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Globalization and Child Health in Developing Countries: The Role of Democracy

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Globalization and Child Health in Developing Countries: The Role of Democracy

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Globalization and Child Health in Developing Countries: The Role of Democracy

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Abstract

Good health is crucial for human and economic development. In particular poor health in childhood seems to be of utmost concern since it causes irreversible damage and have implications later in life. Recent research suggests globalization is a strong force affecting adult and child health outcomes. Yet, there is much unexplained variation with respect to the globalization effect on child health, in particular in low- and middle-income countries. One factor that could explain such variation across countries is the quality of democracy. Using panel data for 70 developing countries between 1970 and 2009 this paper disentangles the relationship between globalization, democracy, and child health. Specifically the paper examines how globalization and a country's democratic status and historical experience with democracy, respectively, affect infant mortality. In line with previous economic research, results suggest that globalization reduces infant mortality and that the level of democracy in a country generally improves child health outcomes. We also find that democracy matters for the size of the globalization effect on child health. If e.g. Côte d'Ivoire was a democracy in the 2000-2009 period, this effect would translate into 1,200 fewer infant deaths in an average year compared to the situation without democracy.

Keywords: Globalization, Democracy, Health, and Developing Countries
JEL codes: F63, F68, I15, P16

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Introduction

Good health is crucial for human and economic development. Better health is an end in itself, but also a means to escape poverty. Several studies find significant positive effects of health on productivity and earnings (Thomas & Strauss, 1997; Alderman, Hoddinott, & Kinsey, 2006; Maluccio et al., 2009). Specifically child malnutrition and ill health is of utmost concern since poor health in early childhood causes irreversible damage in terms of lower physical and mental health in adult life, but also because early-life health is an important factor in the intergenerational transmission of education and economic status (Currie, 2009). It is therefore logical that the UN Millennium Development Goals aim to substantially reducing malnutrition and improve child health in the developing world.

Recent research suggests that globalization is a strong force that improves adult and child health outcomes in rich and poor countries (Owen & Wu, 2007; Bergh & Nilsson, 2010). There are several plausible channels for such a positive relationship, e.g. through increased income, through the movement of and better access to goods and services, including pharmaceuticals and vaccines, and through changed relative prices. It is also claimed that regime type and quality of democracy has a positive independent health impact and consequently that democratization may be an important means of promoting development in the world's poorest countries (Acemoglu & Robinson, 2005; Kudamatsu, 2012) and evidence suggests that this is relationship holds. With democracy follows an increased relative power of ordinary citizens compared to the economic and political elite. The competition for votes likely prompts politicians to provide access to publicly funded services and introduce policies of direct redistribution favoring the less affluent in a society (Besley & Kudamatsu, 2006).

There may very well be mutual interdependence between the processes of democratization and globalization. For example, globalization brings information about other societies and this in turn may suggest to people that elite rule is not a self-evident solution to the political game. Moreover, the health effects of globalization likely depend on the political regime, and vice versa. For example, globalization is more likely to bring health benefits to the population at large the more democratic the regime is in the country since more people may decide on the distribution of resources. Recent evidence indicates such a mutual relationship between democracy and globalization (Giavazzi & Tabellini, 2005; Eichengreen & Leblang, 2008). Also, Bergh and Nilsson (2010) note that across developing countries globalization has a positive health impact in former colonized common law countries but not in the civil law counterparts, which is connected to

the discussions of Joireman (2004) and Glaeser and Shleifer (2002) who reason that the rule of law is intrinsically connected with the promotion and depth of democracy and with economic development. Despite these considerations, research on the roles of democracy and globalization for the production of health has essentially developed independently with little or no crossovers. By combining different strands of literature, this paper aims to disentangle the relationship between globalization, democracy, and child health.

Using panel data covering 70 developing countries between 1970 and 2009 we estimate fixed effects specifications to analyze the relationship between globalization, democracy, and child health. A contribution to the literature is the analysis of the interaction effect between globalization and the quality of democracy on child health, i.e. we describe how the relationship between globalization and child health is affected by a country's quality of its democratic institutions. Our health indicator is infant mortality and the level of globalization is measured using the KOF Index of Globalization (Dreher, 2006; Dreher, Gaston, & Martens, 2008). To measure the quality of democracy we use the data from the Polity IV project (Marshall, Jaggers, & Gurr, 2011), the Democracy and Dictatorship variable (Cheibub, Gandhi, & Vreeland, 2010), and a recently developed measure of democratic capital (Persson & Tabellini, 2009). While the former measures capture a country's democratic status in a given year, democratic capital measures a nation's historical experience with democracy.

In line with previous research, our results suggest that globalization positively associates with child health in developing countries. Likewise, democracy generally promotes good health in this context. Furthermore, the conditional marginal effect of globalization suggests that the quality of democracy in a country is crucial for the magnitude of the connection between globalization and child health.

1 Theoretical background

1.1 Modeling child health

We follow the work by Wolfe and Behrman (1982), Behrman and Deolalikar (1988), and Bolin, Jacobson, and Lindgren (2002) and conceptualize a household utility function, where utility depends on parental health, child health, consumption of household goods (including leisure) and exogenous taste shifters. Child health is produced by combining material and time inputs and the effect on child health also depends on parental education (which affects their effectiveness as producers of child health) and environmental factors.

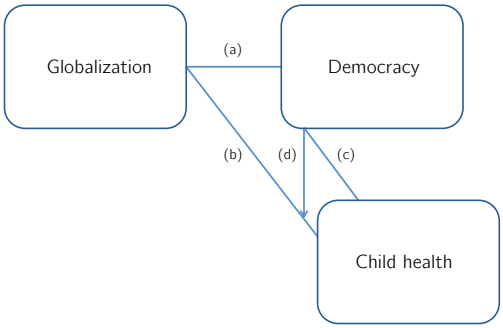
The effect of a factor on child health in this context can essentially flow through two channels: it may change the level, accessibility or relative prices of factors in the production function for health (nutrition, health care, environment etc.), and it may affect the parents' decisions about the health of their children (parents' income, education etc.). As argued by Currie (2000), the size of the response in child health to changes in the inputs can be expected to be large in poor countries that generally start from a low level with respect to most health inputs.

A relatively rich literature on child health across developing countries points to the most important factors in the production function for child health.[1] These include *health inputs*, such as the delivery of health care services connected to the birth process and in the first months of life (access to antenatal care and follow up, skilled care during birth), as well as a number of *preventive measures* (immunization, insecticides treated bed nets, safe water, and proper sanitation). Other important factors concerns the *conditions for the decision making of the parents* and their effectiveness as producers of child health, such as the information and understanding (in particular of mothers) concerning malnutrition, breastfeeding, practices, appropriate use of rehydration therapy and zinc etc. Many of these factors are likely related to the globalization process and to how the nature of political regime affects outcomes (relative prices, income distribution etc.) in the economy.

With this knowledge we now turn to the relationship between globalization, democracy and child health. In particular, we focus on the channels (a)-(d) in Figure 1, where (b) and (c) relate to the separate associations between globalization and democracy on the one hand and child health on the other, (a) refers to the interaction between the two processes of globalization and democratization, and (d) concerns the extent to which the association between globalization and child health outcomes is mediated by the level of democracy. Since our main interest is to explore the importance of globalization we do not explicitly address the parallel phenomenon of globalization mediating the association between democracy and health.

[1] Recent studies include Cutler, Deaton, and Lleras-Muney (2006) and Hanmer, Lensink, and White (2003), while an older study is Mosley and Chen (1984).

Figure 1: Globalization, democracy, and child health



1.2 Globalization and child health

Although no generally accepted definition exists, globalization typically refers to the increasing integration of societies and economies.[2] This closer integration concerns, on one hand, greater openness between countries that speeds transactions, and, on the other hand, the development of relationships between individuals at a distance. Globalization accordingly refers to both the temporal and spatial compression of interactions and the process of globalization consists of economic, social, and political events and is multidimensional by nature (Arribas, Prez, & Tortosa-Ausina, 2009).

When a poor country opens up and becomes more integrated with the world economy, child health can be affected both directly and indirectly, represented by channel (b) in Figure 1. First, globalization tends to increase national incomes and enables households to invest more in the health of their children. The effect is unlikely to be uniform across the population, however, as globalization also changes relative prices.

Second, with respect to the delivery of publicly funded care, there are two competing hypotheses on globalization effects: openness may lead to a race-to-the-bottom scenario with tax competition and reductions in government spending on social services (Sinn, 1997), or openness may cause economies to expand their welfare states as argued in the compensation hypothesis (Rodrik, 1998; Lindbeck, 1975). Following the work by Rudra (2002) on social spending there are, however, reasons to believe that the negative effect dominates in a developing context.

[2]Easterly (2008) lists ten definitions of globalization and points out those engaged in the debate regularly allude to different aspects of the integration process. While some choose to focus on the power structures that characterize internationalization, others emphasize the liberalization of trade, capital, and migration flows and the effects thereof. As a result, public debate is often marked by confusion (Bourguignon et al., 2002).

Third, education is likely to change as a result of globalization. Increasing national income may translate into subsidized education, and the individual's incentive to invest in her own education may also be affected. Enhanced migration opportunities which increase the incentives for education (Stark, 2004), and larger flows of information via the Internet and tourism leading to better education of mothers (e.g. higher literacy rates) may have positive effects on child health. But globalization could also lead to a brain-drain where educated workers migrate to find work where wages are higher. In particular, Mills (2011) argues that a historically high international mobility among doctors and nurses suggests that the brain-drain scenario poses a threat to the health sector (and therefore to child health) in poor countries.

Fourth, globalization may also have negative effects on the health of children in low-income countries through faster spreading of infectious diseases, e.g. HIV and SARS. This could be a particularly serious threat to developing countries where health systems are ill prepared to handle large-scale outbreaks of disease (Saker, Lee, & Cannito, 2007). Yet, Dollar (2001) argues that increased international cooperation and political integration on strategies to combat communicable diseases could be positive for child health in developing countries.

Fifth, Deaton (2004) argues that the transmission of health technology (including related knowledge) is crucial for health improvements around the world. Child health can improve through such factors as the transfers of vaccines, medical treatments, and pharmaceuticals as well as better sanitation and water facilities. An important aspect of globalization is thus the access and diffusion of medical technologies, which is an important contributor to good population health (Papageorgiou, Savvides, & Zachariadis 2007), but also the information and awareness of them. However to the extent that it takes the form of diffusion through medical exports, poor countries may find themselves without the means to buy patented drugs and without cheap generic drugs (Dollar, 2001).

Sixth, globalization often leads to increased urbanization in developing countries. This may provide better access to proper sanitation, safe water, and health care services for adults and children, but urbanization may also give rise to overcrowding in slum areas bringing about poor access to clean water and sanitation facilities, which in turn may cause faster spreading of water-borne diseases (Godfrey & Julien, 2005).

Overall, globalization is likely to have positive effects on child health in a developing context, but there are potential mechanisms working in the opposite direction.

1.3 The political foundations of child health

Institutions are often defined as the rules of the game, shaping human behavior by providing the incentive structure of an economy and by setting transaction costs (North, 1981; 1990). Formal institutions can be economic or political. While the former often refers to laws, governmental regulations and property rights, the latter consists of political systems, political culture, state capacity, etc. As suggested by the hierarchy of institutions hypothesis (Acemoglu, Johnson, & Robinson, 2005), political institutions set the stage on which economic institutions can be devised and economic policies implemented. Focusing on formal political institutions, there are several important differences between democratic and autocratic regimes that help us understand the relationship between political rules and the health of children in developing countries (channel (c) in Figure 1).

In general it is evident that the level of democracy affects the allocation of resources among the actors in society and thereby the possibilities for different households to spend on their own health and on that of their children.[3] Since the poor typically face worse health prospects than the affluent, any regime that shifts resources to the poor majority will likely improve population and child health, as the marginal health effect is larger among the poorer than among the rich. The affluent in a developing economy also has less of an incentive to invest in the next generation as a way of securing their own livelihood at old age, since they have better access to insurance-market solutions to the pension problem than the masses, and so once again public policy will be more concerned with child health in a situation where the political influence of the poor increases.

The poor majority is likely to benefit more from public health policies with public good characteristics, such as sanitation, access to clean water, or immunization programs since they inevitably face much more of such adverse living conditions.[4] Population health in general and child health in particular will improve when public health is a priority of the group who dominate the political arena, i.e., when the preferences of the poor tend to govern public policy as in a democracy (Besley & Kudamatsu, 2006).[5]

Democracies are expected to provide better education to its citizens than autocracies - following the same logic as above - it is part of a policy to favor the position of the poor majority.

[3] The mechanisms of rule vary between - say - a median voter oriented policy and one of repression.

[4] For example because the poor implicitly place a lower value on their health, are more willing to take hazardous jobs etc.

[5] It has also been argued that democracies tend to reward other skills and traits in presumptive leaders than non-democracies and that this in turn have effects on public child health policies (Besley & Kudamatsu, 2006).

If better education leads to better health outcomes for children there is thus an indirect effect on child health from democracy operating through the educational channel.

Among democracies, the experience of democratic rule creates differences between young and established democracies. Keefer (2007) argues that these differences arise from the difficulty of politicians in young democracies to make credible public commitments. This leads to poor provision of public goods and services, targeted spending, and rent seeking. For our purpose, the implication is that there will be less positive effects on health of a democratic regime if it is a young democracy. Having a long experience with democracy promotes stability, efficient public policies, and credible commitments to voters (Persson & Tabellini, 2009).

1.4 Globalization, democracy, and child health

As noted above, there are several a priori reasons to suggest that globalization and the quality of political institutions may independently influence child health determinants and outcomes in developing countries (channels (b) and (c) in Figure 1). Additionally, it seems likely that the two processes interact, and that the impact of one varies with the strength of the other. In this paper, we explore how globalization relates to child health depending on the strength of democratic institutions. This is channel (d) in Figure 1. The strength of democratic institutions are measured both as a country's democratic status in a given time period and as a country's historical experience with democracy.

Given that globalization fosters economic growth, the growth effect on child health depends on the level of democracy and the quality of political and economic institutions. These factors determine whether the poor benefit from growth and to what extent they manage to use the state apparatus to further guard their interests. There may thus be a positive impact of the simultaneous existence of globalization and democracy on child health. This will happen, e.g., if the resources made available from openness reach a larger share of the population and improve the lives of a larger number of children through redistributive measures available in democracies but not in non-democracies. Also, if globalization worsens child health by reducing social spending, democratic institutions may serve as a mitigating factor (Rudra & Haggard, 2005).

Another aspect of globalization is that the spreading of information and the effect it has on the behavior of citizens will vary with the level of democracy in a country, since authoritarian regimes typically strive to contain the diffusion of information. Public policy debate will be common in a system where political opposition and civic activism are allowed and media is independent. Along the lines of Sen (1997), even when government accountability is limited, an

open public sphere where the flow of information is free makes it difficult for political leaders to completely disregard public welfare. Again, there may be a combined effect of globalization and democracy on child health.[6] Citizens in established democracies may also have higher levels of trust in the government and societal functions overall, which may yield a positive interaction effect between globalization and historical experience with democracy.

2 Evidence on the globalization-democracy-child health nexus

Recent economic research suggests globalization and democracy influence health in low- and middle-income countries. Tables 1, 2, and 3 summarize research on the relationships. While a number of studies apply child health variables as proxies for general population health, few studies emphasize child health as the central topic. We focus this review on studies both examining health in general and child health in particular. As mentioned above, the interactive effect between globalization and democracy on health or child health is neither discussed nor analyzed in any previous studies that we know of.

Earlier works indicate a positive relationship between globalization and health, with especially economic globalization as a robust driving force (Table 1). Bergh and Nilsson (2010) find that former colonized common law countries, in which the prevalence of democracy is higher compared with former colonized civil law countries, drive the relationship in developing countries. This suggests that a country's political institutions may play an important role for the effects of globalization on health outcomes. Furthermore, Owen and Wu (2007) and Mukherjee and Krieckhaus (2011) find that globalization improve child and overall population health.

The fairly large number of studies analyzing whether democracies have better health outcomes than non-democracies almost universally conclude that democracy is good for health. Both democratic status at a given point in time and historical experience with democracy are found to be important for health outcomes. Ross (2006), however, argues that democracy only benefits middle- and high-income groups without improving the health and overall welfare of the poor. The recent works by Kudamatsu (2012) and Halleröd, Rothstein, and Daoud (2013) apply micro data on child health. While the former concludes that democratization in sub-Saharan Africa during the 1990s reduced within-mother infant mortality, the latter suggests that it is quality of government rather than democracy, which is positive for child health. Although not discussed by Halleröd et al. (2013), good governance may be a mediator in the democracy-child health

[6] Globalization may also reduce the possibility of elites to monopolize power and resources (Gordon, 1996), thus making non-democracy less detrimental to population health.

relationship explaining the null effect of democratization in their estimations.

Table 1: Summary of previous research on globalization and health

Authors	Research topic	Variables of interest and data	Sample and estimation method	Results
Owen and Wu (2007)	Trade openness and health.	Trade as share of GDP, Sachs-Warner index (1995), black market premium, male and female life expectancy at birth and the infant mortality rate.	219 low-, middle- and high-income countries, five-year averages 1960-1995. Fixed effects estimations.	Trade openness is positively related to health and the relationship is stronger in low-income countries. The mechanisms seem to be knowledge spillovers and sound macroeconomic policies that are positively correlated with trade openness policies that are positive for health.
Tsai (2007)	Globalization and human well-being.	The KOF index of globalization and its three dimensions and the Human Development Index (HDI).	112 low-, middle- and high-income countries, three ten-year intervals 1980-2000. Random effects estimations.	Overall globalization and political globalization positively relate to HDI. The results appear stronger in high-income countries.
Bergh and Nilsson (2010)	Globalization and health.	The KOF index and its three dimensions, total, male, and female life expectancy at birth.	92 low-, middle- and high-income countries, four-year averages 1970-2005. Panel corrected standard errors (PCSE) procedure with country and period dummies and fixed effects estimations.	Overall globalization and economic globalization increase life expectancy. Stronger results in the subsample of stable democracies (mainly high-income countries) and among civil law low- and middle-income countries.
Mukherjee and Krieckhaus (2011)	Globalization and health.	The KOF index and its thee dimensions, total life expectancy at birth, the infant and child morality rates.	132 low-, middle- and high-income countries, five-year intervals 1970-2007. Fixed effects estimations.	Overall globalization, and economic and social globalization positively relates to health. This also holds for a sample of only non-OECD countries.

There is a large literature on the role of globalization and democracy on population health and child health, but little research focuses on which factors are critical for realizing a positive impact of closer economic, social, and political integration among countries. As pointed out by Nissanke and Thorbecke (2006) collective measures likely have to be in place for globalization to have beneficial effects in developing counties. In the absence of such measures the process of globalization may only create opportunities for those that are best positioned to take advantage of them. In line with this argument, Rudra and Haggard (2005) investigate the impact of greater economic globalization on social spending in democracies and autocracies using a sample of 57 developing countries between 1975 and 1997. They find that democracies spend more on social security, health, and education than autocracies and their results therefore suggest that democracy plays an important role in mediating the potential negative effects of globalization on social spending. To our knowledge, there are no studies focusing on the relationship between globalization, democracy, and child health outcomes, or the potential interaction effects of globalization and democracy on child health.

Table 2: Summary of previous research on democracy and health, part I

Authors	Research topic	Variables of interest and data	Sample and estimation method	Results
Moon and Dixon (1985)	Democracy and quality of life.	Measure of political democratic rule (Bollen, 1980) and the physical quality of life index (PQLI) (Morris, 1979).	116 countries. Cross-sectional regressions with averaged data from 1960-1965 and 1970-1975.	Democracy relates positively with PQLI and its components: the infant mortality rate, life expectancy at age one, and the basic literacy rate.
Boone (1996)	Foreign aid efficiency, democracy and infant mortality.	Political rights by Freedom House (Gastil, 1989), dummy variable by Derbyshire and Derbyshire (1989), the infant mortality rate.	Main sample is 97 aid recipient countries. Democracy tests with reduced sample: non-communist countries over two ten-year periods: 1971-1980 and 1981-1990. Random effects estimation with time dummy.	Liberal political regimes have lower rates of infant mortality.
Przeworski, Alvarez, Cheibub, and Limongi (2000)	Democracy and population mortality.	Dichotomous democracy measure based on four criteria, total mortality, and infant mortality.	135 low-, middle- and high-income countries between 1950 and 1990. Heckman two-step method. (Heckman, 1979)	Democracies have lower mortality rates than autocracies. This is largely explained by lower infant mortality rates.
Zweifel and Navia (2000)	Democracy and infant mortality.	Democracy measure by Przeworski et al. (2000), the infant mortality rate.	138 low-, middle- and high-income countries between 1950 and 1990. Heckman two-step method.	Democracies have lower infant mortality rates than autocracies.
Lake and Baum (2001)	Democracy and provision of public services.	The Polity project, Freedom House, total life expectancy at birth, infant mortality, the crude death rate.	At most 92 low-, middle- and high-income countries between 1967 and 1992. Three- or five-year increments using pooled panel and cross-sectional estimations.	Democracy correlates with better heath outcomes.
Navia and Zweifel (2003)	Democracy and infant mortality.	Democracy measure by Przeworski et al. (2000), the infant mortality rate.	138 low-, middle- and high-income countries between 1950 and 1989 and 1990-1997. Heckman two-step method.	Democracies have lower infant mortality rates than autocracies.

Table 3: Summary of previous research on democracy and health, part II

Authors	Research topic	Variables of interest and data	Sample and estimation method	Results
Franco, Álvarez-Dardet, and Ruiz (2004)	Democracy and health.	Political and civil rights by Freedom House, total life expectancy at birth, the infant and maternal mortality rates.	At most 162 low-, middle- and high-income countries. Cross-sectional estimations.	Democracy associates positively with all health variables.
Besley and Kudamatsu (2006)	Democracy and health.	Democracy data from the Polity project, total life expectancy at birth, and infant mortality.	At most 160 low-, middle, and high-income countries, five- or ten-year increments between 1962 and 2002 and 1960 and 2000. Panel estimations with regional and time dummies and fixed effects estimations.	Persistent democracy positively relates to health but this is not always true for the level of democracy in a given year.
Ross (2006)	Democracy and health.	Democracy data from the Polity project and the infant and child mortality rates.	168 low-, middle-, and high-income countries, five-year increments between 1970 and 2000. PCSE and fixed effects estimations.	Neither democratic status nor historical experience with democracy lead to better health outcomes or welfare of the poor.
Kudamatsu (2012)	Democracy and health.	Democracy measure by Przeworski et al. (2000), and within-mother infant mortality.	28 sub-Saharan countries covering children born between 1960 and 2004. Linear probability estimations.	Within-mother infant mortality falls after democratization in the 1990s. Leadership change and multiparty elections are important.
Halleröd, Rothstein, and Daoud (2013)	Quality of government, democratization, and child deprivation.	Government efficiency measure by Kaufmann, Kraay, and Zoido-Lobatón (1999), democracy by the Polity project and Freedom House, and micro data on seven categories of child deprivation, e.g. health and sanitation.	68 low- and middle-income countries. Child deprivation data collected between 1996 and 2007. Linear probability estimations.	Governmental efficiency relates negatively to health deprivation but democracy is not significantly related to health deprivation. No interaction effects between democracy and quality of government.

3 Empirical specification

3.1 The model

To investigate the relationship between globalization, democracy, and child health in developing countries, we estimate a panel data model using the following empirical specification:

$$h_{it} = \alpha + \beta_1 G_{it-1} + \beta_2 D_{it-1} + \beta_3 G_{it-1} \times D_{it-1} + X_{it-1}\beta_4 + Z_{it}\beta_5 + \gamma_i + \delta_t + \epsilon_{it} \qquad (1)$$

where child health, hit, is explained by lagged globalization, G_{it1}, lagged democracy, D_{it1}, the interaction term of the lagged globalization and democracy variables, $G_{it1} \times D_{it1}$, and two sets of control variables in vectors X_{it1} and Z_{it}. γ_i is a country specific effect, δ_t represents period dummies in the specification, ϵ_{it} is the error term, and α is a constant. Since the process of globalization is multidimensional, we evaluate the role of three dimensions of globalization: economic, social, and political globalization, as well as sub-dimensions of the economic and social globalization variables.[7]

To reduce problems with measurement errors and annual fluctuations, each time period, t, is an average of five years. Since neither globalization nor the democracy variables are expected to affect health instantly, these variables, along with the interaction of the two variables, are lagged one period so that the variables in period 1970-1974 explain average health between 1975 and 1979, and so on. This setup may also reduce potential problems of reverse causality. To account for country specific effects we apply the fixed effects estimator, which is preferred to the random effects estimator since country heterogeneities in the sample are not expected to be independent from the variations in the explanatory variables in the model. This is confirmed by Hausman tests in all estimations. We also include time period effects, δ_t, controlling for time effects that are common to all countries in the sample.[8]

The control variables in X_{it-1} and Z_{it} are mediators and exogenous controls, where mediators are expected to affect child health but also be influenced by globalization and democracy, whereas the exogenous controls influence the health variable but are not influenced by the democracy or globalization variables. When mediators are included in the model, they are consequently

[7] A similar decomposition for political globalization is not possible since there are no separate data for lower levels of this index.

[8] Although using lagged variables and country and time fixed effects, we do not claim our results to be causal relationships. Democracy is likely endogenous to socio-economic factors that also affect development (Lipset, 1959) and democracy is not randomly assigned across countries. Similarly a healthy population may be more attractive for foreign direct investments (FDI) etc.

expected to reduce the magnitude of the effect of globalization and/or democracy on child health.

An essential part of the model relates to the analysis of the relationship between globalization and child health depending on the democratic quality in a country. Here we rely on the interaction term between the democracy variables and the measures of globalization.[9] From Equation 1 we derive the marginal effect of globalization on child health conditional on the level of democracy as $\partial h_{it}/\partial G_{it-1} = \beta_1 + \beta_3 D_{it-1}$ and a confidence interval for this marginal effect using $var[\beta_1 + \beta_3 G_{it-1}] = var[\beta_1] + G^2_{it-1} var[\beta_3] + 2G_{it-1} cov[\beta_1, \beta_3]$ (see e.g. Friedrich, 1982), demonstrating whether the marginal effect of globalization is significantly different from zero at various levels of democracy.

3.2 Data

We use an unbalanced panel data set covering 70 developing countries over eight five-year time periods between 1970 and 2009. Table A.1 in the appendix presents a list of countries included in the sample.

3.2.1 Dependent variable: Child health

The dependent variable is child health (h_{it}), operationalized as the infant mortality rate, i.e. the number of infants dying before reaching one year of age per 1,000 live births. Infant mortality is generally seen as a sticky indicator of child health that often requires large changes and sustained efforts to bring down. The measure serves as a window on the health and nutrition of young children (and pregnant women) and is a good indicator of the health conditions of the poor in a society (Boone, 1996). As a sensitivity test we also apply the child mortality rate, defined as the number of children dying before reaching five years of age per 1,000 live births. Both dependent variables are expressed in natural logarithms and collected from the World Bank's World Development Indicators (WDI) database (World Bank, 2013).

3.2.2 Independent variables: Globalization and democracy

Globalization For the different globalization measures, we apply the KOF index of globalization (Dreher, 2006; Dreher et al., 2008). Its multidimensional character is one of the advantages with the index; another is that it covers a long time period, 1970-2012, and many countries. The composite index covers three dimensions: economic globalization, social globalization,

[9] Similarly this can be interpreted as the relationship between democracy and child health given how integrated a country is with the rest of the world.

and political globalization, with equal weights. Economic globalization (KOF1) has two sub-dimensions: actual flows of trade and FDI (KOF11) and restrictions on international economic activities (KOF12). Social globalization (KOF2) consists of three sub-dimensions: personal contact (KOF21), information flows (KOF22), and cultural proximity (KOF23), where personal contact is measured by e.g. international telephone calls, information flows by, e.g., Internet usage, and cultural proximity is accounted for by e.g. the number of McDonald's restaurants. Finally, political globalization (KOF3) refers to e.g. the number of embassies and memberships in international organizations. All KOF variables take values between 0 and 100, where a higher value represents a higher degree of globalization.[10] The composite index is used as a measure of overall globalization and the disaggregated indices and the sub-dimensions of the disaggregated indices are used to investigate different dimensions of globalization. Table A.2 in the appendix presents details on the KOF variables.

Democracy To quantify the quality of democracy, we use the Polity IV index of democracy (Marshall et al., 2011), and the Democracy and Dictatorship (DD) variable (Cheibub et al., 2010), along with a recently developed measure of democratic capital (Persson & Tabellini, 2009). While the two former democracy variables measure the status of democratic institutions in a country in a given year, Democratic capital measures a nation's historical experience with democracy.

The Polity IV index consists of five components measuring the quality of the executive recruitment, constraints on executive authority, and political competition, which are combined to take a value from minus 10 (strongly autocratic) to plus 10 (strongly democratic) (Marshall et al., 2011). Here, we apply the time series adjusted index denoted Polity2. However, polychotomous democracy measures such as the Polity IV index have been criticized because the many dimensions produce many combinations and final democracy scores, in turn impeding the interpretation of the results. The DD variable from Cheibub et al. (2010) is dichotomous where a one indicates a democracy and a zero a non-democracy. A country is classified as a democracy if it satisfies four criteria: the chief executive is selected by a popular election or by a body which itself is chosen by a popular election, the legislature is popularly elected, elections have more than one competing party, and an alternation of power has taken place under the same electoral rules that brought the incumbent to power. In our sample, a country is classified as a democracy

[10] In 2009, Belgium and Ireland were the two most globalized countries in the world with KOF scores of 92.77 and 91.95, Ghana was in the midsection with a KOF value of 54.94, and the two least globalized countries were Timor-Leste and Kiribati with KOF ratings of 23.44 and 25.71.

in one five-year period if it is a democracy in at least three out of five years.[11]

The idea behind the democratic capital variable is that democratic capital accumulates in years of democracy and depreciates geometrically at a rate of (1-δ) in years of autocracy. The variable is defined as follows, $z(\delta)_{it} = (1-\delta)\sum_{\tau=0}^{\tau=t-t_0}(1-a_{it-\tau})\delta^{\tau}$, where $a_{it-\tau}$ is a binary variable taking the value one if country i is a democracy in year $t-\tau$ and zero in case of autocracy in year $t-\tau$. A country is classified as a democracy in year $t-\tau$ if the Polity2 index takes a strictly positive value. t_0 is the year of independence or the year 1800. Consequently, democratic experience closer to the present is more valuable than experiences in the past. $z(\delta)_{it}$ depends largely on the depreciation rate (1-δ) where a higher rate leads to faster depreciation oft in years of autocracy as well as faster accumulation of $z(\delta)_{it}$ in years of democracy. Persson and Tabellini (2009) estimate δ to be 0.94 or 0.99 when $a_{it-\tau}$ is defined using the Polity2 index. This yields depreciation rates of 0.06 and 0.01. The Democratic capital variables take a value between zero and one.[12]

Figure 2 illustrates the bivariate relationships between the average values of overall globalization and democracy (Polity2, DD, and Democratic capital) for the 70 countries in the sample. KOF, Polity2 and Democratic capital are given by the country averages over the whole period while DD is given by a country's most common regime type over the whole sample period.

The relationships between KOF and the democracy variables are quite scattered across the various levels of KOF and Polity2, DD, and the Democratic capital variables. Some countries score fairly high on KOF but have very low democracy ratings in terms of all democracy measures, e.g. Jordan, whereas others have both low KOF and democracy scores, e.g. Burundi. Costa Rica is one example of a country with both high KOF and democracy scores, while India is quite low on KOF but reasonably high on democracy.

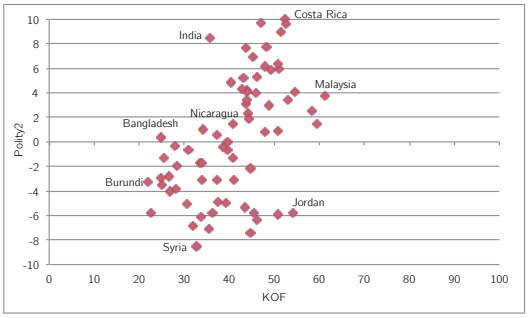
3.3 Control variables

The model includes a number of control variables to account for factors important in explaining the level of child health in developing countries. *Real GDP per capita (PPP adjusted)* controls for the level of economic development and is consequently expected to reduce infant mortality. This data comes from Heston, Summers, and Aten (2011). The GDP per capita variable is expressed

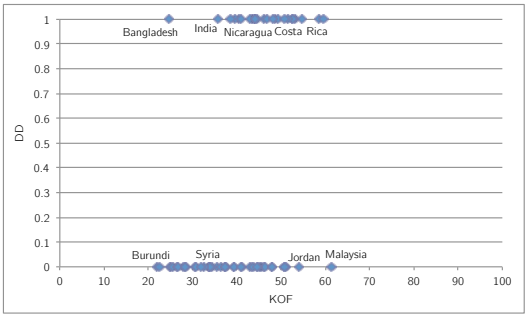
[11] DD data is only available up until 2008. If a country is a classified as a democracy in two of the years in the 2005-2008 period and a non-democracy the remaining two years, the classification of the whole period is based on the score in 2008. This only applies to Bangladesh and Thailand.

[12] In this paper, we use the Democratic capital variables defined for $\delta = 0.94$ and $\delta = 0.99$, i.e. $z(0.94)_{it}$ and $z(0.99)_{it}$, and because the data is only available up until 2000, the 2004-2009 period is dropped from the regressions in which we include these variables.

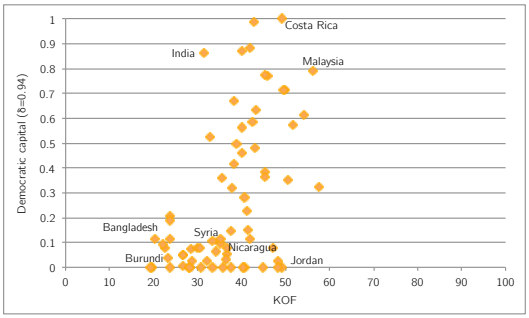
Figure 2: KOF and democracy



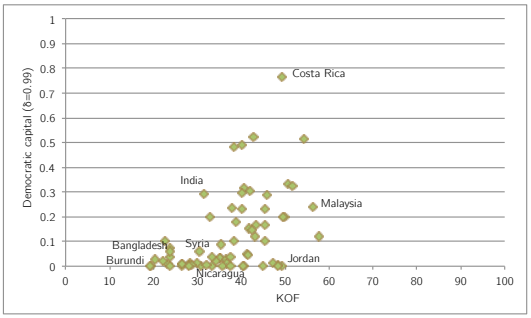
(a) KOF and Polity2



(b) KOF and DD



(c) KOF and Democratic capital ($\delta = 0.94$)



(d) KOF and Democratic capital ($\delta = 0.99$)

in natural logarithms.

Studies show that fertility is highly correlated with infant mortality (Przeworski et al., 2000; Navia & Zweifel, 2003) and this is usually explained by the insurance model in which parents have many children because the risk of them dying at a young age is very high. To control for this relationship in our model, we employ data from WDI on the *fertility rate* measured as the number of births per woman (World Bank, 2013). This variable is in natural logarithms. As a sensitivity test this variable is replaced with the *dependency ratio* defined as the share of the young (under 15 years) and old (over 64 years) in relation to the working-age population.

To control for the availability of doctors and health services we use information on the *number of physicians* per 1,000 people collected from the WDI. Moreover we control for *food supply* using a measure of the nutritional status of the population (the national average daily intake of calories per capita) from the Food and Agricultural Organization of the UN (FAO, 2011), as this is an essential determinant of child health in poor countries. Both the number of physicians and nutritional status are presumed to be positively related to health and thus to reduce infant mortality.

We also include the number of years in school of the female population over 15 years of age to control for the level of maternal education, which is important for infant and child health (Caldwell & McDonald, 1982). Data on *female educational attainment* comes from Barro and Lee (2010) and is expressed in natural logarithms. Since educational attainment data is only available every five years, the value for the 1970-1974 period refers to the average between 1970 and 1975. Female educational attainment is believed to reduce infant mortality and improve child health and we expect this variable to take a negative sign in the estimations. In a robustness test we instead use a general human capital measure - educational attainment of the total population, where *total educational attainment* measures the average number of years in school of the total population over 15 years of age (Barro & Lee, 2010).

Finally, we include four additional controls to test the robustness of our baseline specifications: *quality of economic institutions, population size, government consumption* (percentage of GDP) and the *urban share of the population.* The quality of economic institutions is measured by the second dimension of the Economic Freedom of the World Index (EFI2) (Gwartney et al., 2012), and captures the security of property rights and the legal system. Given the close relationship between political and economic institutions, this extra control assists to ensure that democracy only captures the political components of institutions. We control for the size of the population since smaller countries are more prone to be open to trade, investments, etc. Government

Table 4: *Summary statistics*

Variable	Obs.	Mean	Std. dev.	Min.	Max.	Source
Infant mortality rate^L	552	3.999	0.671	1.834	5.293	World Bank (2013)
Child mortality rate^L	552	4.332	0.794	1.993	5.878	World Bank (2013)
Overall globalization - KOF	543	40.777	12.371	14.404	77.154	Dreher et al. (2008)
Economic globalization - KOF1	543	41.467	15.585	9.566	84.182	Dreher et al. (2008)
Economic globalization, actual flows - KOF11	543	46.595	19.873	5.324	94.129	Dreher et al. (2008)
Economic globalization, restrictions - KOF12	535	36.586	16.408	9.268	85.056	Dreher et al. (2008)
Social globalization - KOF2	543	55.684	17.856	15.129	92.958	Dreher et al. (2008)
Social globalization, personal contact - KOF21	527	35.781	14.693	9.095	74.153	Dreher et al. (2008)
Social globalization, information flows - KOF22	543	38.105	16.795	8.737	82.871	Dreher et al. (2008)
Social globalization, cultural proximity - KOF23	543	14.413	15.945	1.000	87.089	Dreher et al. (2008)
Political globalization - KOF3	543	29.631	12.708	7.994	74.260	Dreher et al. (2008)
Democratic status - Polity	551	0.305	6.652	-10	10	Marshall et al. (2011)
Democratic status - DD	550	0.385	0.487	0	1	Cheibub et al. (2010)
Democratic status - Democratic capital (δ=0.94)	420	0.275	0.320	0.000	1.000	Persson and Tabellini (2009)
Democratic status - Democratic capital (δ=0.99)	420	0.123	0.163	0.000	0.791	Persson and Tabellini (2009)
GDP per capita^L	556	7.815	0.943	5.046	10.206	Heston et al. (2011)
Fertility rate^L	560	1.459	0.412	0.404	2.130	World Bank (2013)
Dependency ratio^L	560	79.921	16.091	38.474	112.612	World Bank (2013)
Number of physicians^L	491	-1.229	1.394	-4.828	2.269	World Bank (2013)
Nutritional status^L	556	7.769	0.160	7.363	8.221	FAO (2011)
Female Education^L	560	1.296	0.801	-1.928	2.387	Barro and Lee (2010)
Total Education^L	560	1.490	0.604	-1.000	2.392	Barro and Lee (2010)
Population^L	560	9.276	1.547	6.299	14.086	World Bank (2013)
Rule of law - EFI2	475	4.444	1.245	1.251	7.990	Gwartney et al. (2012)
Government consumption	556	10.142	5.620	0.834	40.225	Heston et al. (2011)
Urban share of the population^L	560	41.881	20.914	2.716	92.472	World Bank (2013)

^{L} Variable in natural logarithms.

consumption may influence child health in developing countries, although it may also be affected by both globalization and democracy. This data comes from Heston et al. (2011). Finally, the share of the population living in urban areas is added to our main specification as both globalization and democracy may affect urbanization and, simultaneously, urbanization may have an independent effect on average child health in developing countries. The data is collected from WDI (World Bank, 2013) and depending on the forces at play, urbanization may be both negatively and positively associated with infant mortality.

Table 4 presents descriptive statistics and data sources for all variables included in the empirical analysis.

4 Results

Tables 5, 6, and 7 present baseline estimation results.[13] All estimations apply fixed country specific effects and control for GDP per capita, fertility, the number of physicians, nutritional status, and female education unless stated otherwise. Time period dummies are included in all regressions and F tests indicate they are jointly significant in all estimations and thus should be included. In addition, we apply robust standard errors in all regressions since diagnostic tests suggest the presence of heteroskedasticity and serial correlation. The first two columns show the results with Polity2, the following two columns give the DD results while the last four columns present the estimation outcomes with Democratic capital (columns 5 and 6 with $\delta = 0.94$ and columns 7 and 8 with $\delta = 0.99$). Odd-numbered columns show the results excluding the interaction variables and even-numbered columns present the results including interaction variables.

4.1 Overall globalization, democracy, and infant mortality

All control variables generally behave in accordance with our expectations. GDP per capita is negative but insignificant in all regressions, suggesting that the likely impact of economic development on infant mortality to a large extent is picked up by mediating variables. Theoretically income is only instrumentally important by representing purchasing power that can be used to consume important child health inputs. When such factors enter as control variables, we expect the income coefficient to be reduced. A similar point can be made with respect to the positive but statistically insignificant relation with respect to education, as e.g., maternal education may affect behavior regarding feeding practices and various preventive measures. Fertility is generally positive and highly significant in baseline regression, suggesting that there is a strong connection between fertility and infant mortality as predicted. Also, the number of physicians and nutritional status are negatively correlated with infant mortality, but while the former is significant in all estimations, the latter is significant only in the last four regressions.

In line with theoretical predictions and previous empirical findings globalization seems to relate negatively with infant mortality. Similarly, democracy correlates negatively with infant

[13] Table A.3 presents a correlation matrix illustrating pairwise correlations between explanatory variables. Some globalization variables, most notably KOF, KOF22, and KOF3, correlate quite highly with a few control variables, e.g. GDP per capita, fertility, and the number of physicians. This could pose a problem for the estimation results by inflating the standard errors, but the variance inflation factors indicate no such problem with multicollinearity. The values range from 1.34 to 4.46, and the mean values are between 2.33 and 2.78 in the four regression models, which are all below the critical values of 5 or 10. We do not identify any outliers employing the Hadi method for multivariate outlier detection at the one percent significance level (Hadi, 1992).

Table 5: Globalization and democracy on infant mortality

	Polity2		DD		Dem. cap. ($\delta = 0.94$)		Dem. cap. ($\delta = 0.99$)	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
KOF (t-1)	-0.012**	-0.011**	-0.011*	-0.008	-0.010*	-0.008	-0.011*	-0.004
	(0.006)	(0.005)	(0.006)	(0.005)	(0.006)	(0.006)	(0.006)	(0.006)
Democracy (t-1)	-0.009***	0.012	-0.079***	0.220**	-0.080	0.168	0.127	1.826*
	(0.003)	(0.009)	(0.027)	(0.103)	(0.169)	(0.252)	(0.697)	(1.036)
KOF×Democracy (t-1)		-0.001**		-0.008***		-0.006		-0.035**
		(0.0002)		(0.003)		(0.006)		(0.015)
GDP per capita (t-1)	-0.100	-0.090	-0.081	-0.074	-0.071	-0.065	-0.072	-0.066
	(0.088)	(0.098)	(0.097)	(0.095)	(0.099)	(0.098)	(0.095)	(0.090)
Fertility	0.510***	0.526***	0.493***	0.511***	0.422***	0.432***	0.425***	0.457***
	(0.088)	(0.081)	(0.093)	(0.090)	(0.092)	(0.093)	(0.094)	(0.089)
Physicians	-0.076**	-0.059**	-0.083***	-0.068**	-0.082***	-0.078***	-0.084***	-0.073**
	(0.029)	(0.028)	(0.030)	(0.028)	(0.029)	(0.028)	(0.030)	(0.029)
Nutritional status	-0.257	-0.289	-0.264	-0.284	-0.477**	-0.516**	-0.490**	-0.558***
	(0.214)	(0.203)	(0.223)	(0.217)	(0.221)	(0.210)	(0.222)	(0.203)
Female education	0.128	0.029	0.133	0.051	0.133	0.113	0.147	0.090
	(0.089)	(0.096)	(0.096)	(0.097)	(0.097)	(0.103)	(0.104)	(0.091)
Constant	6.015***	6.340***	6.882***	6.009***	7.631***	7.799***	7.684***	7.940***
	(1.493)	(1.370)	(1.543)	(1.440)	(1.552)	(1.480)	(1.575)	(1.419)
Observations	415	415	415	415	365	365	365	365
Countries	70	70	70	70	70	70	70	70
R^2 (within)	0.856	0.863	0.853	0.861	0.836	0.838	0.836	0.847
Sign. *F statistic*	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Note: All estimations include period dummies.
Robust standard errors in parentheses.
***p<0.01, **p<0.05, *p<0.1.

mortality, but only Polity2 and DD significantly so, which is also in accordance with previous findings (Mukherjee & Krieckhaus, 2011; Kudamatsu, 2012) The results thus suggest that both globalization and democracy independently reduce infant mortality in low- and middle-income countries.

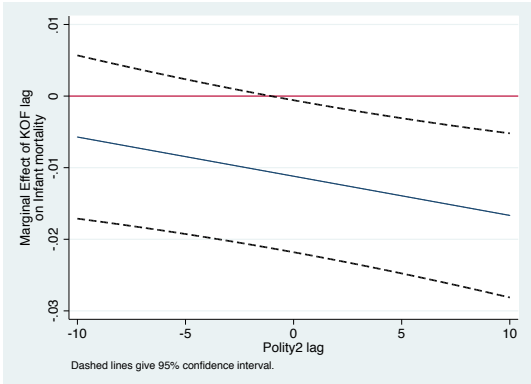
In even-numbered columns we investigate the combined role of globalization and democracy on infant mortality. All interaction terms are negative and KOF×Polity2, KOF×DD, and KOF×Democratic capital ($\delta = 0.99$) are significant. To capture the broader scope of potential interaction effects we also graphically illustrate the marginal effects of globalization given the levels of the democracy variables by calculating the marginal effects with 95 percent confidence intervals. In this way we analyze the interaction effects more thoroughly by capturing statistical and economic significance of the relationship between globalization and infant mortality at various levels of democracy status and historical experience with democracy.

Figure 3 indicates that both democratic status in a given time period and accumulated experience with democracy plays an important role in explaining some of the variation in the relationship between globalization and child health. The democracy variables are important both for explaining economic and statistical significance. Thus, countries that are more open have better child health outcomes if they also have high quality democratic institutions.

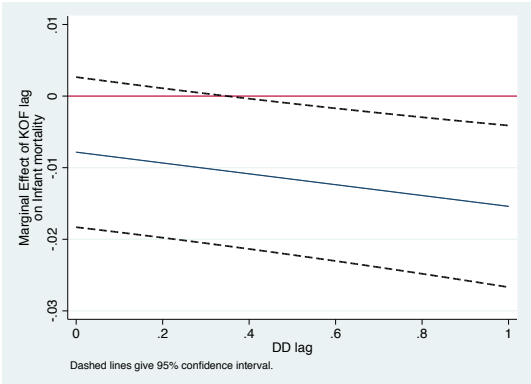
Taking a closer look at Figure 3, the negative relationship between globalization and infant

mortality increases with the level of democracy measured by Polity2. The relationship turns significant at a threshold level of Polity2 equal to minus one. 57 percent of the countries in the sample have an average Polity2 score above this threshold (average Polity2 is 0.3). A similar outcome is observed when measuring democratic status by DD. For non-democratic countries, at DD equal to zero, the correlation between KOF and infant mortality is negative but insignificant, whereas it is negative and significant at DD equal to one. In 37 percent of the countries in the sample democracy is the most common regime type over the whole sample period. Furthermore, the size of the negative correlation between overall globalization and infant mortality is increasing slightly as Democratic capital ($\delta = 0.94$) increases. At Democratic capital greater than 0.6, the relationship becomes significant. For Democratic capital with $\delta = 0.99$ the negative correlation increases in size and goes from statistically insignificant to significant just below 0.2. On average 19 and 27 percent of the countries in the sample score higher than these threshold values.

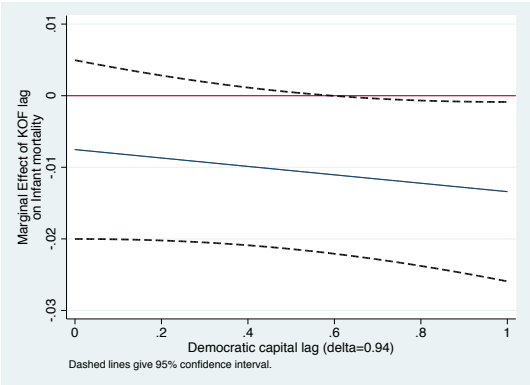
Figure 3: Marginal effects of KOF on infant mortality given democracy



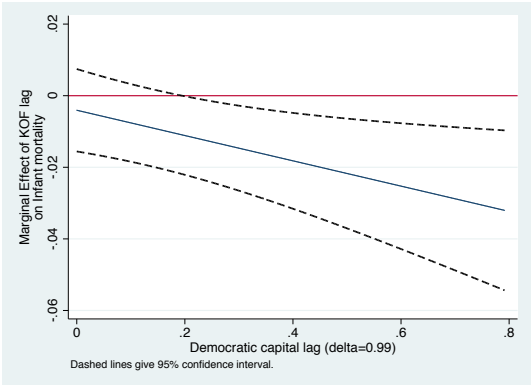
(a) Polity2



(b) DD



(c) Democratic capital ($\delta = 0.94$)



(d) Democratic capital ($\delta = 0.99$)

The magnitudes of these results can be illustrated with a country example. Côte d'Ivoire increased their KOF score by approximately five points between 2000 and 2009 but remained stable in terms of all democracy measures. Our estimations suggest that the country reduced the infant mortality rate by about 5.4 deaths per 1,000 live births (based on Polity2). Had Côte d'Ivoire been a full democracy in terms of Polity2, this five-point increase in globalization would have had, ceteris paribus, reduced the infant mortality rate by about 7.3 deaths per 1,000 live births. In an average year this translates into approximately 1,200 fewer infant deaths.

4.2 Disaggregating globalization

In order to make more precise what elements of the globalization process drive these results we investigate the relationships between the three dimensions of globalization: economic, social, and political, and infant mortality. Results in odd-numbered columns in Table 6 suggest that economic and particularly political globalization seem to be the driving forces behind the negative relationship between globalization and infant mortality. This result is in accordance with previous findings by Owen and Wu (2007) and Bergh and Nilsson (2010) who also note that economic integration improves health outcomes in poor countries, and Tsai (2007) who shows that political globalization comes with higher values of HDI. However, social globalization does not relate to child health in our setting. The outcomes on democracy follow the same pattern as above.

Focusing on interaction terms (even-numbered columns in Table 6) indicate that it is economic and political globalization that drive baseline findings. KOF1×DD, KOF1×Democratic capital ($\delta = 0.99$), KOF3×Polity2, and KOF3×DD are negative and significant. The marginal effects in Figures 4, 5, and 6 also confirm the interactive effects between economic and political globalization and democracy, whereas the marginal effects of social globalization are insignificant at all levels of the democracy variables.

The correlations between economic globalization and infant mortality given democracy status are similar to those of overall globalization. That is, economic openness does more for child health if the country has a democratic government. The threshold level of Polity2 is approximately minus one as in the baseline case. In addition, both Democratic capital variables associate with increasing negative marginal effects of globalization on infant mortality, although the size variation of the marginal effect is higher in the case with Democratic capital ($\delta = 0.99$). About 41 percent of the countries in the sample have an average democratic capital ($\delta = 0.99$) score above the threshold of approximately 0.1.

The negative relationship between political globalization and infant mortality is significant

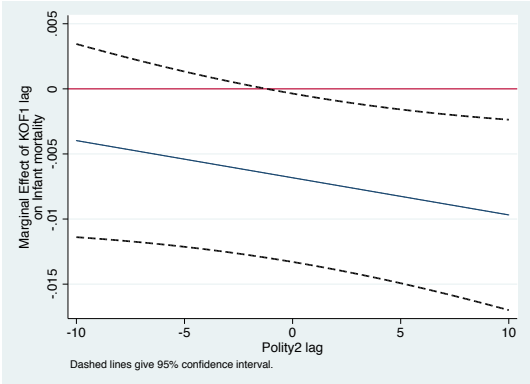
Table 6: Disaggregated globalization and democracy on infant mortality

	Polity2		DD		Dem. cap. ($\delta = 0.94$)		Dem. cap. ($\delta = 0.99$)	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
KOF1 (t-1)	-0.007**	-0.007**	-0.007*	-0.005	-0.009**	-0.008*	-0.009**	-0.005
	(0.003)	(0.003)	(0.003)	(0.003)	(0.005)	(0.004)	(0.004)	(0.004)
Democracy (t-1)	-0.009***	0.003	-0.083***	0.127	-0.085	0.058	0.029	1.287
	(0.003)	(0.007)	(0.027)	(0.085)	(0.164)	(0.232)	(0.674)	(0.892)
KOF1×Democracy (t-1)		-0.0003		-0.005**		-0.003		-0.025*
		(0.0002)		(0.002)		(0.005)		(0.013)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	415	415	415	415	365	365	365	365
Countries	70	70	70	70	70	70	70	70
R^2 (within)	0.855	0.858	0.853	0.858	0.840	0.840	0.839	0.847
Sign. *F statistic*	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
KOF2 (t-1)	0.001	0.001	0.001	0.002	0.003	0.004**	0.001	0.004**
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Democracy (t-1)	-0.009***	0.007	-0.081***	0.123	-0.100	0.203	-0.371	1.498
	(0.003)	(0.008)	(0.026)	(0.126)	(0.166)	(0.270)	(0.679)	(1.131)
KOF2×Democracy (t-1)		-0.0003**		-0.003		-0.005		-0.024*
		(0.0001)		(0.002)		(0.004)		(0.013)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	415	415	415	415	365	365	365	365
Countries	70	70	70	70	70	70	70	70
R^2 (within)	0.849	0.854	0.847	0.850	0.831	0.838	0.819	0.842
Sign. *F statistic*	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
KOF3 (t-1)	-0.014***	-0.013***	-0.013***	-0.010**	-0.015***	-0.015**	-0.015***	-0.012**
	(0.005)	(0.004)	(0.005)	(0.005)	(0.005)	(0.006)	(0.005)	(0.06)
Democracy (t-1)	-0.009***	0.004	-0.071**	0.108	-0.086	-0.108	0.209	0.637
	(0.003)	(0.006)	(0.027)	(0.069)	(0.158)	(0.214)	(0.651)	(0.811)
KOF3×Democracy (t-1)		-0.001**		-0.007**		0.001		-0.012
		(0.0002)		(0.003)		(0.007)		(0.014)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	415	415	415	415	365	365	365	365
Countries	70	70	70	70	70	70	70	70
R^2 (within)	0.864	0.869	0.860	0.866	0.849	0.847	0.847	0.848
Sign. *F statistic*	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

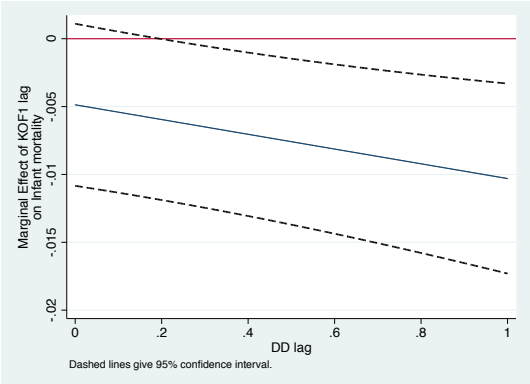
Note: All estimations include period dummies.
Robust standard errors in parentheses.
***p<0.01, **p<0.05, *p<0.1.

and increasing at all levels of democratic status (Polity2 and DD). For Democratic capital ($\delta = 0.94$), KOF3 and infant mortality are negatively correlated but the effect is almost constant. On the other hand, the negative correlation is significant at all levels of Democratic capital ($\delta = 0.99$) and increasing in size.

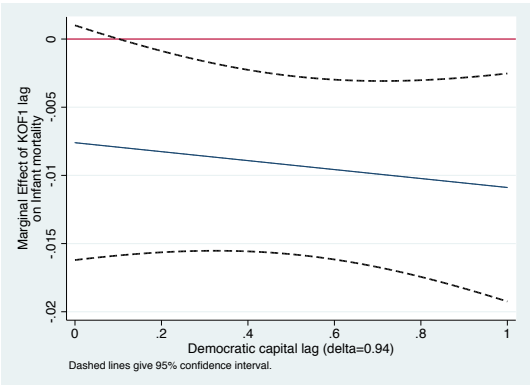
Figure 4: Marginal effects of KOF1 given democracy



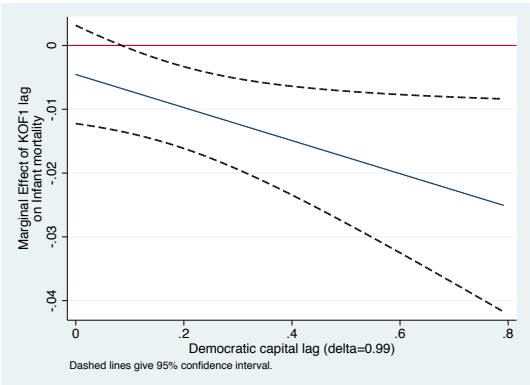
(a) Polity2



(b) DD

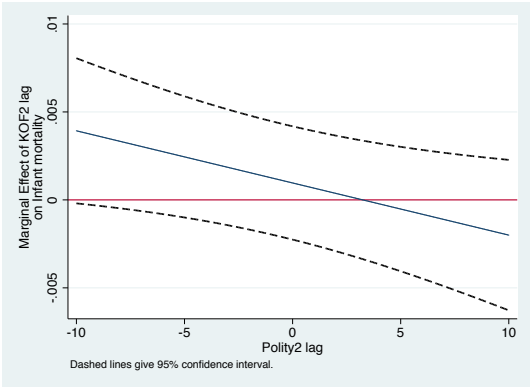


(c) Democratic capital ($\delta = 0.94$)

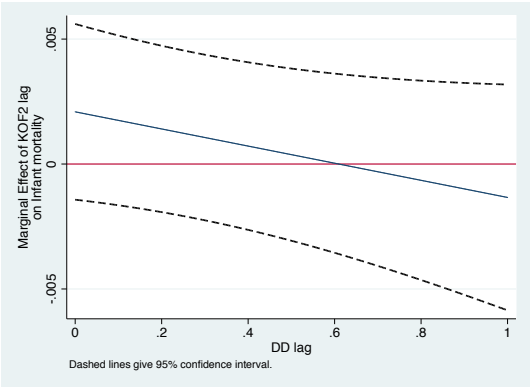


(d) Democratic capital ($\delta = 0.99$)

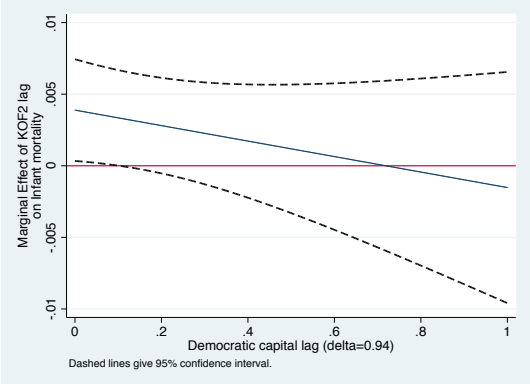
Figure 5: Marginal effects of KOF2 given democracy



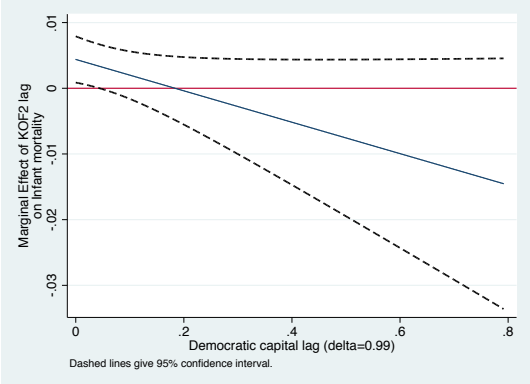
(a) Polity2



(b) DD

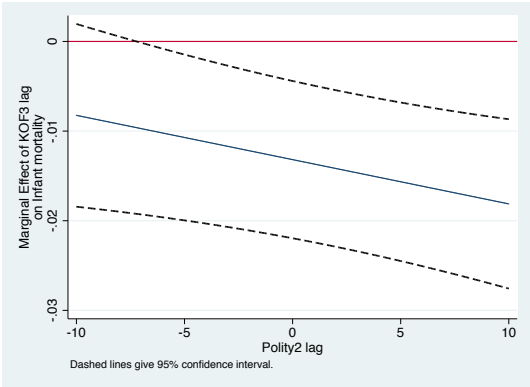


(c) Democratic capital ($\delta = 0.94$)

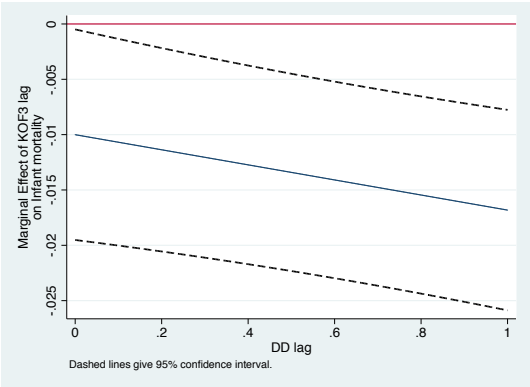


(d) Democratic capital ($\delta = 0.99$)

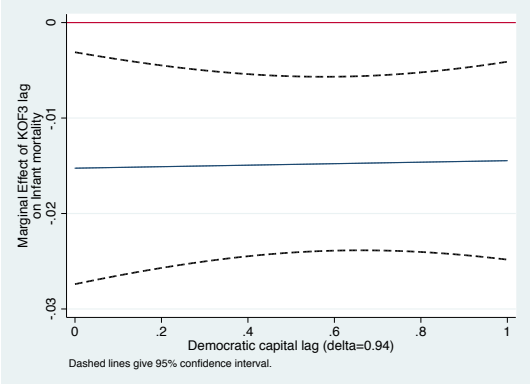
Figure 6: Marginal effects of KOF3 given democracy



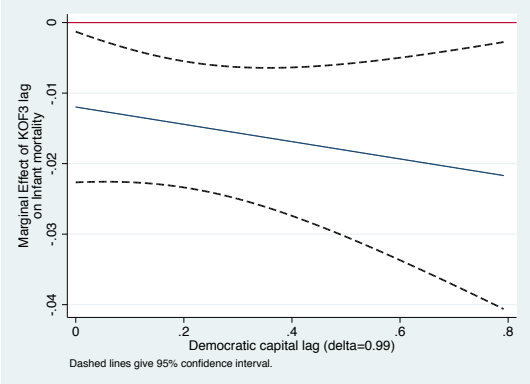
(a) Polity2



(b) DD



(c) Democratic capital ($\delta = 0.94$)



(d) Democratic capital ($\delta = 0.99$)

Further decomposing globalization suggest that it is fewer restrictions on trade and international economic activities, KOF12, that positively relates to child health. This could steam from the importance of lower import prices or economic policies connected to child health improving governmental policies. Moreover, although social globalization does not correlate with child health and shows no signs of interacting with democracy, two of its sub-dimensions: information flows, KOF22, and cultural proximity, KOF23, have some explanatory power and act to improve health among infants through the potential channels discussed above.

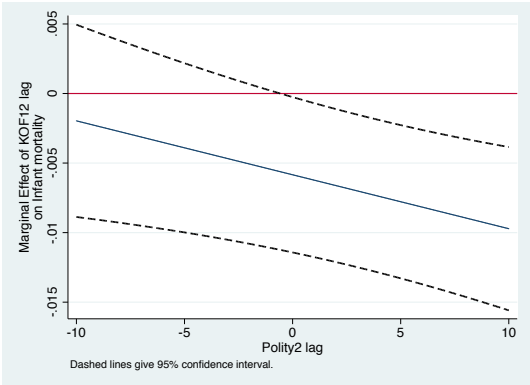
As can be seen in Figure 7, Polity2, DD, and Democratic capital are all important when explaining the variation in the negative relationship between KOF12 and infant mortality. Figures 8 and 9 give the results for the two sub-dimensions of social globalization. Information flows, KOF22, in Figure 8 associates negatively with infant mortality at high levels of democratic status (Polity2 and DD), while the relationship does not appear to depend on the level of Democratic capital. Figure 9 reveals that the negative relationship between cultural proximity, KOF23, is higher in countries with higher democracy scores in terms of all variables but Democratic capital ($\delta = 0.99$). Given that a country has strong democratic institutions, the effect of fewer restrictions on international exchange does however seem to be stronger than those of more information flows and cultural proximity.

Table 7: KOF12, KOF22, KOF23, and democracy on infant mortality

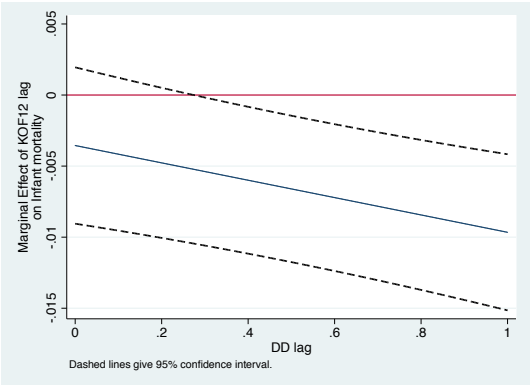
	Polity2		DD		Dem. cap. ($\delta = 0.94$)		Dem. cap. ($\delta = 0.99$)	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
KOF12 (t-1)	-0.007**	-0.006**	-0.007**	-0.004	-0.009***	-0.007*	-0.009***	-0.006
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.004)	(0.003)	(0.004)
Democracy (t-1)	-0.008***	0.006	-0.075***	0.132*	-0.091	0.049	-0.068	0.514
	(0.003)	(0.007)	(0.027)	(0.070)	(0.154)	(0.183)	(0.638)	(0.745)
KOF12×Democracy (t-1)		-0.0004**		-0.006***		-0.004		-0.013
		(0.0002)		(0.002)		(0.004)		(0.010)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	410	410	410	410	360	360	360	360
Countries	69	69	69	69	69	69	69	69
R^2 (within)	0.860	0.865	0.857	0.865	0.847	0.848	0.846	0.850
Sign. *F statistic*	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
KOF22 (t-1)	-0.006	-0.005	-0.005	-0.002	-0.013**	-0.014**	-0.013**	-0.012**
	(0.004)	(0.004)	(0.004)	(0.004)	(0.005)	(0.006)	(0.005)	(0.005)
Democracy (t-1)	-0.009***	0.005	-0.079***	0.122**	-0.099	-0.172	0.005	0.329
	(0.003)	(0.006)	(0.026)	(0.060)	(0.160)	(0.187)	(0.666)	(0.791)
KOF22×Democracy (t-1)		-0.0004**		-0.006***		0.002		-0.007
		(0.0002)		(0.002)		(0.005)		(0.010)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	415	415	415	415	365	365	365	365
Countries	70	70	70	70	70	70	70	70
R^2 (within)	0.851	0.856	0.848	0.857	0.838	0.838	0.836	0.837
Sign. *F statistic*	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
KOF23 (t-1)	-0.005***	-0.005***	-0.005***	-0.004*	-0.005***	-0.003	-0.005***	-0.002
	(0.004)	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)	(0.002)	(0.003)
Democracy (t-1)	-0.010***	-0.007**	-0.075***	0.023	-0.090	-0.035	0.147	0.363
	(0.003)	(0.003)	(0.027)	(0.037)	(0.163)	(0.174)	(0.661)	(0.660)
KOF23×Democracy (t-1)		-0.0002		-0.004*		-0.004		-0.012
		(0.0002)		(0.002)		(0.004)		(0.011)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	415	415	415	415	365	365	365	365
Countries	70	70	70	70	70	70	70	70
R^2 (within)	0.863	0.866	0.859	0.863	0.843	0.845	0.842	0.846
Sign. *F statistic*	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Note: All estimations include period dummies.
Robust standard errors in parentheses.
***p<0.01, **p<0.05, *p<0.1.

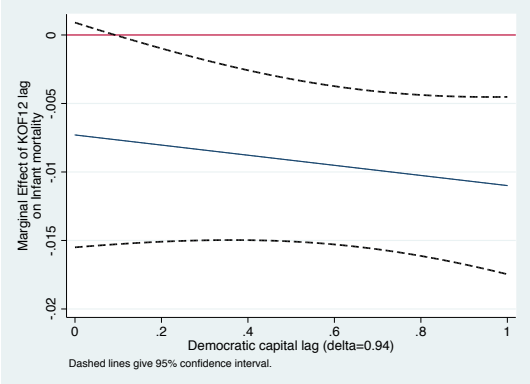
Figure 7: Marginal effects of KOF12 on infant mortality given democracy



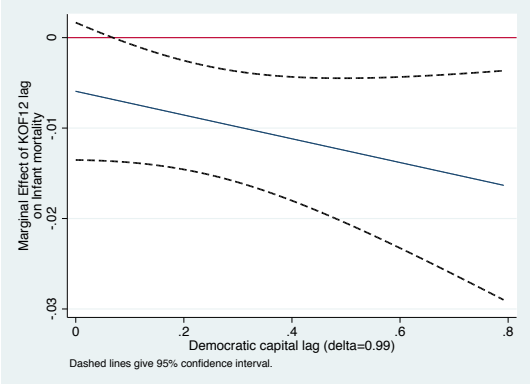
(a) Polity2



(b) DD

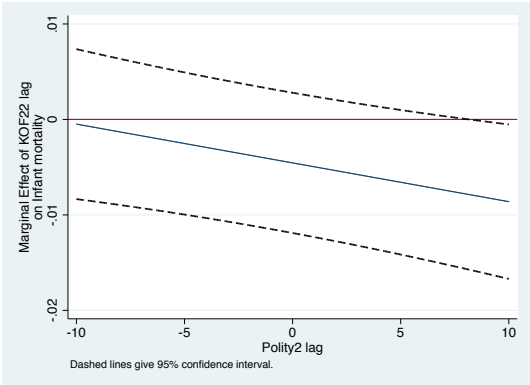


(c) Democratic capital ($\delta = 0.94$)

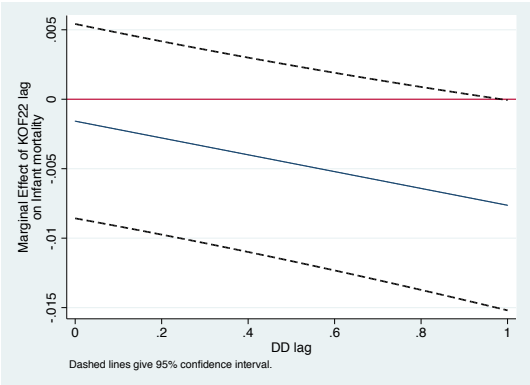


(d) Democratic capital ($\delta = 0.99$)

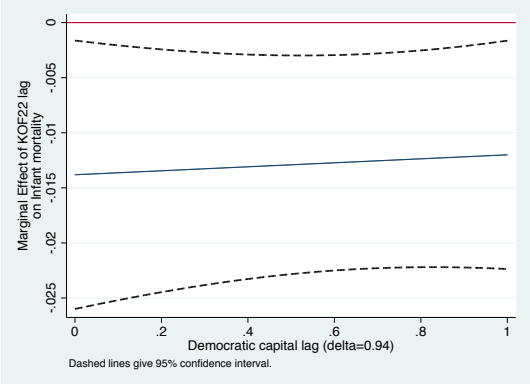
Figure 8: Marginal effects of KOF22 on infant mortality given democracy



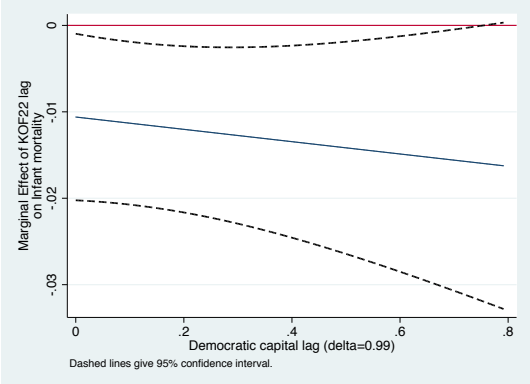
(a) Polity2



(b) DD

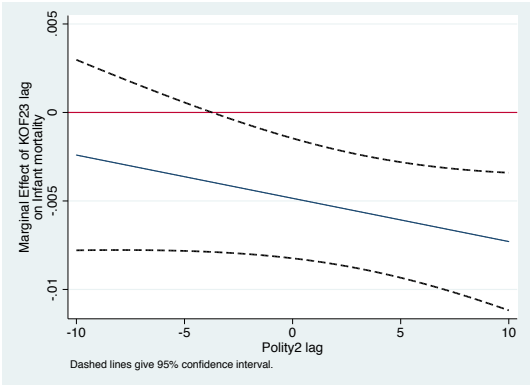


(c) Democratic capital ($\delta = 0.94$)

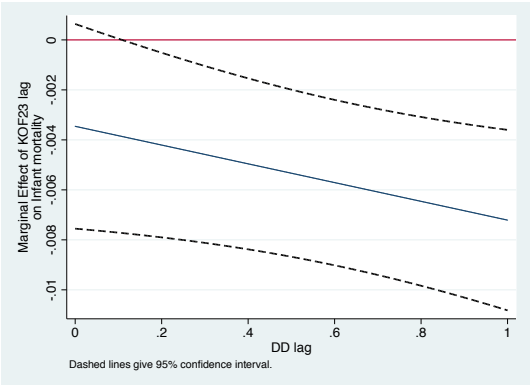


(d) Democratic capital ($\delta = 0.99$)

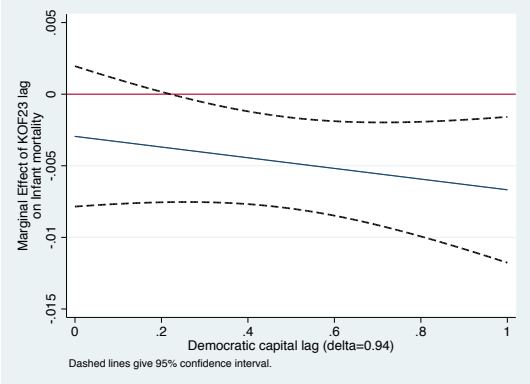
Figure 9: Marginal effects of KOF23 on infant mortality given democracy



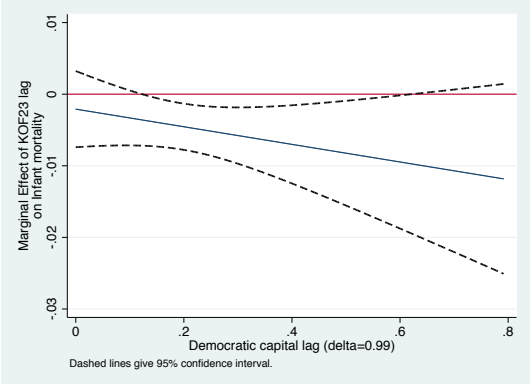
(a) Polity2



(b) DD



(c) Democratic capital ($\delta = 0.94$)



(d) Democratic capital ($\delta = 0.99$)

5 Sensitivity analysis

To test the robustness of our results we perform a number of sensitivity tests (results in Tables A.4 and A.5 in the appendix). Adding a number of control variables to the baseline specification does not alter baseline findings. Including the size of the population, economic institutions in terms of a strong legal system and protection of property rights, government consumption, and the urban share of the population do not matter for our conclusions that democratic institutions broadens the picture of how overall globalization relates to infant mortality. The findings on Democratic capital ($\delta = 0.94$) are the most sensitive in our tests. This is also true for the results on economic and political globalization along with the sub-dimensions of economic and social globalization: restrictions, information flows, and cultural proximity. But overall both economic and statistical significance hold up well.

Using non-lagged variables gives rise to somewhat larger changes compared with just including new control variables, but the conclusions based on the findings above are not different. Similarly, replacing the infant mortality rate as the dependent variable for child mortality rate does not alter baseline findings. This substitution shows that the results do not only hold for ill health among infants, but also for child health as measured by the number of children dying before reaching the age of five. Finally, we substitute some of the controls in the original specifications: non-lagged GDP per capita instead of lagged GDP per capita, the dependency ratio instead of the fertility rate, and educational attainment of the total population and not only females. These alterations do not lead to any changes in our interpretations of our baseline results and overall, the specification in Equation 1 and the results from Section 5 hold for various adjustments.

6 Conclusion

Interconnectedness between economies is not a new phenomenon and globalization is merely a new name for a longstanding occurrence. However, the latest phase of globalization, starting in the 1980s, has some novel features. In particular, developing countries are increasingly integrated with the world economy making the consequences of globalization across low-income countries an important focus (Bourguignon et al., 2002).

Recent research suggests several positive welfare consequences following with more globalization (see e.g. Dreher et al., 2008). For example, more trade and higher levels of FDI are important determinants of growth and development in low-income context. Similarly, empirical findings suggest that democracy correlates with improved welfare measures (see e.g. Przeworski

et al., 2000). Yet, little is known about the interaction between globalization and democratic institutions, and their joint-influence on economic development. As pointed out by Nissanke and Thorbecke (2006) collective measures likely have to be in place for the various components of globalization to reach their full potential, and particularly so in developing countries as globalization otherwise will only create opportunities for those best positioned to take advantage.

Good health is crucial for human and economic development and particularly good child health is important since it may cause irreversible damage and have implications later in life. Using panel data for 70 developing countries between 1970 and 2009 we analyze the relationship between globalization, democracy, and child health. Specifically we study the interactive effect between dimensions of globalization and democracy.

In line with previous findings our results suggest that globalization and democracy are important independent determinants of child health in developing countries, both reducing infant mortality. Moreover, results suggest that democratic institutions matter for the size of this child health improving globalization effect. Putting the size of this estimated relationship into perspective, country specific examples suggest that the interactive effect between globalization and democracy on child health is quite substantial. Such calculations are only for illustrative purposes, but they do indicate that the effects are economically and politically relevant. Furthermore, despite not always being statistically significant, the child health improving globalization effect is always increasing with more democracy. Consequently there is mutual interdependence between on-going processes of increasing world integration and democratization that in turn have important welfare effects.

In addition to our main results, our analysis generates findings worthy of further examination. First, we find that our main results are driven by economic and political globalization. Specifically the child health improving effect seems to follow from more liberal restrictions on trade and other international economic activities. A likely explanation for the importance of trade restrictions is that these matter for import prices and that these are connected to changes in policies that are child health improving. Second, despite that our initial disaggregation of globalization suggests social globalization is of less importance for improving child health in the developing world, the effect appear to vary between different types of social globalization. Information flows and cultural proximity are positively related to child health in countries with better democratic institutions. These results merit further research to gain knowledge on the specific mediating mechanisms.

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Appendix A

Table A.1: List of countries

East Asia and Pacific	Haiti	**Sub-Saharan Africa**
China	Honduras	Benin
Fiji	Jamaica	Botswana
Indonesia	Mexico	Burundi
Malaysia	Nicaragua	Cameroon
Mongolia	Panama	Central African Republic
Philippines	Paraguay	Côte d'Ivoire
Thailand	Peru	Gabon
Vietnam	Trinidad & Tobago	Ghana
	Uruguay	Kenya
Europe and Central	Venezuela	Malawi
Asia		Mali
Albania	**Middle East and**	Mauritius
Armenia	**North Africa**	Mozambique
Turkey	Algeria	Namibia
	Egypt	Niger
Latin America and	Iran	Republic of the Congo
Caribbean	Jordan	Rwanda
Argentina	Morocco	Senegal
Bolivia	Syria	Sierra Leone
Brazil	Tunisia	South Africa
Chile		Tanzania
Colombia	**South Asia**	Togo
Costa Rica	Bangladesh	Uganda
Dominican Republic	India	Zambia
Ecuador	Nepal	Zimbabwe
El Salvador	Pakistan	
Guatemala	Sri Lanka	
Guyana		

Table A.2: The KOF index of globalization

1. Economic globalization
i) *Actual flows*
Trade (percent of GDP)
Foreign direct investment, stocks (percent of GDP)
Portfolio investment (percent of GDP)
Income payments to foreign nationals (percent of GDP)
ii) *Restrictions*
Hidden import barriers
Mean tariff rate
Taxes on international trade (percent of current revenue)
Capital account restrictions
2. Social globalization
i) *Data on personal contact*
Telephone traffic
Transfers (percent of GDP)
International tourism
Foreign population (percent of total population)
International letters (*per capita*)
ii) *Data on information flows*
Internet users (per 1,000 people)
Television (per 1,000 people)
Trade in newspapers (percent of GDP)
iii) *Data on cultural proximity*
Number of McDonald's restaurants *per capita*
Number of Ikea *per capita*
Trade in books (percent of GDP)
3. Political globalization
Embassies in country
Membership in international organizations
Participation in U.N. Security Council missions
International treaties

Table A.3: Correlation matrix

	KOF	KOF1	KOF11	KOF12	KOF2	KOF21	KOF22	KOF23	KOF3	Polity2	DD	Dem. cap. ($\delta = 0.94$)	Dem. cap. ($\delta = 0.99$)	GDP per capita	Fertility	Dependency ratio	Physicians	Nutritional status	Female education	Total education	Population	EFI2	Government consumption	Urban population
KOF	1.0																							
KOF1	0.9	1.0																						
KOF11	0.8	0.9	1.0																					
KOF12	0.8	0.8	0.5	1.0																				
KOF2	0.5	0.2	0.1	0.2	1.0																			
KOF21	0.6	0.6	0.6	0.5	-0.1	1.0																		
KOF22	0.8	0.7	0.6	0.7	0.2	0.6	1.0																	
KOF23	0.7	0.6	0.4	0.6	0.3	0.3	0.4	1.0																
KOF3	0.9	0.8	0.7	0.7	0.2	0.8	0.9	0.7	1.0															
Polity2	0.4	0.4	0.2	0.5	0.2	0.2	0.4	0.4	0.4	1.0														
DD	0.2	0.1	0.0	0.3	0.2	0.0	0.2	0.3	0.3	0.8	1.0													
Dem. cap. ($\delta = 0.94$)	0.5	0.4	0.2	0.6	0.2	0.2	0.5	0.4	0.5	0.8	0.6	1.0												
Dem. cap. ($\delta = 0.99$)	0.5	0.4	0.2	0.5	0.3	0.1	0.4	0.4	0.4	0.6	0.4	0.8	1.0											
GDP per capita	0.7	0.6	0.4	0.6	0.3	0.4	0.7	0.5	0.7	0.4	0.3	0.5	0.5	1.0										
Fertility	-0.6	-0.5	-0.3	-0.6	-0.4	-0.2	-0.6	-0.5	-0.6	-0.5	-0.4	-0.5	-0.5	-0.6	1.0									
Dependency ratio	-0.6	-0.5	-0.3	-0.6	-0.4	-0.1	-0.5	-0.4	-0.5	-0.5	-0.4	-0.5	-0.5	-0.6	0.9	1.0								
Physicians	0.6	0.4	0.2	0.5	0.4	0.3	0.6	0.4	0.6	0.4	0.4	0.5	0.5	0.8	-0.7	-0.6	1.0							
Nutritional status	0.5	0.4	0.2	0.5	0.4	0.3	0.5	0.2	0.5	0.1	0.1	0.2	0.3	0.6	-0.5	-0.5	0.6	1.0						
Female education	0.6	0.6	0.5	0.6	0.2	0.4	0.7	0.4	0.7	0.4	0.3	0.5	0.5	0.6	-0.7	-0.6	0.7	0.4	1.0					
Total education	0.6	0.6	0.4	0.6	0.3	0.4	0.6	0.4	0.6	0.4	0.3	0.4	0.4	0.6	-0.7	-0.6	0.7	0.4	1.0	1.0				
Population	-0.2	-0.3	-0.4	-0.1	0.4	-0.6	-0.3	0.0	-0.4	0.0	0.0	0.0	0.1	-0.1	-0.1	-0.2	0.1	0.1	-0.1	-0.1	1.0			
EFI2	0.3	0.4	0.3	0.4	0.1	0.2	0.3	0.2	0.3	0.3	0.1	0.2	0.1	0.2	-0.5	-0.5	0.2	0.2	0.3	0.3	0.0	1.0		
Government consumption	-0.1	-0.1	0.0	-0.2	-0.2	0.0	-0.2	0.0	-0.1	-0.1	0.0	-0.2	-0.1	-0.2	0.2	0.2	-0.1	-0.2	-0.1	-0.1	-0.2	-0.2	1.0	
Urban population	0.6	0.4	0.3	0.5	0.5	0.2	0.6	0.3	0.5	0.3	0.2	0.3	0.5	0.7	-0.5	-0.5	0.7	0.5	0.5	0.5	0.0	0.1	-0.2	1.0

Table A.4: Sensitivity analysis, part I

Variation	Democracy variable	KOF	KOF1	KOF2	KOF3
Controlling for population	Polity2	Negative ME sign. at Polity2=-1. Increasing in size. -0.016 at Polity2=10.	Negative ME sign. at Polity2=-1. Increasing in size. -0.01 at Polity2=10.	ME insignificant at all levels of Polity2.	Negative ME sign. at Polity2=-7. Increasing in size. -0.017 at Polity2=10.
	DD	Negative ME insign. at DD=0, sign. at DD=1. -0.015 at DD=1.	Negative ME sign. at DD=0, sign. at DD=1. -0.01 at DD=1.	ME Insignificant at DD=0 and DD=1.	Negative ME always sign. Increasing in size. -0.016 at DD=1.
	Dem. cap. ($\delta = 0.94$)	Negative ME sign. at Dem. cap.=0.5. Increasing in size. -0.013 at Dem. cap.=1.	Negative ME sign. at Dem. cap.=0.5. ME increasing in size. -0.01 at Dem. cap.=1.	ME positive and sign until Dem. cap.=0.1. Thereafter insign.	Negative ME always sign. Size constant at -0.014.
	Dem. cap. ($\delta = 0.99$)	Negative ME sign. at Dem. cap.=0.2. Increasing in size. -0.032 at Dem. cap.=0.8.	Negative ME sign. at Dem. cap.=0.1. Increasing in size. -0.025 at Dem. cap.=0.8.	ME positive and sign. until Dem. cap.=0.05. Thereafter insign.	Negative ME always sign. Increasing in size. -0.021 at Dem. cap.=1.
Controlling for rule of law (EFI2)	Polity2	Negative ME sign. at Polity2=-1. Increasing in size. -0.016 at Polity2=10.	Negative ME sign. at Polity2=0. Increasing in size. -0.01 at Polity2=10.	ME insignificant at all levels of Polity2.	Negative ME sign. at Polity2=-7.5. Increasing in size. -0.015 at Polity2=10.
	DD	Negative ME insign. at DD=0, sign. at DD=1. -0.014 at DD=1.	Negative ME insign. at DD=0. Sign. at DD=1. -0.01 at DD=1.	ME insignificant at DD=0 and DD=1.	Negative ME always sign. Increasing in size. -0.015 at DD=1.
	Dem. cap. ($\delta = 0.94$)	ME Insignificant at all levels of Dem. cap.	Negative ME sign. at Dem. cap.=0.1. Increasing in size. -0.012 at Dem. cap.=1.	ME insignificant at all levels of Dem. cap.	Negative ME always sign. Size constant at -0.012.
	Dem. cap. ($\delta = 0.99$)	Negative ME sign. at Dem. cap.=0.2. Increasing in size. -0.025 at Dem. cap.=0.8.	Negative ME sign. at Dem. cap.=0.1. Increasing in size. -0.024 at Dem. cap.=0.8.	ME insignificant at all levels of Dem. cap.	Negative ME sign. until Dem. cap.=0.6. ME -0.015. Thereafter insign.
Controlling for government consumption	Polity2	Negative ME sign. at Polity2=-1. Increasing in size. -0.016 at Polity2=10.	Negative ME sign. at Polity2=-1. Increasing in size. -0.01 at Polity2=10.	ME insignificant at all levels of Polity2.	Negative ME sign. at Polity2=-7. Increasing in size. -0.018 at Polity2=10.
	DD	Negative ME insign. at DD=0, sign. at DD=1. -0.015 at DD=1.	Negative ME sign. at DD=0, sign. at DD=1. -0.01 at DD=1.	ME insignificant at DD=0 and DD=1.	Negative ME always sign. Increasing in size. -0.016 at DD=1.
	Dem. cap. ($\delta = 0.94$)	Negative ME sign. at Dem. cap.=0.5. Increasing in size. -0.013 at Dem. cap.=1.	Negative ME sign. at Dem. cap.=0.5. Increasing in size. -0.01 at Dem. cap.=1.	ME insignificant at all levels of Dem. cap.	Negative ME always sign. Constant in size at -0.015.
	Dem. cap. ($\delta = 0.99$)	Negative ME sign. at Dem. cap.=0.2. Increasing in size. -0.032 at Dem. cap.=0.8.	Negative ME sign. at Dem. cap=0.1. Increasing in size. -0.025 at Dem. cap.=0.8.	ME insignificant at all levels of Dem. cap.	Negative ME always sign. Increasing in size. -0.021 at Dem. cap.=0.8.
Controlling for share of urban population	Polity2	Negative ME sign. at Polity2=-2.5. Increasing in size. -0.016 at Polity2=10.	Negative ME sign. at Polity2=-1. Increasing in size. -0.01 at Polity2=10.	ME insignificant at all levels of Polity2.	Negative ME always sign. Increasing in size. -0.019 at Polity2=10.
	DD	Negative ME insign. at DD=0, sign. at DD=1. -0.015 at DD=1.	Negative ME sign. at DD=0, sign. at DD=1. -0.01 at DD=1.	ME insignificant at DD=0 and DD=1.	Negative ME always sign. Increasing in size. -0.017 at DD=1.
	Dem. cap. ($\delta = 0.94$)	Negative ME sign. at Dem. cap.=0.5. Increasing in size. -0.013 at Dem. cap.=1.	Negative ME sign. at Dem. cap.=0.5. Increasing in size. -0.01 at Dem. cap.=1.	ME positive and sign. until Dem. cap.=0.1. Thereafter insign.	Negative ME always sign. Size is constant at -0.015.
	Dem. cap. ($\delta = 0.99$)	Negative ME sign. at Dem. cap.=0.2. Increasing in size. -0.033 at Dem. cap.=0.8.	Negative ME sign. at Dem. cap.=0.1. Increasing in size. -0.026 at Dem. cap.=0.8.	ME positive and sign. until Dem. cap.=0.05. Thereafter insign.	Negative ME always sign. Increasing in size. -0.022 at Dem. cap.=1.

Table A.5: Sensitivity analysis, part II

Variation	Democracy variable	KOF	KOF1	KOF2	KOF3
Non-lagged GDP per capita	Polity2	Negative ME sign. at Polity2=-2. Increasing in size. -0.016 at Polity2=10.	Negative ME sign. at Polity2=0. Increasing in size. -0.01 at Polity2=10.	ME insignificant at all levels of Polity2.	Negative ME sign. at Polity2=-7.5. Increasing in size. -0.018 at Polity2=10.
	DD	Negative ME insign. at DD=0 and sign. at DD=1. -0.015 at DD=1.	Negative ME insign. at DD=0 and sign. at DD=1. -0.01 at DD=1.	ME insignificant at DD=0 and DD=1.	Negative ME always sign. Increasing in size. -0.016 at DD=1.
	Dem. cap. ($\delta = 0.94$)	Negative ME sign. at Dem. cap.=0.5. Increasing in size. -0.013 at Dem. cap.=1.	Negative ME sign. at Dem. cap.=0.5. Increasing in size. -0.01 at Dem. cap.=1.	ME insignificant at all levels of Dem. cap.	Negative ME always sign. Size is constant at -0.015.
	Dem. cap. ($\delta = 0.99$)	Negative ME sign. at Dem. cap.=0.2. Increasing in size. -0.032 at Dem. cap.=0.8.	Negative ME sign. at Dem. cap.=0.1. Increasing in size. -0.025 at Dem. cap.=0.8.	Me insignificant at all levels of Dem. cap.	Negative ME always sign. Increasing in size. -0.022 at Dem. cap.=1.
Replacing infant mortality with child mortality	Polity2	Negative ME sign. at Polity2=0. Increasing in size. -0.016 at Polity2=10.	Negative ME sign. at Polity2=-2.5. Increasing in size. -0.01 at Polity2=10.	ME insignificant at all levels of Polity2.	Negative ME sign. at Polity2=-7. Increasing in size. -0.018 at Polity2=10.
	DD	Negative ME insign. at DD=0 and sign. at DD=1. -0.015 at DD=1.	Negative ME insign. at DD=0 and sign. at DD=1. -0.011 at DD=1.	ME insignificant at DD=0 and DD=1.	Negative ME sign. at DD=0, sign. at DD=1. -0.017 at DD=1.
	Dem. cap. ($\delta = 0.94$)	ME insignificant at all levels of Dem. cap.	Negative ME sign. at Dem. Cap.=0.1. Size is constant at -0.01 at Dem. cap.=1.	ME positive and sign. until Dem. cap.=015. Thereafter insign.	Negative ME always sign. Slightly decreasing in size. -0.012 at Dem. cap.=1.
	Dem. cap. ($\delta = 0.99$)	Negative ME sign. at Dem. cap.=0.25. Increasing in size. -0.03 at Dem. cap.=0.8.	Negative ME sign. at Dem. cap.=0.1. Increasing in size. -0.025 at Dem. cap.=0.8.	ME positive and sign. until Dem. cap.=0.05. Thereafter insign.	Negative ME sign. until Dem. cap.=0.7. ME -0.017. Thereafter insign.
Replacing fertility with dependency ratio	Polity2	Negative ME sign. at Polity2=-1. Increasing in size. -0.017 at Polity2=10.	Negative ME sign. at Polity2=0. Increasing in size. -0.009 at Polity2=10.	ME insignificant at all levels of Polity2.	Negative ME sign. at Polity2=-8. Increasing in size. -0.019 at Polity2=10.
	DD	Negative ME insign. at DD=0 and sign. at DD=1. -0.015 at DD=1.	Negative ME insign. at DD=0 and sign. at DD=1. -0.01 at DD=1.	ME insignificant at DD=0 and DD=1.	Negative ME always sign. Increasing in size. -0.018 at DD=1.
	Dem. cap. ($\delta = 0.94$)	ME insignificant at all levels of Dem. cap.	Negative ME sign. at Dem. cap.=0.2. Increasing in size. -0.01 at Dem. cap.=1.	ME positive and sign. until Dem. cap.=0.15. Thereafter insign.	Negative ME always sign. Decreasing in size. -0.014 at Dem. cap.=1.
	Dem. cap. ($\delta = 0.99$)	Negative ME sign. at Dem. cap.=0.2. Increasing in size. -0.03 at Dem. cap.=0.8.	Negative ME sign. at Dem. cap.=0.1. Increasing in size. -0.023 at Dem. cap.=0.8.	ME positive and sign. until Dem. cap.=0.05. Thereafter insign.	Negative ME always sign. Increasing in size. -0.021 at Dem. cap.=1.
Replacing female education with total education	Polity2	Negative ME sign. at Polity2=-2. Increasing in size. -0.016 at Polity2=10.	Negative ME sign. at Polity2=-2. Increasing in size. -0.01 at Polity2=10.	ME insignificant at all levels of Polity2.	Negative ME sign. at Polity2=-7.5. Increasing in size. -0.018 at Polity2=10.
	DD	Negative ME insign. at DD=0 and sign. at DD=1. 0.015 at DD=1.	Negative ME insign. at DD=0 and sign. at DD=1. -0.01 at DD=1.	ME insignificant at DD=0 and DD=1.	Negative ME always sign. Increasing in size. -0.017 at DD=1.
	Dem. cap. ($\delta = 0.94$)	Negative ME sign. at Dem. cap.=0.55. Increasing in size. -0.013 at Dem. cap.=1.	Negative ME sign. at Dem. cap.=0.1. Constant in size. -0.011 at Dem. cap.=1.	ME positive and sign. until Dem. cap.=0.0.1 Thereafter insign.	Negative ME always sign. Size is constant at -0.015.
	Dem. cap. ($\delta = 0.99$)	Negative ME sign. at Dem. cap.=0.2. Increasing in size. 0.032 at Dem. cap.=0.8.	Negative ME sign. at Dem. cap.=0.1. Increasing in size. -0.025 at Dem. cap.=.8.	ME positive and sign. until Dem. cap.=0.05. Thereafter insign.	Negative ME always sign. Increasing in size. -0.021 at Dem. cap.=1.