and trade blocs created, after gaining the independence, among previous colonial powers and their dependent territories. Variable μ_t controls for time-specific fixed effects (where more than one time observation exists), while μ_i is bound to control for remaining country-specific fixed effects. ϵ_{it} is the usual i.i.d error term.

We estimate (1) by OLS (see discussion of potential application of fixed-effects (FE) regressions bellow). The estimated *Size* coefficients from the OLS regressions can be interpreted as conditional differences in performance of particular country size group compared to the reference group, that is the country-year averages of other countries (i.e. medium and large countries are comparison group for each of the three small countries' groups, and vice versa).

To account for the remaining unobserved country heterogeneity μ_i (that is not captured by the included country-specific fixed effects), which may be correlated with the variables included in the model and may potentially lead to biased estimates of the size premia, we should also apply the fixed-effects (FE) regressions. The application of the FE estimator in the context of the model (1) is however not meaningful. For *one*, the fixed-effects regressions, with the underlying time-demeaning transformation of data, would in fact estimate a correlation between a change in size and a change of the dependent variable, since this type of regression captures countries' deviations from their own long-term averages. These estimates, however, are not meaningful in our context as size classes to which countries are assigned are time-invariant. At the same time, time-demeaning would wipe out all included country-specific and time-invariant fixed effects.

And *second*, a potential solution to the problem of using the time-demeaning transformation of time-invariant data is to use the AREG regression analysis. In contrast to the FE regression, AREG does not transform the variables, but

instead creates a full set of country specific binary fixed effects. However, in the context of model (1) this approach is not appropriate as newly created country-specific binary dummy variables are perfectly correlated with the time-invariant categorical country size variable. Due to this, fixed effects estimations are either meaningless or inappropriate in our case and we therefore try to capture the country-specific fixed effects, as good as we can, with the above exhausting list of country-specific characteristics.

We compute the size premia from the estimated coefficient β as 100*(exp(β)-1). This is the obvious way to calculate the size premia when the dependent variable is in a logarithmic form and explanatory variable is a dummy variable. In case of three dependent variables (i.e. rate of growth of GDP, balance of current account to GDP, and government budget balance to GDP), logarithmic transformation of data is not appropriate as these variables can take negative values. In these particular cases, we regress the absolute values of these variables on country size dummy and other RHS variables. The size premia in these cases are computed from the estimated coefficient β as 100*(β/(y/x)), whereby x is evaluated at $x=1$ and $y=\bar{y}$ (i.e. at average value of y).

The size premia computed in this way show the average percentage difference in performance between a selected country size group and the reference country group controlling for the time-specific fixed effects and country-specific characteristics included in the vector *Control*.

3.2. Data and descriptives

The dataset employed in this study consists of relevant country data sampled at five-years intervals, starting in 1960 and proceeding through 2010. Our dataset includes all 214 countries (or territories) that are being covered by the Worldbank's *The World Development Indicators* (WDI). Note that we follow here a similar approach as Rose (2006) and consider as "countries" all entities referred to as such by the WDI in 2013. This list includes a number of entities that are in strict sense of the word not considered to be "countries", such as the Cayman Islands, Hong Kong, Andorra, Puerto Rico, etc., but which have their own economies ran by their autonomous authorities. This list also does not include countries that ceased to exist and have split into multiple countries, such as U.S.S.R., Czechoslovakia or Yugoslavia. Their successor countries are included instead.

Our main source of data is WDI in 2013. These data covers a wide range of more than 1,200 different economic and socio-economic indicators. Where missing, these data was complemented with the IMF data (International Financial Statistics, Government Finance Statistics, Balance of Payments) on international trade and finance, government finance and unemployment. The latter data

covers mainly the period 1980 – 2010. Data on country characteristics, such as language, geographic location and distance to equator, was taken from Rose (2006). Data on conflicts was taken from Uppsala Conflict Data Program (UCDP).

Though the data starts in 1960, there is a number of countries for which data become available only later on. There is also a mixed coverage of indicators. For some variables, such as GDP and population, data is available throughout the sampled period, while for some other variables, such as informal payments, the data are available only for a most recent year or two.

[*Insert Table 2*]

The overview of the data used in this paper is given in Table 2. The data cover the most important economic indicators, such as GDP per capita, GDP annual growth rate, standard deviation of GDP growth rate, unemployment, budget balance, CPI, government revenues and expenditures, public debt, trade openness, foreign direct investment, current account balance, business environment, size of banking sector, risk premium, gross savings and gross investment, infrastructure and ICT data, etc. Among socio-economic indicators the data cover expenditures for education, health and military, school enrollment, life expectancy, infant mortality, human development index, inequality index, income shares by selected income groups, homicides, democracy and autocracy index, armed conflicts, informal payments, etc.

4. Results

In this section we present results on whether size matters for country performance. We first present some explorative graphic analysis whether size matters in terms of some selected variables and then proceed with presenting results on size premia as estimated using the model (1).

4.1. Does size matter?

To start with the explorative analysis whether size matters for country performance, we present some cross-section graphic representations of the relationship between size and a number of selected variables.

Figure 1 shows scatter-plots of (logarithm of) real GDP per capita against (logarithm of) population at 5-years intervals from 1960 through 2010 and the most recent year 2012. Each point represents a country. Each separate picture includes a linear regression line and a simple bivariate regression model, where the estimated coefficients represent simple elasticity of per capita GDP in respect to population size. Each picture also includes vertical (dashed) demarcation lines

representing the size classes of countries. The most left section represent micro-sized countries, and section the most to the right shows large countries, with the rest three size classes in between.

[*Insert Figure 1*]

Though the sample of countries increased over time, from 96 up to 199, the relationship between per capita GDP and population size remains unaltered. Relationship between per capita GDP and size is weakly, but significantly negative indicating that smaller countries are on average richer (more developed) than larger ones. The difference in per capita GDP can be quite high between the two extremes, i.e. between the group of micro-sized and the group of large countries. This indicates that there is a potentially significant negative size premium in being large when it comes to per capita income. We discuss the exact size premia in the next subsection.

[*Insert Figure 2a*]

[*Insert Figure 2b*]

Figures 2a and 2b explore the relationship between size and some other selected performance indicators. The data depicted in the figures spans over the whole period 1960 – 2010. The upper panel of Figure 2a shows that there is absolutely no relationship between average GDP growth[5] and size. On the other side, unemployment seems to be (weakly) negatively related to population size with a tendency of larger countries to exhibit lower unemployment rates. The lower panel of Figure 2a confirms that small countries insure against small domestic markets by engaging in international trade – there is evident a strong negative relationship between trade openness and size. Though, this does not necessarily mean that smaller countries will experience positive current account balances. On the contrary, larger countries seem to exhibit lower current account deficits.

Figure 2b graphically explores relationship between size of population and size of government as well as its potential consequences in terms of budget balance and public debt. The upper panel of Figure 2b clearly demonstrates that smaller countries will on average run higher governments, both in terms of expenditures and revenues. This confirms the notion of higher per capita costs of certain public goods in smaller countries. Running larger governments, however, does not necessarily translate into fiscal irresponsibility. As shown in the lower panel of Figure 2b, there seems to be no significant relationship neither between the average budget balance and size nor between average public debt and size.

The presented scatter-plots between population size and some selected variables are quite instructive. Though, these figures present only simple bivariate

[5] Note that for all selected indicators in Figures 2a through 2d we use 5-year averages instead of a snaphot for particular year. For example, data point for 1965 depicts 5-year average of selected indicator for 1961-1965.

relationships and do not account for heterogeneity of countries along other dimensions. One of the most important dimensions is per capita GDP, which may and does, in an important way, determine country performance.

The correlations between per capita GDP and the same set of selected performance variables are depicted in Figures 2c and 2d. The figures show that per capita income matters for country performance. And, with the exception of GDP growth, it matters a lot. Per capita income is shown to be negatively correlated with unemployment, but positively correlated with both trade openness and current account balance. Similarly, Figures 2d reveal that government size is strongly related to level of development. And, surprisingly, so does the government budget balance and public debt. Countries with higher per capita income seem to be more prudent in terms of fiscal policies, they run higher budget surpluses and lower levels of public debt.

[*Insert Figure 2c*]

[*Insert Figure 2d*]

As size is correlated with per capita GDP, and both per capita GDP and size are correlated with a number of countries' performance indicators, this indicates that when searching for the size effects it is important to account for income per capita effects as well (and a number of other country-specific covariates). We present the effects of size after controlling for these country-specific covariates in the next subsection.

4.2. Base empirical results

In this section, we present basic results of estimating model (1), which serves as a base for computing the size premia. We only present results on the relationship between size and per capita GDP in a greater detail. Instead of presenting full results for all other variables in a great detail, we rather graphically present the computed size premia. Visual presentation of premia is far more instructive for depicting the relationship between size and country performance. Tables with more detailed results for all selected variables of interest can be found in the Appendix.

Table 3 shows results of estimating model (1) in a successive way for variable GDP per capita. First line presents results of a bivariate regression of log GDP per capita (in 2005 constant $) on Size dummy variable taking value 1 for population size smaller than 15 million, and 0 otherwise. The coefficient of a bivariate regression in the first line shows that countries with less than 15 million of population experience significantly higher per capita income. Second line labeled Controls 1 includes year fixed effects. The estimated coefficient gets a bit smaller, but remains significantly positive. Specification labeled Controls 2 includes full set of control variables as explained in Section 3.1 (with the obvious

exception of GDP per capita). Under this specification the coefficient of Size becomes larger and improves in significance. Running regressions year-by-year, reveals that per capita income is always positively correlated with small size and significant or marginally insignificant at 10 per cent in 7 out of ten years.

[*Insert Table 3*]

These results hence show that, after controlling for a full set of country-specific and time-specific fixed effects, per capita GDP is significantly larger in countries with less than 15 million of population. The exact premium of smallness computed from pooled specification with included full set of covariates amounts to 30.7 per cent. In other words, small countries on average experience a 30 per cent higher income per capita than larger countries.

Of course, the above specification is very crude in accounting for country size. There might be differences across countries within both large country groups. We therefore run a set of regressions by dissecting country size in five different size classes – micro, tiny, small, medium and large.[6] Regressions are run separately for each size class and include a full set of control variables and time fixed effects. Results are presented in Table 4.

[*Insert Table 4*]

The estimated coefficients by size classes in the pooled regression show that all three groups of small countries are having significant size premia over larger countries in terms of GDP per capita. While the groups of tiny (population between 1 and 5 million) and small countries (population between 5 and 15 million) are having a modest premium of about 13 per cent over medium and large countries, real per capita income in 64 micro countries is, on average, more than double of that in medium and large countries. On the other side, per capita income in 24 medium and 25 large countries is, on average, by 12% and 40%, respectively, lower than in the all three groups of small countries combined (see also Figure 3). Year-by-year regressions suffer under small samples size, due to which only the coefficients for micro and large countries remain significant. These results, however, are clearly driven by the explained construction of Size dummy variables resulting in significantly reduced sample size.

These results imply three *ad hoc* conclusions. *First*, there is apparently no important scale effect at work, at least it is obviously not important when it comes to long-run per capita income. *Second*, more populous countries have a hard time to provide an equal level of standard of living to their numerous population, while small countries – despite their lower abundance of resources and lower economic scale – have it much easier. And *third*, as set out in the

[6] Micro - less than 1 million population; Tiny - population between 1 and 5 millions; Small - population between 5 and 15 millions; Medium - population between 15 and 40 millions; and Large - more than 40 millions of population.

hypotheses, small independent countries are apparently the ones who are richer and can therefore afford to overcome the cost of smallness. This is particularly true for the large group of micro-sized countries.

4.3. Size premia

In this subsection we present results on size premia as computed from coefficients estimated using the model (1). We first present results on major economic indicators and then proceed with other socio-economic indicators of country performance.

4.3.1. Size premia for economic indicators

We estimated the impact of size on the following list of economic indicators: GDP per capita, average GDP growth, standard deviation of GDP growth rate, average unemployment rate, average government revenues/GDP, average government expenditures/GDP, average current account/GDP, average openness, average budget balance/GDP, average debt/GDP, FDI/GDP, CPI, savings rate, investment rate, country risk, risk premia, and bank credit/GDP. Computed premia are presented in Figures 3 through 3d.

[*Insert Figure 3*]

Figure 3 presents size premia for a class of small countries as compared to large countries (the dividing line is population of 15 million). The figure clearly demonstrates that small countries are significantly diverse as compared to large countries in almost all important economic indicators. In fact, small countries are shown to perform significantly differently from large countries in terms of 13 out of 17 selected major economic indicators. This is in contrast to Rose (2006) who finds, using the parametric regression analysis, that – with the exception of per capita income and trade openness – size does not really matter.

Our results show that small countries are on average richer by 30 per cent, but they do not grow significantly faster than their larger counterparts. This offers two potential insights. First, it implies that differences in income per capita between small and large countries are very persistent over time. Principally, only territories that can afford to maintain the cost of smallness will decide to become independent. But once you are an established small economy your income per capita premium, after controlling for a number of country-specific effects, is going to last. And second, it demonstrates as well that, in contrast to the notions of endogenous growth theory, lower intensity of product market competition in small countries does not necessarily lead to lower productivity benefits and lower long-run average rates of growth.

On the other side, though not systematically different in terms of the average growth rates, economic growth of small countries is shown to be more volatile. Standard deviation of GDP growth rates over 5-years intervals in small countries is on average by 20 per cent larger as compared to large countries. This is line with findings of Easterly and Kraay (2000) who also find bigger volatility of growth rates in smaller countries. Small countries are more likely to be subject to bigger spikes in either direction due to their larger exposure to trade shocks. The latter confirms legitimacy of the fourth potential scale effect as put forward by Alesina and Spolaore (1997, 2003) that small countries may have a lower ability to handle adverse economic shocks (to which they are subject due to higher exposure to international trade).

As shown by most of the studies, small countries are systematically and substantially more open than larger countries. Our results show that the openness premium of small countries is close to 70 per cent, i.e. the shares of exports and imports in GDP in small countries are higher by almost 70 per cent. This confirms, in conjunction with the previous finding of no systematic differences in terms of average GDP growth, that small countries are able to compensate for their smallness and insure against the domestic small markets by becoming more open to trade. Another aspect of higher openness of small countries is their more extensive involvement in international capital flows as they attract more of deficient productive capital from abroad. On average, small countries attract by almost 30 per cent more FDI relative to GDP. This is in line with the general findings of Hines (2005) and Head and Ries (2008) that small countries attract more FDI. Higher exposure to trade and FDI flows, however, comes at the cost of systematically larger current account deficits (by 65 per cent), whereby at least the first as we found earlier my also lead to higher volatility of growth.

Small and large countries do not differ in terms of average unemployment rates, but do so in terms of inflation, where small countries on average exhibit lower inflation rates by 25 per cent. Small countries also exhibit lower savings and investment rates by 20 and 5 per cent, respectively. The difference in premia between the two in favor of relatively lower savings rate indicates that small countries are dependent on foreign savings, which materialize in the form of larger inflows of FDI.

As shown earlier, small countries have systematically bigger governments. The exact average premia in terms of expenditures and revenues equals to 17 and 10 per cent, respectively. While this confirms findings of Alesina and Wacziarg (1998), having larger governments, however, does not necessarily lead to fiscal irresponsibility. On the contrary, small countries are shown to run more prudent fiscal policies and have budget surpluses bigger by almost 50 per cent as compared to large countries. In addition, there are no systematic differences between small and large countries in terms of the public debt to GDP. Some additional clarification might be needed here. Bigger budget surpluses and lower

public debts in small countries could be partly explained by the fact that they are richer and hence having it easier to collect more taxes. Note, however, that in all estimations we control for GDP per capita, geographic location, the High Income (OECD) dummy, etc., but the significant effect of, on average, more prudent fiscal policies in small countries is still there.

Data also shows that, on average, small countries have banking sectors smaller by 25 per cent. Finally, though their country risk is no different from large countries, small countries on average pay systematically higher risk premium by almost 25 per cent when taking up foreign loans. At least here, small countries are taxed for their smallness by international financial markets. The reason may well lay in the perception of markets that, notwithstanding more sound fundamentals such as better budget position, small countries posses over lower ability to repay the loans in the long run.

[*Insert Figure 3a*]

[*Insert Figure 3b*]

[*Insert Figure 3c*]

[*Insert Figure 3d*]

It is useful to see how above systematic differences in economic performance between a group of small and group of large countries behave when dissecting the group of small countries into more narrow size classes. In other words, we are interested in seeing whether there are significant differences in economic performance between the three distinct groups of small countries.

Our results show that in general the above trends in economic performance between small and large countries remain systematically associated with size all the way down to micro-sized countries. In terms of per capita GDP, micro countries are clearly outperforming the group of larger countries (i.e. medium and large countries combined) by recording a premium of more than 125 per cent. The groups of tiny and small countries show smaller but still significant premia of about 13 per cent. At the other extreme, large countries are poorer on average by almost 40 per cent relative to the groups of small countries, followed by 12 per cent negative premium by medium-sized countries. In terms of average growth of GDP, there are no significant differences to be found in none of the three groups of smaller countries. Significant differences are, however, found in the club of smaller countries in terms of the GDP growth volatility. While the group of small countries shows no different growth volatility compared to larger countries, the groups of tiny and micro countries demonstrate an increased volatility. Growth volatility in tiny countries is bigger by 18 per cent and in micro countries by almost 50 per cent relative to the group of larger countries. This indicates that the smaller the country the larger is the vulnerability to economic shocks.

In terms of openness to trade differences among groups of smaller countries are quite pronounced. In the group of small countries the premium is at 50 per cent

and then increases up to almost 100 per cent in the group of micro countries. The trends are quite similar with the FDI to GDP ratios, with the notable difference, however, that the largest premium over larger countries is recorded in the group of tiny countries (i.e. at 40 per cent). The FDI premia in small and micro countries amounts to 11 and 25 per cent, respectively. Current account deficits seems to be the greatest plague in tiny countries, while they are, surprisingly, not significantly different from large countries in the groups of micro and small countries. There seems to be no convenient explanation for this phenomenon at hand.

In terms of unemployment, there seem to be no systematic similarities across groups of small countries. While tiny countries seem to be subject to larger unemployment rates (by 18 per cent), micro countries demonstrate systematically lower unemployment by about 20 per cent relative to larger countries. The unemployment rates in the group of small countries are not systematically different with respect to large countries. On the other side, the differences in inflation are again quite systematically associated with size. Tiny and small countries record significantly lower inflation rates by 20 and 36 per cent, respectively, while inflation rates in the group of micro countries do not significantly differ from those recorded in the group of larger countries. On the other part of the country spectrum, large countries are shown to experience larger unemployment rates than medium-sized countries (the premia over smaller countries being 36 per cent in the former and 28 per cent in the latter group). In terms of the savings rate there is a clear linear association with regard to size. The smaller the country the smaller will be savings rate, with premia ranging between 17 per cent (in small countries) and 22 per cent in micro countries. In terms of investment rates the relations are less clear-cut, with the lowest rate recorded in the group of small countries.

The government size, budget balance and size of the banking sectors are evidently systematically related to the country size. The smaller the country the bigger will be the government, the bigger the budget surplus and the smaller will be the banking sector. One notable exception is the group of small countries, which, in contrast to the groups of micro and tiny countries, does not significantly differ from larger countries both in terms of government size and budget balance. It is the micro and tiny countries who account for larger governments and more sound fiscal policies. Finally, in terms of risk premium on foreign borrowing differences across country groups seem to be systematic. It is, however, the group of micro countries that pays the highest tax on smallness in terms of higher risk premium of about 90 per cent.

4.3.2. Size premia for socio-economic indicators

Finally, we turn to other socio-economic indicators of interest, such as education expenditure to GDP, secondary school enrollment, tertiary school enrollment, Human development index, life expectancy at birth, public health expenditure to GDP, infant mortality, internet users, mobile phone subscribers, fixed telephone lines, road density, military expenditure to GDP, intentional homicides, number of armed conflicts, Democracy Index, Autocracy Index, Ease of doing business index, informal payments, Gini index and Kuznets index of inequality.

[*Insert Figure 4a*]

[*Insert Figure 4b*]

Figures 4a and 4b present size premia for a class of small countries compared to large countries (the dividing line is population of 15 million). The Figures demonstrate several interesting findings. *First*, though small countries on average exhibit by almost 15 per cent higher public spending for health care relative to GDP, the overall quality of life (as measured with Human development index) and life expectancy are lower (both by modest 1 per cent) and infant mortality is higher (by 5 per cent). As shown by Figure 5b, this is mostly due to the low performance of micro countries, and to a less extent in case of tiny countries. The group of small countries does not perform differently from the groups of larger countries.

Second, despite higher expenditures for public education by almost 7 per cent, the secondary and tertiary school enrolment rates are significantly lower in small countries (the negative premia ranging between 8 and 17 per cent, respectively). Again, this is predominantly due to the low performance of micro-sized countries (see Figure 5c).

Third, telecommunication infrastructure (as measured by internet users, mobile phone subscribers and fixed telephone lines) is of lower intensity in smaller countries. Here, again micro and tiny countries are the ones who perform more poorly, though there is a negative premium evident in the group of small countries as well (see Figure 5a). These findings confirm the propositions of Alesina and Spolaore (1997, 2003) that the cost of providing public goods in smaller countries is higher, resulting in their lower overall effective quality.

[*Insert Figure 5a*]

[*Insert Figure 5b*]

[*Insert Figure 5c*]

[*Insert Figure 5d*]

[*Insert Figure 5e*]

Fourth, in contrast to the propositions in the literature, smaller countries do not seem to be significantly adversely affected by size in terms of military spending

(see Figures 4b and 5d). In the group of micro countries military expenditure relative to GDP are even lower (by 12 per cent) than in the groups of large countries where military spending to GDP is significantly bigger by 13 per cent. This is probably a consequence of two things. First reason might be lower tendency of smaller, and in particular of micro-sized countries to build sophisticated military system ranging from aviation to intercontinental missile defense systems. At least in this field, a higher per capita cost of providing public goods works in favor of smaller countries. And second reason lies probably in smaller countries' less aggressive stance towards other nations, which is also reflected in their significantly lower engagement in armed conflicts. Engagement in armed conflicts is shown to monotonically increase with size. The group of small countries is on average by almost 20 per cent less frequently engaged in armed conflicts.

Fifth, in terms of democracy, small countries in general perform no differently than large countries (see Figure 4b). Our results show no significant relationship between size and two alternative measures of democracy - Democracy index and Autocracy index. This remains true also when dissecting countries into smaller groups (see Figure 5d) or when employing a parametric approach and a number of other variables (see Rose, 2006). There is no evidence of small countries being less democratic or more autocratic.

Sixth, the former finding is related to another proposition in the literature (see Campante and Do, 2008) hypothesizing that larger countries need more redistributive policies in order to avoid revolts or even revolutions against ruling elites. Our results, however, show no systematic differences among large and small countries in terms of inequality. Both measures of income inequality (the standard Gini index and a Kuznets ratio)[7] show no systematic correlation to country size (see Figures 4b and 5e). The only exception seems to be the group of small countries with population between 5 and 15 million, who displays a significantly smaller Gini index by 4 per cent relative to larger countries and similarly smaller Kuznets ratio (but not significant)

Finally, results demonstrate that small countries are not lagging behind in providing sound business environment and do not seem to be more corrupt. Regarding the former, a group of tiny countries with population between 1 and 5 million show significantly sounder business environment relative to larger countries as measured by the Worldbank Doing business ranking. This confirms high rankings of smaller countries on IMD and WEF competiveness scoreboards.[8]

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[7] Kuznets ratio is defined as a ratio of highest 20% earners to lowest 40 % earners of income.

[8] Note that due to lower rate of coverage of countries both in IMD and WEF scoreboards we are unable to use these in empirical analysis.

5. Conclusions

The aim of this paper is to examine the premium of country size. We use a comprehensive database for over than 200 countries for a period 1960 – 2010 on a large number of key economic and socio-economic indicators. Using the econometric approach, we tease out a premium of size (smallness) in a variety of key dimensions, such as level of per capita income, long-run economic growth, volatility of growth, openness to trade and foreign direct investment, budget and current account balance, size of government and public debt, inflation, standard of living, income distribution, health, education, infrastructure development, level of democracy and corruption, and a number of other socio-economic indicators.

We find that, after controlling for a number of country-specific fixed effects, small countries are different. Our evidence shows that small countries are richer, have larger governments, but are also more prudent in terms of fiscal policies and run smaller public debts. Small countries seem to do exceptionally well, or at least not worse than large countries, by insuring against smallness with relying on foreign trade and foreign direct investment. This, however, comes at cost of higher vulnerability to external shocks resulting in higher volatility of growth rates. Smaller countries seem to pay higher absolute and per capita cost of provision of essential public goods, but seem to get less for a penny in terms of health and education outcome. On the other side, this is not true of military spending, where small countries demonstrate lower spending and lower tendency to engage in armed conflicts. Smallness also does not result in bigger income inequality, lower democracy or bigger corruption.

Country size, hence, is important. It is important in a number of ways, but one cannot determine whether it is good or bad being a small country. It depends on the context and on performance indicator of interest.

6. References

Alesina, A., Devleeschauwer, A., Easterly, W., Kurlat, S., & Wacziarg, R. (2003). Fractionalization. *Journal of Economic growth*, 8(2), 155-194.

Alesina, A. & E. Spolaore (1997). "On the Number and Size of Nations," *Quarterly Journal of Economics,* 112, 1027–1056, November.

Alesina, A. (2003). The size of countries: does it matter? *Journal of the European Economic Association*, 1(2-3), 301-316.

Alesina, A. & E. Spolaore (2003). *The Size of Nations*. Cambridge, Massachusetts: MIT Press.

Alesina, A. & R. Wacziarg (1998). "Openness, Country Size and the Government." *Journal of Public Economics,* 69, 305–322.

Alesina, A., E. Spolaore, and R. Wacziarg (2000). "Economic Integration and Political Disintegration," *American Economic Review* 90, 1276–1296.

Alesina, A., Spolaore, E., & Wacziarg, R. (2005). Trade, growth and the size of countries. Aghion, P. and Durlauf (eds.), *Handbook of Economic Growth,* North Holland: Amsterdam, 1499-1542.

Anckar, D. (2002). Why are small island states democracies?. The Round Table, 91(365), 375-390.

Barro, Robert J. & Xavier Sala-i-Martin (1995). Economic Growth (McGraw-Hill: New York).

Blanco, L., & Rogers, C. (2011). Do Tax Havens Really Flourish? Accounting for Endogeneity in Growth Regressions.

Bolton, P. & G. Roland (1997). "The Break-up of Nations: A Political Economy Analysis." *Quarterly Journal of Economics,* November.

Bucovetsky, S., & Haufler, A. (2006). Preferential tax regimes with asymmetric countries (No. 1846). CESifo working paper.

Bucovetsky, S., & Haufler, A. (2008). Tax competition when firms choose their organizational form: Should tax loopholes for multinationals be closed?. Journal of International Economics, 74(1), 188-201.

Campante, F. R., & Do, Q. A. (2008, May). Inequality, redistribution and population. In *American Law & Economics Association Annual Meetings* (p. 103). bepress.

Dahl, R. A. and E. R. Tufte (1973). *Size and Democracy*. Stanford: Stanford University Press.

Damijan, J.P. (1996). *Small Countries in the World Trade*, Ljubljana: Krtina.

Damijan, J.P. & Č. Kostevc (2011), Trade liberalization and economic geography in transition countries: Can FDI explain the adjustment pattern of regional wages? *Post-Communist Economies*, 23 (2): 163-189.

Easterly, W., & Kraay, A. (2000). Small states, small problems? Income, growth, and volatility in small states. World development, 28(11), 2013-2027.

Fearon, J. D., & Laitin, D. D. (2003). Ethnicity, insurgency, and civil war. *American political science review*, 97(1), 75-90.

Friedman, D. (1977). "A Theory of the Size and Shape of Nations," *Journal of Political Economy,* 85(1), 59-77.

Fujita, M., Krugman, P.,Venables, A.J. (1999), The Spatial Economy: Cities, Regions, and International Trade, Cambridge, Mass.: MIT Press.

Grossman, H. I., & Iyigun, M. F. (1997). Population increase and the end of colonialism. *Economica*, 64(255), 483-493.

Head, K., & Ries, J. (2008). FDI as an Outcome of the Market for Corporate Control: Theory and Evidence. *Journal of International Economics*, 74(1), 2-20.

Helliwell, J. (1998). *How Much Do National Borders Matter?* Washington, D.C.: Brookings Institution.

Hines Jr, J. R. (2005). Do tax havens flourish?. In *Tax Policy and the Economy*, Volume 19 (pp. 65-100). MIT Press.

Hobsbawn, E. J. (1987). *The Age of Empires.* New York: Vintage Books.

Keen, M., & Kanbur, R. (1991). Jeux sans frontieres: Tax competition and tax coordination when countries differ in size. Queen's University, Department of Economics.

Khalaf, N. G. (1974). Country size and trade concentration. *The Journal of Development Studies*, 11(1), 81-85.

Krugman, P. (1991), "Increasing Returns and Economic Geography", *Journal of Political Economy*, 99, 483-499.

Krugman, P. & Venables A.J. (1995), "Globalization and the Inequality of Nations", *Quarterly Journal of Economics*, 110, 857-880.

Kuznets, S. (1960). Quantitative aspects of the economic growth of nations: v. capital formation proportions: international comparisons for recent years. *Economic Development and Cultural Change*, *8*(4), 1-96.

Michaely, M. (1962). *Concentration in international trade* (Vol. 962). North-Holland Publishing Company.

Olson, M. (1982). *The Rise and Decline of Nations* (Yale University Press: New Haven).

Olsson, O. & Hansson, G. (2011). Country size and the rule of law: Resuscitating Montesquieu. European Economic Review, 55(5), 613-629.

Ottaviano, G. I., & Puga, D. (1998). Agglomeration in the global economy: a survey of the 'new economic geography'. The World Economy, 21(6), 707-731.

Overman, H. G., Redding, S., & Venables, A. (2003). The economic geography of trade, production and income: A survey of empirics (pp. 353-387). Blackwell Publishing.

Pearson, D. S. (1965). Income Distribution and the Size of Nations. *Economic Development and Cultural Change*, 13(4), 472-478.

Redding, S. J. (2010). The empirics of new economic geography. Journal of Regional Science, 50(1), 297-311.

Robinson, E.A.G. (1960). *Economic Consequences of the Size of Nations.* St. Martin's Press: New York.

Rose, A. K. (2006). Size really doesn't matter: In search of a national scale effect. *Journal of the Japanese and International Economies*, 20(4), 482-507.

Salvatore D., M. Svetličič & P.J. Damijan, eds. (2001): *Small Countries in a Globalised World: New Challenges and Opportunities*. Basingtoke: Palgrave.

Srebrnik, H. (2004). Small island nations and democratic values. *World Development*, 32(2), 329-341.

Streeten, P. (1993). The special problems of small countries. *World Development*, 21(2), 197-202.

Winner, H. (2005). Has tax competition emerged in OECD countries? Evidence from panel data. *International Tax and Public Finance*, 12(5), 667-687.

Tables to be included in text

Table 1: Distribution of countries by size of population

			1960	1965	1970	1975	1980	1985	1990	1995	2000	2005	2010	2012
micro	pop <1	no.	64	64	64	64	64	64	64	64	64	64	64	64
		pop. (mill.)	0.147	0.162	0.179	0.196	0.213	0.237	0.266	0.291	0.310	0.343	0.391	0.409
tiny	1 < pop < 5	no.	52	52	52	52	52	52	52	52	52	52	52	52
		pop. (mill.)	1.8	2.0	2.2	2.4	2.6	2.9	3.2	3.4	3.6	3.9	4.3	4.5
small	5 < pop < 15	no.	49	49	49	49	49	49	49	49	49	49	49	49
		pop. (mill.)	5.3	5.8	6.4	7.0	7.6	8.4	9.1	10.1	11.1	12.2	13.4	13.9
medium	15 < pop < 40	no.	24	24	24	24	24	24	24	24	24	24	24	24
		pop. (mill.)	13.1	14.6	16.3	18.1	20.1	22.2	24.5	26.9	29.1	31.5	34.1	35.2
large	40 < pop	no.	25	25	25	25	25	25	25	25	25	25	25	25
		pop. (mill.)	94.0	102.7	113.9	125.6	136.7	148.6	161.7	173.7	185.2	195.6	205.4	209.5

Source: *The World Development Indicators* 2013, Worldbank.

Table 2: Variables and descriptive statistics of the sample data

Variable	Obs	Mean	Std. Dev.	Min	Max
Autocracy Index	625	3.8	3.7	0.0	10.0
Domestic credit provided by banking sector (% of GDP)	1,591	72.6	508.8	-67.5	15,676.0
Current account balance (% of GDP)	1,340	-2.9	12.2	-90.0	106.8
Passenger cars (per 1,000 people)	200	234.3	214.3	1.0	1,139.1
Mobile cellular subscriptions (per 100 people)	2,376	21.6	42.1	0.0	284.3
No. of armed conflict	608	0.3	0.5	0.0	1.0
Inflation, consumer prices (annual %)	1,457	33.3	386.3	-17.6	11,749.6
Central government debt, total (% of GDP)	862	60.2	55.3	0.0	755.3
Budget surplus/deficit (% of GDP)	1,001	-1.9	7.1	-34.2	51.4
Democracy Index	625	3.9	4.2	0.0	10.0
Log Km from equator	2,460	2857.0	1904.0	0.0	8,015.4
Ease of doing business index	184	93.4	53.4	1.0	185.0
Public spending on education, total (% of GDP)	689	4.4	2.0	0.3	14.8
Foreign direct investment, net inflows (% of GDP)	4,650	4.0	8.5	-161.0	173.0
Gross fixed capital formation (% of GDP)	1,502	21.8	8.3	1.1	92.4
Firms expected to give gifts to tax officials (% of firms)	74	25.0	24.3	0.0	83.8
Gini Index	179	41.6	9.9	24.2	62.8
Central gov budget expenditures (% of GDP)	954	32.4	13.4	0.6	104.1
Central gov budget revenues (% of GDP)	960	30.4	13.6	0.0	98.5
Human Development Index	367	0.7	0.2	0.3	1.0
Health expenditure, public (% of GDP)	749	3.7	2.4	0.0	19.3
Intentional homicides (per 100,000 people)	376	9.8	14.7	0.0	139.1
Hospital beds (per 1,000 people)	1,016	4.5	3.9	0.1	40.3
Country risk	138	68.1	11.6	34.8	90.8
IMD Comp Index	46	24.0	13.9	1.0	47.0
Income share held by highest 10%	785	33.3	7.8	18.2	65.0
Income share held by highest 20%	785	48.7	8.2	31.4	78.3
Income share held by lowest 20%	785	5.8	2.3	0.0	11.9
Income share held by second 20%	784	10.0	2.5	1.9	15.8
Kuznets ratio (highest 20 to lowest 40 % of income)	784	366.5	233.3	113.4	3747.3
Mortality rate, infant (per 1,000 live births)	2,021	54.4	47.2	1.7	249.4
Informal payments to public officials (% of firms)	76	23.7	18.1	0.0	69.9
Internet users (per 100 people)	1,176	18.1	25.6	0.0	96.0
Life expectancy at birth, total (years)	2,099	62.6	11.8	30.3	83.2
Military expenditure (% of GDP)	681	2.6	3.1	0.1	48.7
Trade (% of GDP)	1,678	79.5	50.7	1.1	447.2
Telephone lines (per 100 people)	2,089	14.2	18.0	0.0	125.5
Political Stability, KKZ	164	0.0	1.0	-2.8	1.7
Poverty gap at national poverty line (%)	206	12.2	10.4	0.4	47.6
GDP per capita (constant 2005 US$)	1,847	8,938	14,771	50	127,000
GDP per capita, PPP (constant 2005 international $)	1,315	10,637	12,886	102	123,000
Average annual GDP growth over past 5 years	1,646	1.8	3.7	-22.3	31.5
Standard deviation of GDP growth over past 5 years	1,834	3.7	3.6	0.0	48.8
Risk premium on lending (%)	570	6.5	15.1	-4.3	293.3
Road density (km of road per 100 sq. km of land area)	180	111.5	319.5	1.0	3,850.0
Rule of Law	184	0.0	1.0	-2.3	2.2
Gross domestic savings (% of GDP)	1,599	17.5	16.4	-86.9	85.6
School enrollment, secondary (% gross)	1,116	62.1	33.8	0.6	161.7
Tax revenue (% of GDP)	444	16.6	7.8	0.2	60.8
School enrollment, tertiary (% gross)	974	21.4	21.5	0.0	103.1
Unemployment, total (% of total labor force)	823	8.7	6.0	0.0	41.4
Voice and Accountability, KKZ	188	0.0	1.0	-2.1	1.6
WEF Competitiveness Index	56	29.2	16.8	1.0	58.0
Population (million)	2,540	23.9	99.5	0.004	1,350.0

Source: *The World Development Indicators* 2013, Worldbank; *International Financial Statistics, Government Finance Statistics, Balance of Payments*, IMF, 2013; Rose (2006), *Uppsala Conflict Data Program* (UCDP).

Table 3: Per capita GDP and size (small=15 million)

	Size	t-stat	Obs.	R-sq.
Bivariate	0.228	[2.72]***	1,847	0.004
Controls 1	0.194	[2.33]**	1,847	0.023
Controls 2	0.268	[5.55]***	1,827	0.786
1960	0.061	[0.32]	96	0.850
1965	0.076	[0.39]	103	0.847
1970	0.212	[1.19]	117	0.839
1975	0.311	[1.61]	122	0.829
1980	0.234	[1.40]	141	0.844
1985	0.374	[2.18]**	155	0.829
1990	0.298	[1.86]*	176	0.816
1995	0.201	[1.17]	186	0.782
2000	0.275	[1.75]*	190	0.797
2005	0.262	[1.70]*	195	0.786
2010	0.246	[1.53]	179	0.765

Notes: Results of estimating model (1). Coefficients of regressions of log GDP per capita (2005 constant $) on Size dummy variable taking value of 1 for population size smaller than 15 million, and 0 otherwise. Each line represents a separate regression. Set of control variables in Controls 1 includes year fixed effects only. Controls 2 includes full set of control variables as explained in Section 3.1. Control variables and constant term are omitted from presentation for brevity.

Robust t-statistics in brackets; *** p<0.01, ** p<0.05, * p<0.1.

Table 4: Per capita GDP and size (by size classes)

	micro		tiny		small		medium		large	
Pooled	0.813	[9.46]***	0.126	[2.03]**	0.125	[2.20]**	-0.124	[-1.91]*	-0.524	[-7.67]***
1960	0.716	[1.58]	-0.255	[-0.94]	-0.119	[-0.61]	0.128	[0.62]	-0.339	[-1.09]
1965	0.821	[1.69]	-0.202	[-0.79]	-0.101	[-0.52]	0.070	[0.31]	-0.292	[-0.93]
1970	0.518	[1.25]	-0.094	[-0.32]	0.049	[0.25]	0.059	[0.31]	-0.495	[-1.76]*
1975	0.746	[1.59]	-0.075	[-0.27]	0.091	[0.42]	-0.091	[-0.42]	-0.552	[-1.90]*
1980	0.449	[1.15]	-0.044	[-0.18]	0.072	[0.33]	-0.050	[-0.26]	-0.467	[-1.93]*
1985	0.808	[2.40]**	0.215	[0.76]	0.228	[1.12]	-0.140	[-0.70]	-0.606	[-2.53]**
1990	0.761	[2.44]**	0.141	[0.62]	0.286	[1.48]	-0.122	[-0.61]	-0.473	[-2.32]**
1995	0.846	[2.73]***	0.046	[0.19]	0.124	[0.58]	-0.018	[-0.08]	-0.377	[-1.81]*
2000	0.797	[2.60]**	0.171	[0.82]	0.139	[0.64]	-0.120	[-0.56]	-0.452	[-2.35]**
2005	0.839	[2.63]**	0.132	[0.63]	0.104	[0.50]	-0.125	[-0.57]	-0.417	[-2.36]**
2010	0.667	[1.99]*	0.061	[0.27]	0.103	[0.49]	-0.172	[-0.72]	-0.358	[-2.06]**

Notes: Results of estimating model (1). Coefficients of regressions of log GDP per capita (in 2005 constant $) on five Size dummy variables. Each coefficient corresponds to a separate regression. Regressions include full set of control variables as explained in Section 3.1. Control variables and constant term are omitted from presentation for brevity.

Robust t-statistics in brackets; *** p<0.01, ** p<0.05, * p<0.1.

Figures to be included in text

Figure 1: GDP per capita and Size

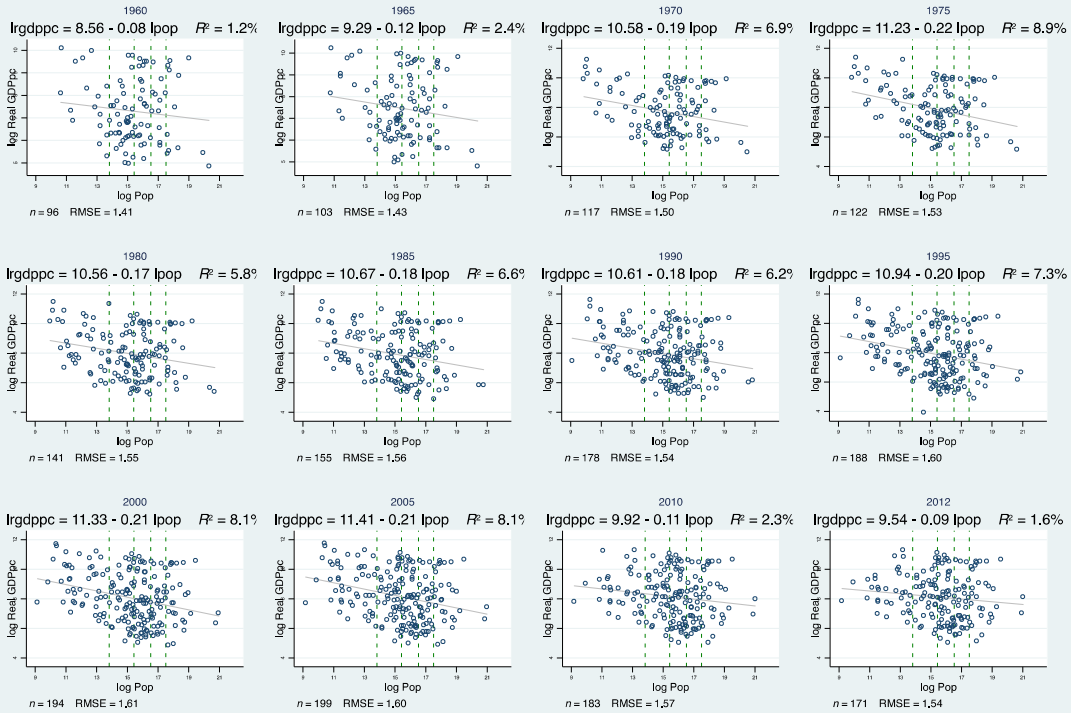
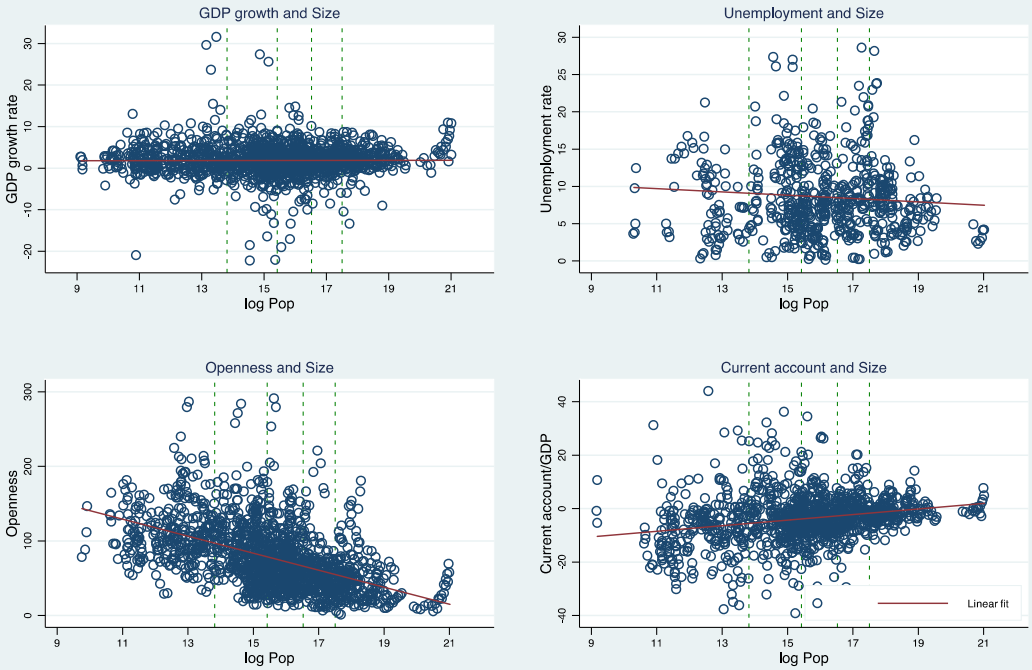
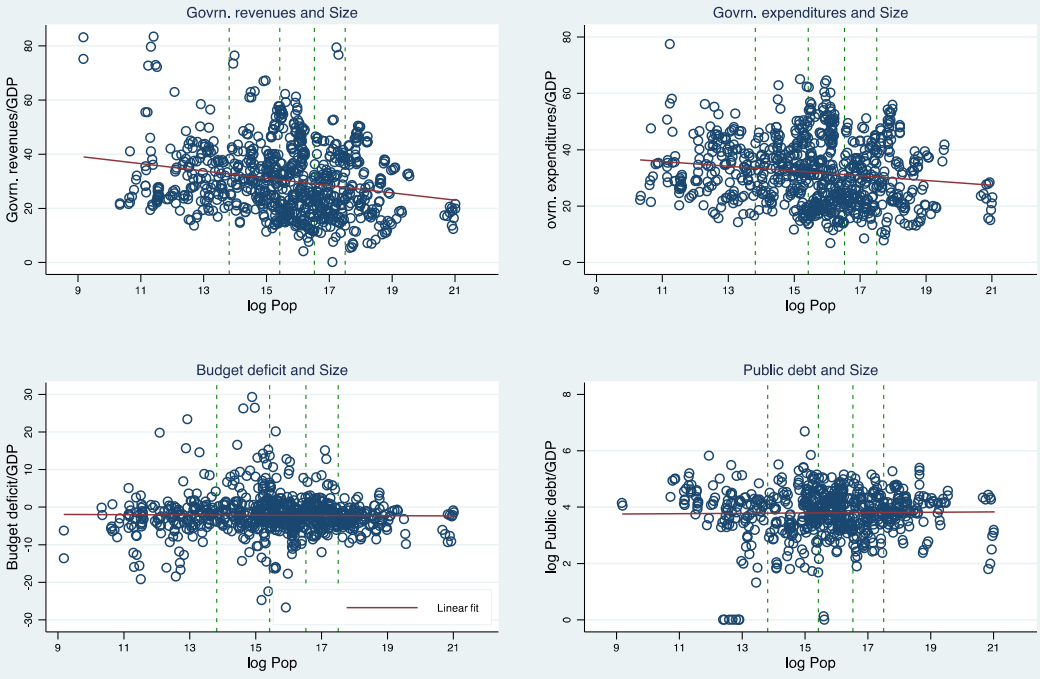


Figure 2a: Does size matter?



Note: Dashed lines indicate upper boundaries of country size classes

Figure 2b: Does size matter?



Note: Dashed lines indicate upper boundaries of country size classes

Figure 2c: Does development matter?

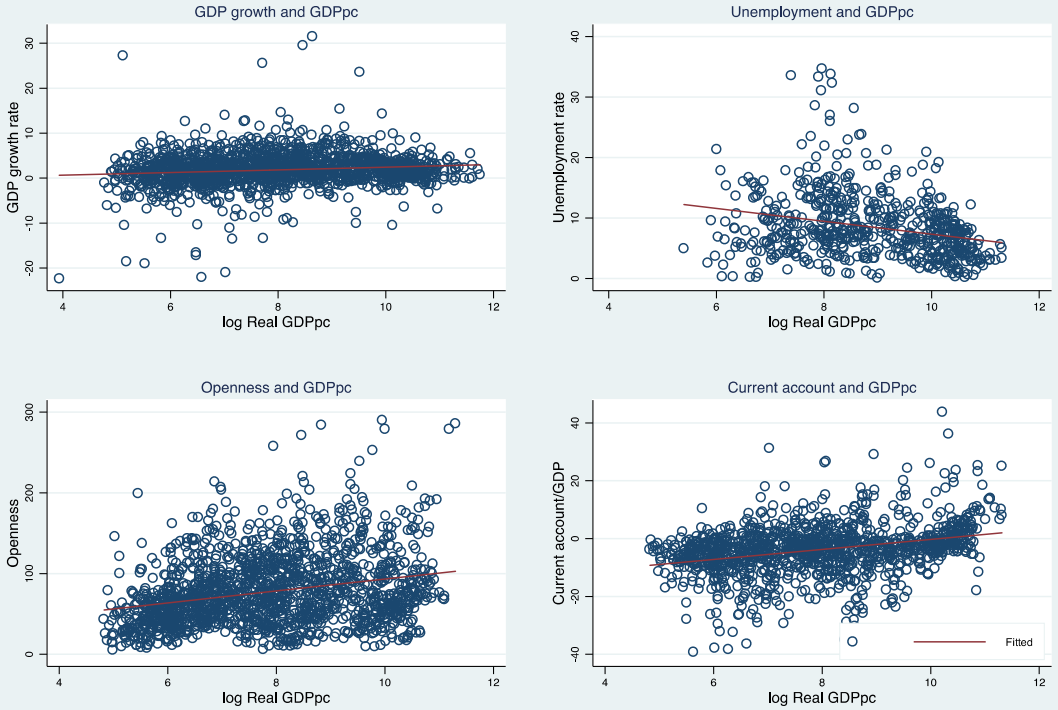
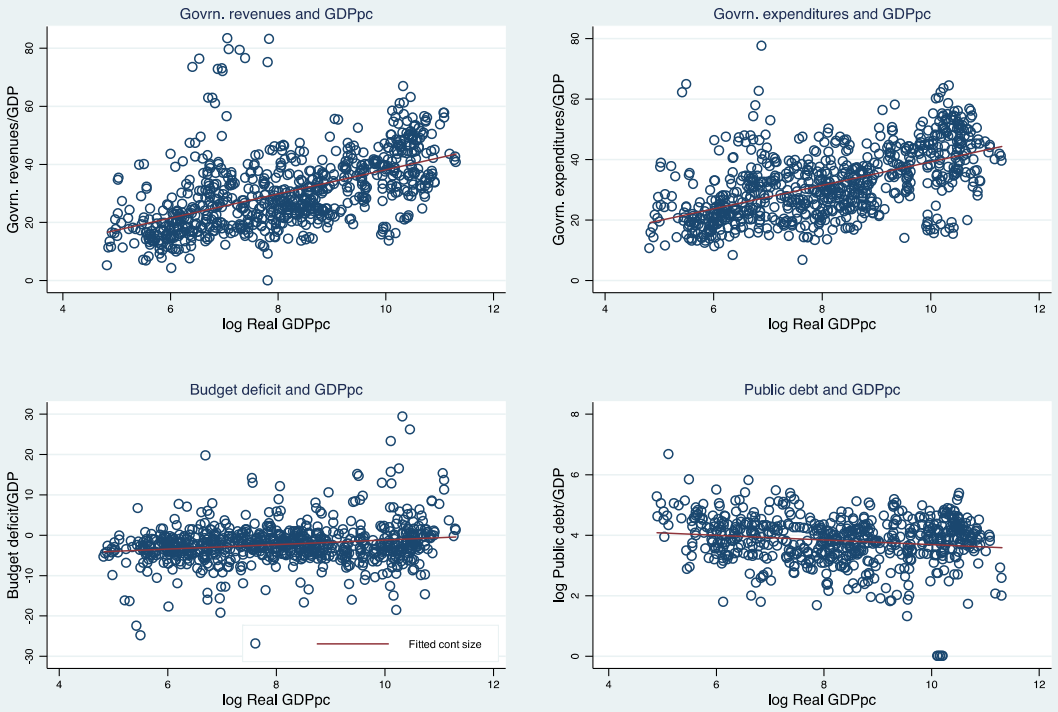
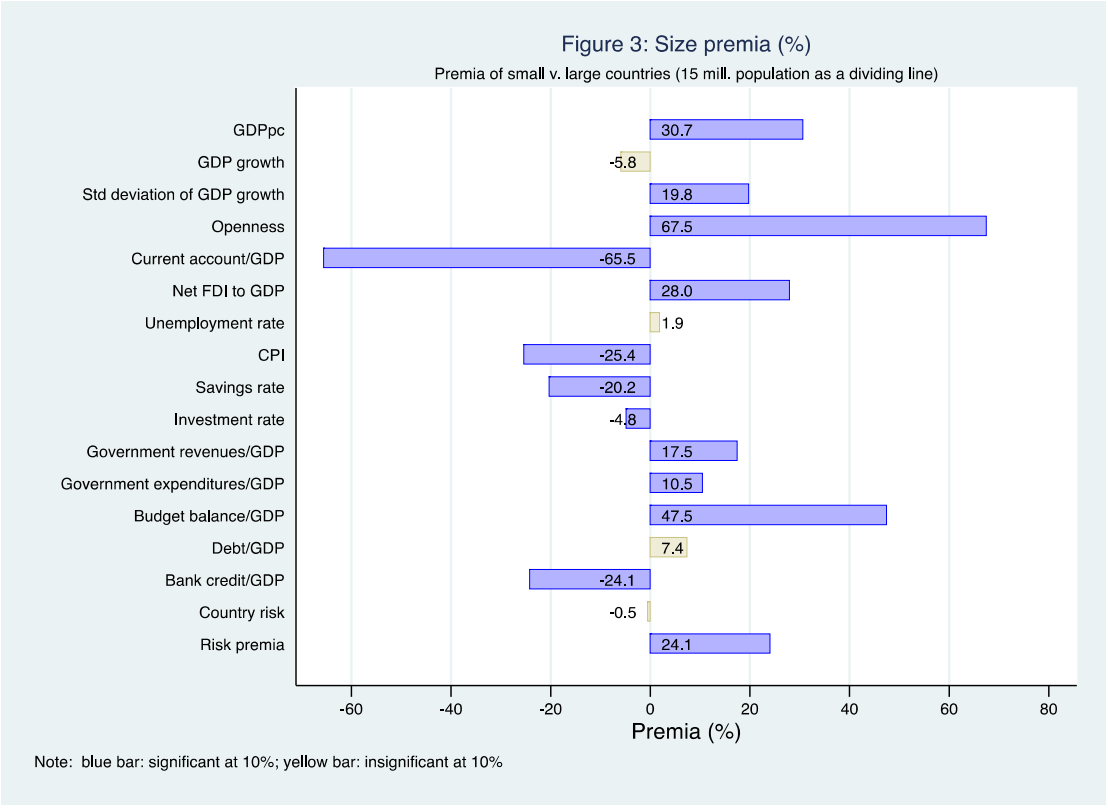


Figure 2d: Does development matter?

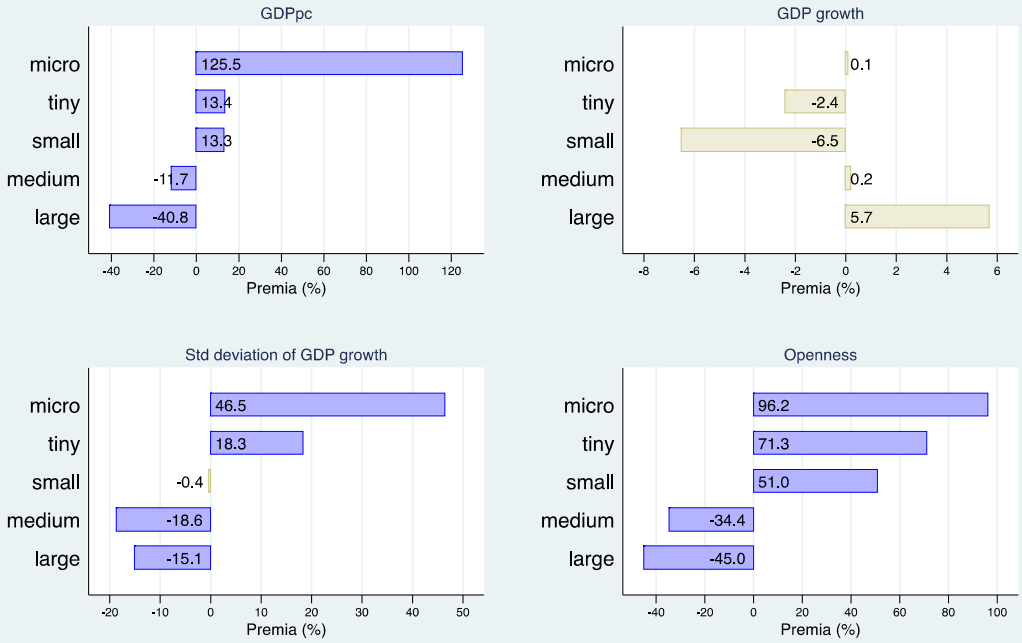




Note: blue bar: significant at 10%; yellow bar: insignificant at 10%

Figure 3a: Size premia (%)

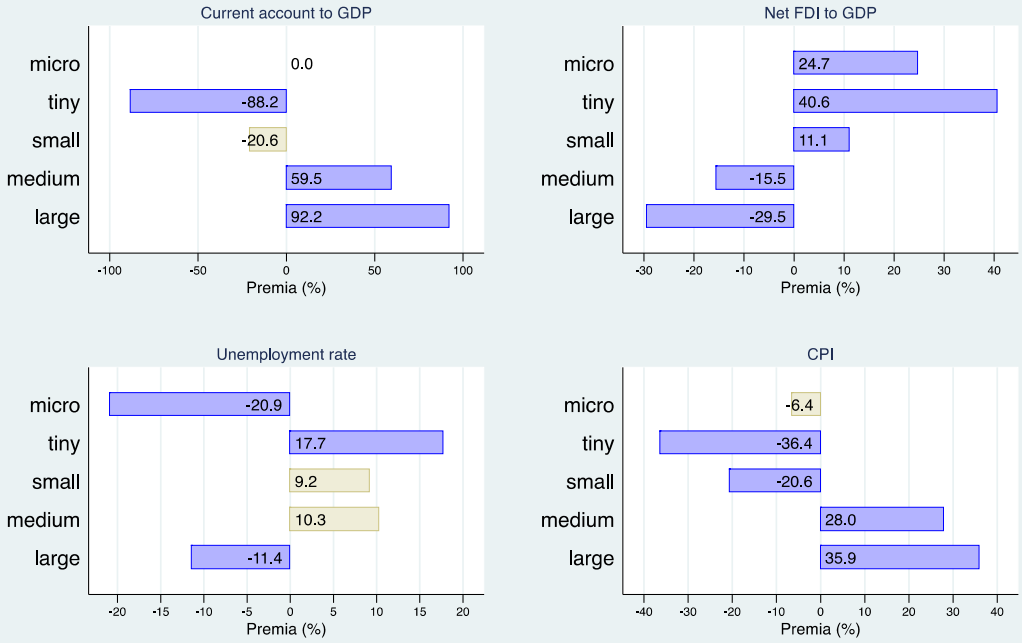
Premia over group of small or large countries (by five country size groups)



Note: blue bar: significant at 10%; yellow bar: insignificant at 10%

Figure 3b: Size premia (%)

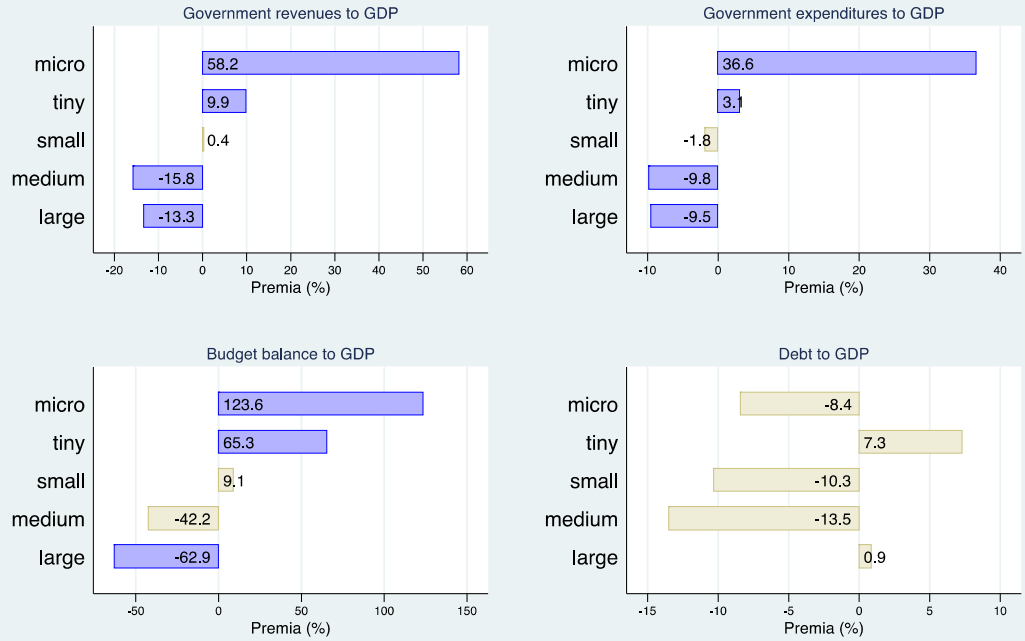
Premia over group of small or large countries (by five country size groups)



Note: blue bar: significant at 10%; yellow bar: insignificant at 10%

Figure 3c: Size premia (%)

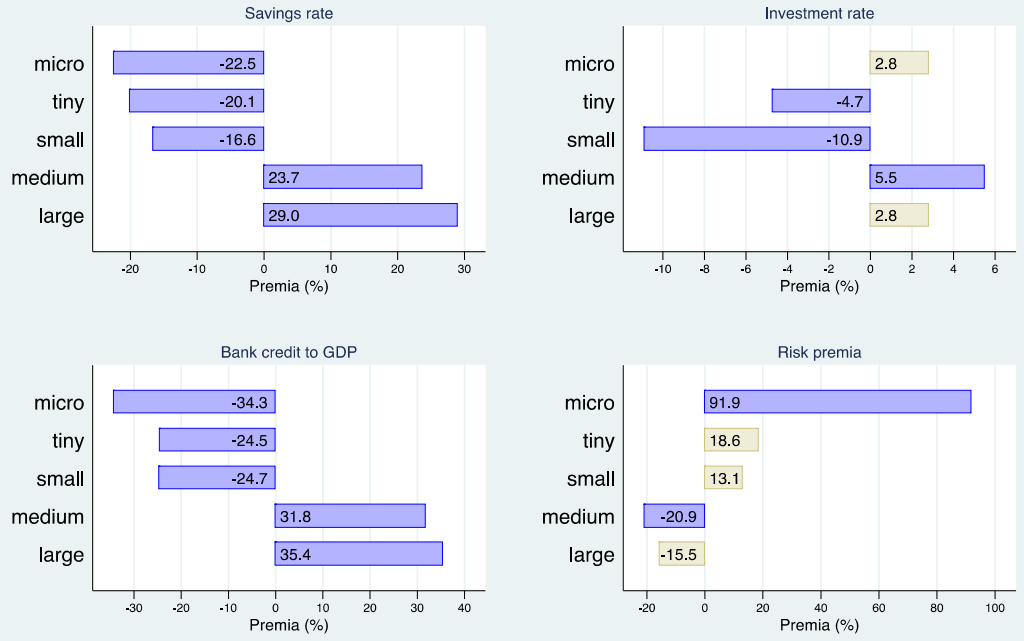
Premia over group of small or large countries (by five country size groups)



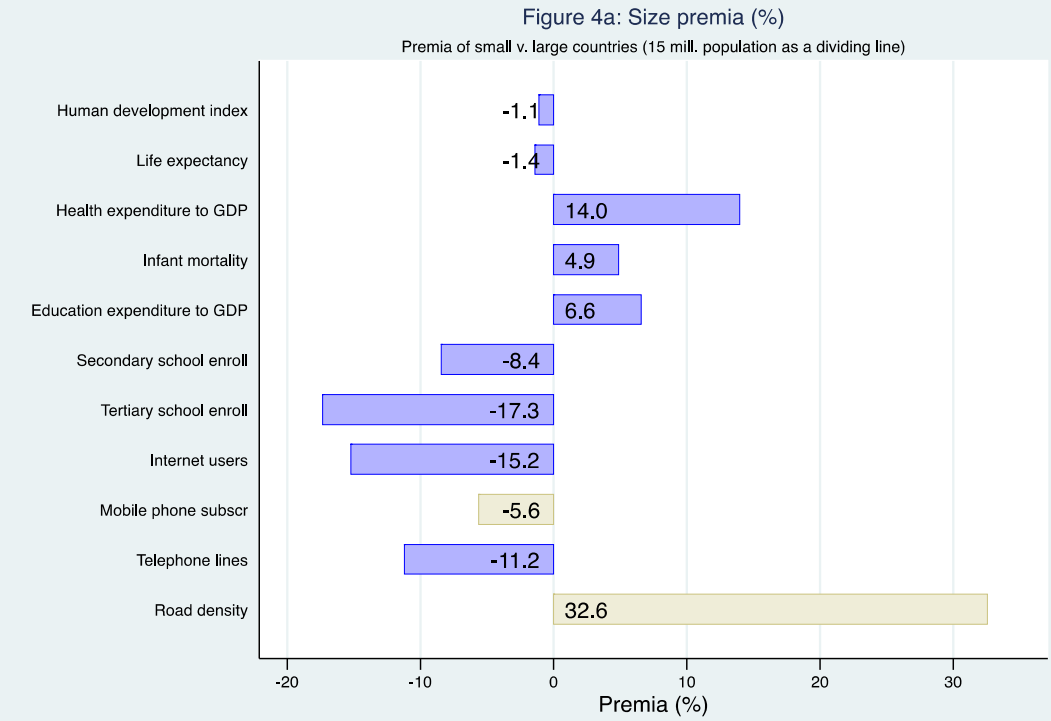
Note: blue bar: significant at 10%; yellow bar: insignificant at 10%

Figure 3d: Size premia (%)

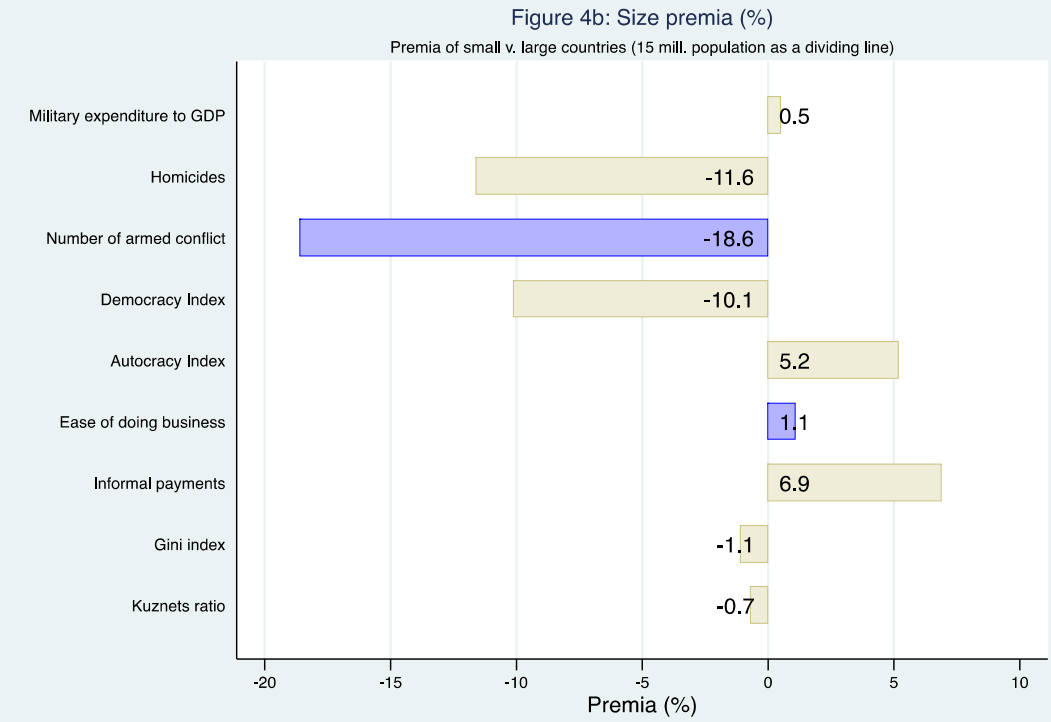
Premia over group of small or large countries (by five country size groups)



Note: blue bar: significant at 10%; yellow bar: insignificant at 10%



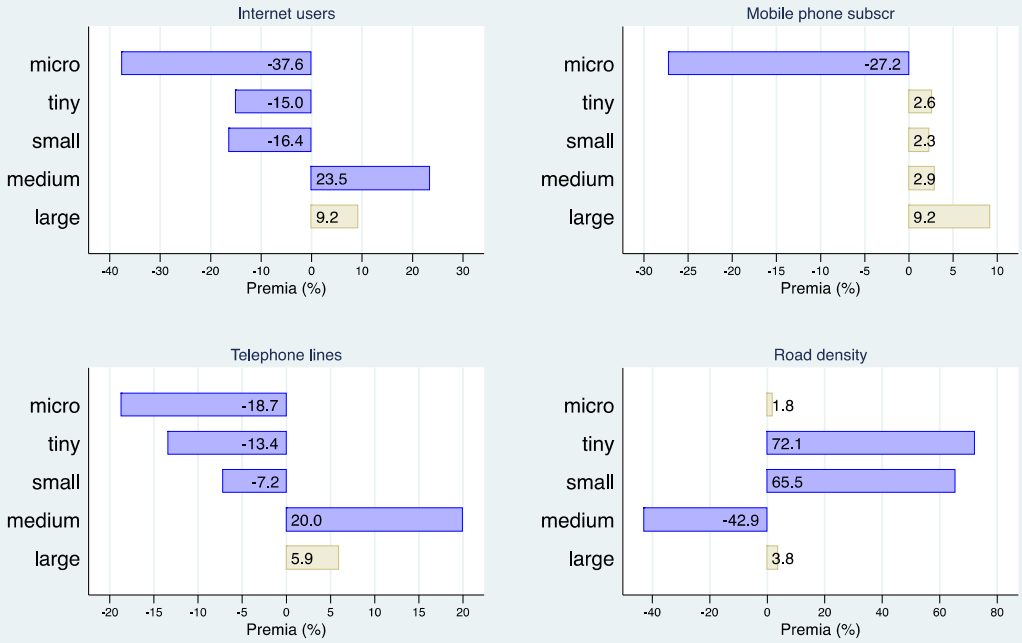
Note: blue bar: significant at 10%; yellow bar: insignificant at 10%



Note: blue bar: significant at 10%; yellow bar: insignificant at 10%

Figure 5a: Size premia (%)

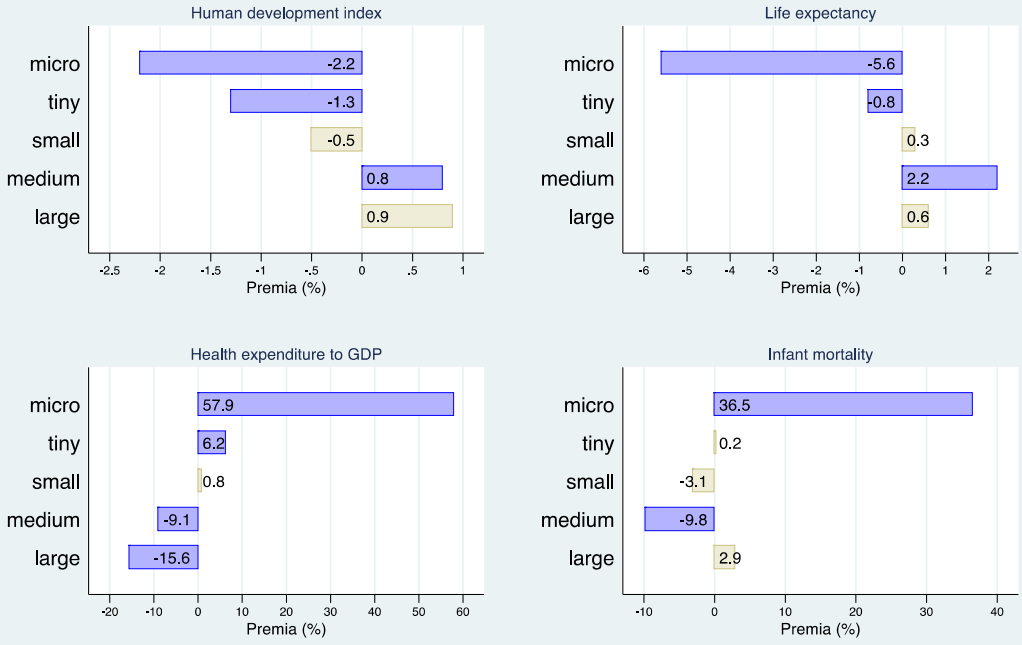
Premia over group of small or large countries (by five country size groups)



Note: blue bar: significant at 10%; yellow bar: insignificant at 10%

Figure 5b: Size premia (%)

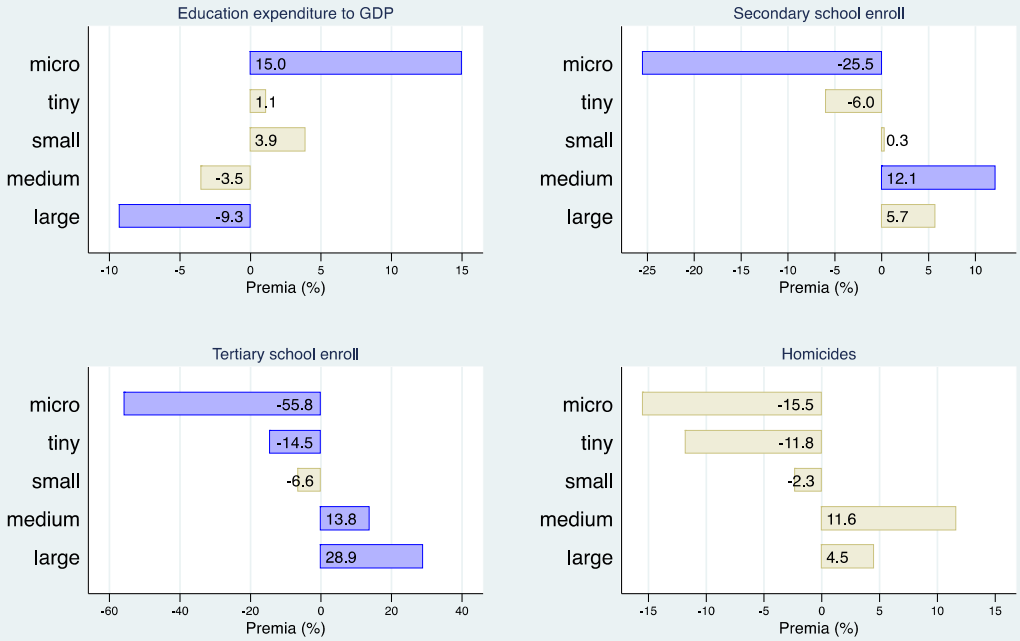
Premia over group of small or large countries (by five country size groups)



Note: blue bar: significant at 10%; yellow bar: insignificant at 10%

Figure 5c: Size premia (%)

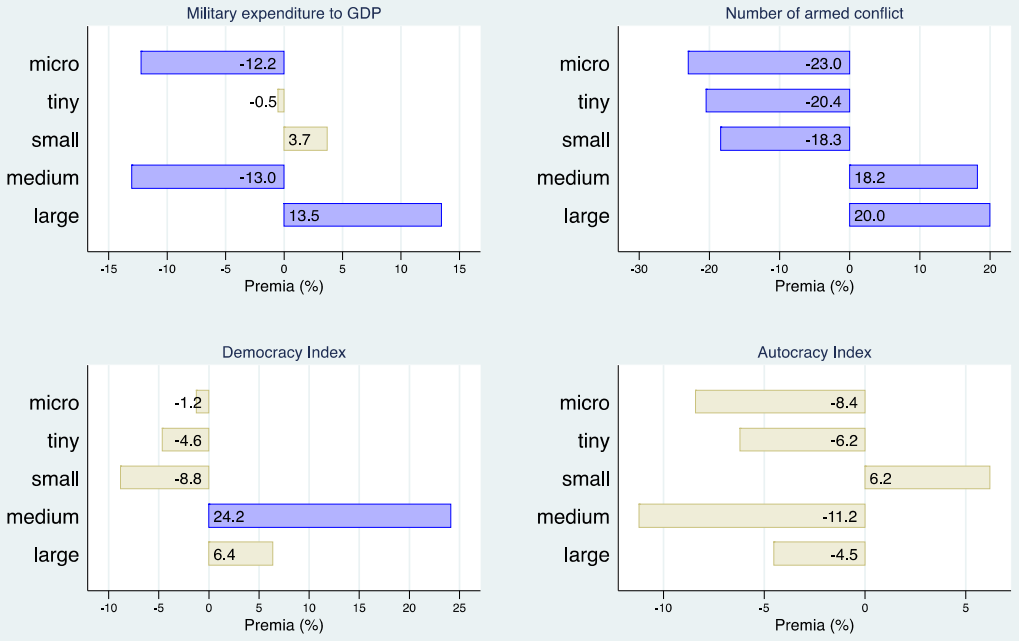
Premia over group of small or large countries (by five country size groups)



Note: blue bar: significant at 10%; yellow bar: insignificant at 10%

Figure 5d: Size premia (%)

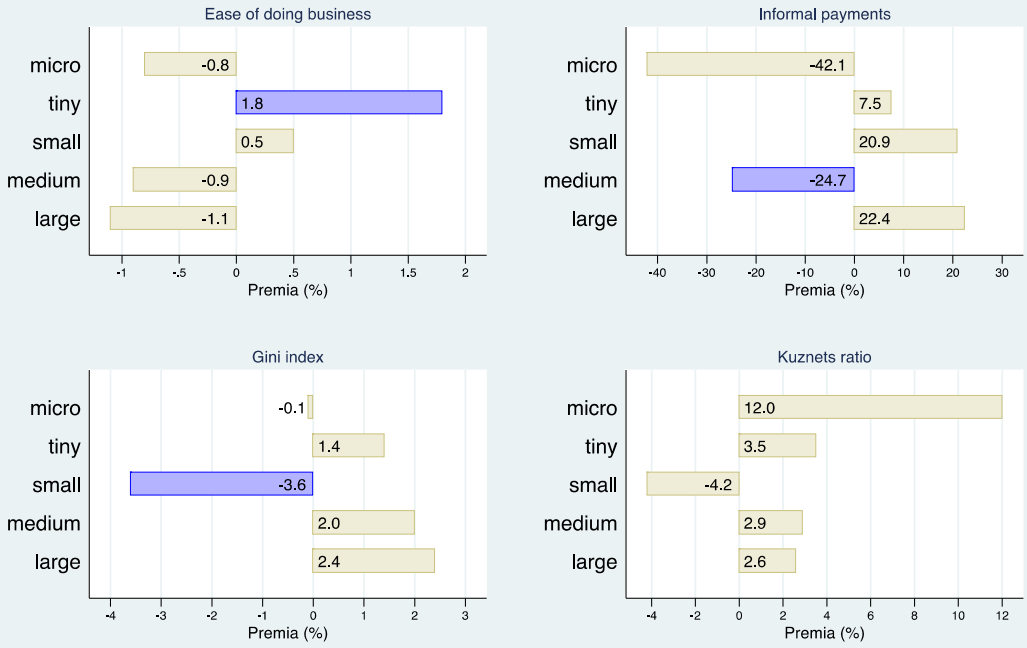
Premia over group of small or large countries (by five country size groups)



Note: blue bar: significant at 10%; yellow bar: insignificant at 10%

Figure 5e: Size premia (%)

Premia over group of small or large countries (by five country size groups)



Note: blue bar: significant at 10%; yellow bar: insignificant at 10%

Appendix

Table A1: Coefficients for premia calculated in Figures 3, 4a and 4b

Variable	Coef.	t-stat	Obs.	R-sq.
GDPpc	0.268	[5.55]***	1,827	0.786
GDP growth	-0.046	[-0.77]	1411	0.151
Std.deviation of GDP growth	0.181	[4.81]***	1,498	0.182
Openness	0.516	[18.81]***	1,585	0.573
Current account to GDP	-2.253	[-3.46]***	1,194	0.256
Net FDI to GDP	0.247	[7.42]***	3,722	0.246
Unemployment rate	0.019	[0.34]	612	0.348
CPI	-0.293	[-3.68]***	1,305	0.308
Government revenues to GDP	0.161	[4.87]***	764	0.507
Government expenditures to GDP	0.100	[3.55]***	757	0.458
Budget balance to GDP	0.989	[1.75]*	752	0.149
Debt to GDP	0.071	[0.97]	627	0.304
Savings rate	-0.226	[-5.59]***	1,383	0.391
Investment rate	-0.049	[-2.41]**	1,433	0.186
Bank credit to GDP	-0.276	[-5.82]***	1,469	0.516
Risk premia	0.216	[1.78]*	536	0.349
Gini index	-0.011	[-0.92]	753	0.696
Kuznets ratio	-0.007	[-0.29]	754	0.691
Ease of doing business	0.011	[2.02]**	338	0.639
Education expenditure to GDP	0.064	[1.90]*	656	0.287
Secondary school enroll	-0.088	[-2.86]***	998	0.764
Tertiary school enroll	-0.19	[-4.62]***	881	0.846
Human devel index	-0.011	[-2.63]***	357	0.926
Life expectancy	-0.014	[-2.78]***	1570	0.836
Health expenditure to GDP	0.131	[4.29]***	712	0.509
Infant mortality	0.048	[1.97]**	1678	0.876
Internet users	-0.165	[-3.19]***	1050	0.858
Mobile phone subscr	-0.058	[-1.51]	1783	0.910
Telephone lines	-0.119	[-4.22]***	1698	0.904
Road density	0.282	[1.29]	169	0.699
Military expenditure to GDP	0.005	[0.13]	664	0.362
Homicides	-0.123	[-1.48]	360	0.648
Number of armed conflict	-0.206	[-5.30]***	528	0.195
Democracy Index	-0.107	[-1.26]	531	0.510
Autocracy Index	0.051	[0.63]	531	0.468
Informal payments	0.067	[0.57]	254	0.532

Notes: Results of estimating model (1). Coefficients on Size dummy variable taking value of 1 for population size smaller than 15 million, and 0 otherwise. Each line represents a separate regression. Regressions include full set of control variables as explained in Section 3.1. Control variables and constant term are omitted from presentation for brevity.

Robust t-statistics in brackets; *** p<0.01, ** p<0.05, * p<0.1.

(Full results can be obtained from authors upon request)

Table A2: Coefficients for premia calculated in Figures 3a – 3d, and 5a – 5e

	micro		tiny		small		medium		large	
Variable	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat
GDPpc	0.813	[9.46]***	0.126	[2.03]**	0.125	[2.20]**	-0.124	[-1.91]*	-0.524	[-7.67]***
GDP growth	0.002	[0.00]	-0.044	[-0.11]	-0.119	[-0.42]	0.004	[0.01]	0.105	[0.33]
Std.deviation of GDP growth	0.382	[5.31]***	0.168	[3.29]***	-0.004	[-0.10]	-0.206	[-4.19]***	-0.164	[-3.55]***
Openness	0.674	[11.46]***	0.538	[15.41]***	0.412	[14.12]***	-0.422	[-12.40]***	-0.598	[-16.19]***
Current account to GDP	0.001	[0.00]	-3.034	[-4.08]***	-0.707	[-1.12]	2.046	[2.47]**	3.170	[3.92]***
Net FDI to GDP	0.221	[3.14]***	0.341	[8.39]***	0.105	[2.45]**	-0.168	[-4.14]***	-0.349	[-8.18]***
Unemployment rate	-0.234	[-1.69]*	0.163	[2.03]**	0.088	[1.30]	0.098	[1.23]	-0.121	[-2.13]**
CPI	-0.066	[-0.52]	-0.453	[-4.16]***	-0.231	[-2.28]**	0.247	[2.31]**	0.307	[3.28]***
Govern. revenues to GDP	0.459	[7.38]***	0.094	[2.54]**	0.004	[0.09]	-0.172	[-3.78]***	-0.143	[-4.03]***
Govern. expenditures to GDP	0.312	[5.58]***	0.031	[0.99]	-0.018	[-0.54]	-0.103	[-2.75]***	-0.100	[-3.07]***
Budget balance to GDP	2.570	[1.79]*	1.358	[1.87]*	0.189	[0.37]	-0.878	[-1.20]	-1.308	[-2.07]**
Debt to GDP	-0.088	[-0.63]	0.070	[0.80]	-0.109	[-1.50]	-0.145	[-1.58]	0.009	[0.11]
Savings rate	-0.255	[-2.18]**	-0.224	[-3.98]***	-0.181	[-3.89]***	0.213	[4.46]***	0.255	[4.79]***
Investment rate	0.028	[0.48]	-0.048	[-1.79]*	-0.115	[-5.26]***	0.054	[2.08]**	0.028	[1.10]
Bank credit to GDP	-0.420	[-4.53]***	-0.281	[-3.91]***	-0.284	[-4.56]***	0.276	[4.26]***	0.303	[5.49]***
Risk premia	0.652	[5.68]***	0.171	[0.92]	0.123	[0.59]	-0.234	[-2.14]**	-0.168	[-1.00]
Gini index	-0.001	[-0.03]	0.014	[0.95]	-0.037	[-2.56]**	0.020	[1.43]	0.024	[1.16]
Kuznets ratio	0.113	[1.02]	0.034	[1.11]	-0.043	[-1.52]	0.029	[0.98]	0.026	[0.66]
Ease of doing business	-0.008	[-1.49]	0.018	[2.36]**	0.005	[0.99]	-0.009	[-1.53]	-0.011	[-1.45]
Education expenditure to GDP	0.140	[1.73]*	0.011	[0.26]	0.038	[0.96]	-0.036	[-0.81]	-0.098	[-2.38]**
Secondary school enroll	-0.295	[-4.38]***	-0.062	[-1.44]	0.003	[0.09]	0.114	[3.16]***	0.055	[1.38]
Tertiary school enroll	-0.816	[-8.21]***	-0.157	[-2.93]***	-0.068	[-1.43]	0.129	[2.51]**	0.254	[4.55]***
Human devel index	-0.022	[-2.37]**	-0.013	[-2.39]**	-0.005	[-1.03]	0.008	[1.71]*	0.009	[1.48]
Life expectancy	-0.058	[-6.10]***	-0.008	[-1.06]	0.003	[0.48]	0.022	[3.45]***	0.006	[0.88]
Health expenditure to GDP	0.457	[7.39]***	0.060	[1.68]*	0.008	[0.23]	-0.095	[-2.56]**	-0.170	[-4.18]***
Infant mortality	0.311	[6.96]***	0.002	[0.06]	-0.031	[-1.00]	-0.103	[-3.05]***	0.029	[0.96]
Internet users	-0.471	[-4.45]***	-0.163	[-2.39]**	-0.179	[-2.67]***	0.211	[3.25]***	0.088	[1.22]
Mobile phone subscr	-0.318	[-4.28]***	0.026	[0.52]	0.023	[0.45]	0.029	[0.63]	0.088	[1.58]
Telephone lines	-0.207	[-3.55]***	-0.144	[-3.98]***	-0.075	[-1.97]**	0.182	[5.63]***	0.057	[1.45]
Road density	0.018	[0.02]	0.543	[1.87]*	0.504	[2.22]**	-0.560	[-1.82]*	0.037	[0.18]
Military expenditure to GDP	-0.130	[-1.64]	-0.005	[-0.10]	0.036	[0.75]	-0.139	[-3.39]***	0.127	[2.37]**
Homicides	-0.168	[-0.83]	-0.126	[-1.18]	-0.023	[-0.22]	0.110	[0.90]	0.044	[0.48]
Number of armed conflict	-0.262	[-1.69]*	-0.228	[-5.04]***	-0.202	[-4.54]***	0.167	[3.79]***	0.182	[2.71]***
Democracy Index	-0.012	[-0.05]	-0.047	[-0.41]	-0.092	[-0.87]	0.217	[2.10]**	0.062	[0.54]
Autocracy Index	-0.088	[-0.39]	-0.064	[-0.61]	0.060	[0.61]	-0.119	[-1.19]	-0.046	[-0.41]
Informal payments	-0.546	[-1.41]	0.072	[0.48]	0.190	[1.42]	-0.284	[-1.75]*	0.202	[1.36]

Notes: Results of estimating model (1). Coefficients on on five Size dummy variables. Each coefficient corresponds to a separate regression. Regressions include full set of control variables as explained in Section 3.1. Control variables and constant terms are omitted from presentation for brevity.

Robust t-statistics in brackets; *** p<0.01, ** p<0.05, * p<0.1.

(Full results can be obtained from authors upon request)