

# Foreign Aid and Business Bottlenecks

## A Study of Aid Effectiveness

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## Abstract

This paper proposes a new framework to analyze aid effectiveness. Using World Bank firm survey data and OECD aid flow data, the authors analyze whether aid targets areas that firms in developing countries have identified as obstacles for their growth and whether aid actually improves firms' perceptions of those areas. The analysis finds that aid does target the areas that firms

have identified as obstacles; aid funding trade related projects is particularly effective in targeting the correct countries. For the most part, aid has a positive impact on improving firms' perceptions, particularly in the business environment. And for each target area, smaller aid disbursements tend to be more effective at improving firm perceptions than larger disbursements.

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**FOREIGN AID AND BUSINESS BOTTLENECKS:  
A STUDY OF AID EFFECTIVENESS**

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## **Introduction**

Most of the aid effectiveness literature has concentrated on explaining the impact of aid on economic growth with unclear and ambiguous results. Given the variety of ex-ante objectives for aid, it is to be expected that ex-post evaluations of aid efficacy lead to mixed results when conducted as if growth were the only objective. This is why in this paper we take a new approach and evaluate aid's impact on its main objective. We analyze firms' perceptions of the areas which aid was set out to improve. Using firm perception data not only allows us to analyze the impact of aid on its direct objective but it also allows us to identify the areas firms categorize as obstacles for their growth and whether aid is addressing these obstacles. Firms are the drivers of innovation, job creation, and growth in an economy. Firms in their everyday business transactions face obstacles such as corruption, inadequate labor force, and lack of infrastructure and therefore are the best agents to judge these and other areas. Being able to concentrate on the problems firms are facing in developing countries can prove to be extremely important in using aid more effectively and having a greater impact on the development of these countries.

We classify aid flows from the OECD CRS database into seven areas—access to finance and land, business environment, infrastructure, labor force, rule of law, economic and political stability, and trade—and match them to firms' perceptions of these seven areas from the World Bank Enterprise Survey Database. By doing this we attempt to answer two main questions related to aid effectiveness:

1. Does aid target those areas which firms have identified as obstacles for their growth?
2. Are firm perceptions better in those areas that have received more aid in the past?

We find that, in general, aid does target those areas which firms have previously identified as obstacle for their growth. Nevertheless, there are areas in which aid is being used more effectively than in others. For example, aid is used more effectively in the area of *trade* as it mostly targets those countries in which a considerable percentage of firms have identified *trade* as a major obstacle for their growth. On the other hand, we find that aid is extremely ineffective in the area of *access to finance*. There is more aid flowing to fund *access to finance* related projects in countries where very few firms identified *access to finance* to be an obstacle, and there are only modest amounts of funds flowing into those countries with a high percentage of firms identifying *access to finance* as an obstacle. The *labor* area seems to be the most neglected; there are very low levels of aid that flow into any country with the objective of educating and training the workforce and/or to improve labor regulations.

Regarding our second question, the results are more mixed. We find that the more aid a country has received in the areas of *access to finance*, *stability*, *business environment* and *labor* the better the firms' perceptions are for these areas. The projects being financed with this influx of aid are effective enough that once they are completed fewer firms find these four areas to be obstacles for their growth. On the other hand, we find that the more aid that is being distributed among *trade* and *infrastructure* projects the greater the number of firms that find the two areas to be obstacles for their growth in the following years. We find that even though *trade* related aid is efficient in going where aid is needed, it does not have the impact aid has on firms' perceptions that target other areas.

Finally we find that larger grants/loans do not necessarily lead to better firm perceptions. On the contrary, it seems like smaller disbursements are more effective.

Smaller disbursements have a more positive impact on firms' perceptions whereas bigger disbursements seem to make matters worse, as more firms indicated an area to be an obstacle after that area had received bigger aid disbursements.

In the following section we discuss our motivation and review the existing literature on the subject of aid effectiveness. We then proceed to describe the data that we used and how we created the dataset used in this analysis. Finally we describe the methodology and explain our results.

### **Literature Review**

What is the impact of foreign aid on the development of low-income countries? Does more aid lead to higher growth? Researchers and policymakers have debated this question for years, with little resolution. Some researchers have concluded that aid does little for growth, with a few suggesting that in the wrong circumstances (such as under a corrupt dictator), aid can undermine growth and development. Others have found that once they carefully control for collateral determinants of growth and allow for diminishing returns, aid supports growth. Still other investigators accept the finding of little or no aggregate relationship between aid and growth. The recent literature on aid and growth largely concludes that the relationship between aid and development outcomes is fragile and often ambiguous (Rajan and Subramanian 2005; Easterly, Levine, and Roodman 2003; Clemens, Radelet, and Bhavnani 2005).

In view of this difficulty, a better understanding of the links from aid to final outcomes is necessary. As Bourguignon and Sundberg (2007) explain, trying to relate donor inputs and development outcomes directly, as through some kind of black box, will most often lead nowhere. The direct objective of most aid flows is not economic growth,

and in some cases it is not the objective at all. Even though most donors are hopeful their aid could help the development of the recipient country, aid usually has other more direct goals with growth and development only as a secondary and distant objective. Aid provided to train court magistrates, to build political systems, or to improve border patrols and customs have other objectives other than economic growth. Even though these aid flows could potentially in the long run lead to growth, the short run objective is different. Given the variety of ex-ante objectives for aid, it is to be expected that ex-post evaluations of aid efficacy lead to mixed results when conducted as if growth were the only objective. Therefore, when we are trying to measure how effective aid is we should try to measure whether that main objective has been accomplished and not some secondary and distant one. This is why, in this paper, we propose a new framework to analyze aid effectiveness with which we attempt to evaluate the impact of aid flows in the areas to which they were set out to improve. For this, we first identify the objective of aid to then evaluate its effectiveness.

Some researchers have moved away from the aid-growth macro perspective and have started to evaluate aid at the micro and project level using experimental or quasi-experimental designs to examine the impact of specific policies or projects on local communities, household decision making, and individual welfare. The World Bank through its Development Impact Evaluation (DIME) initiative has increased its number of projects that include impact evaluation components. These projects are designed in such a way that there is a counterfactual group with which the project/aid can be evaluated against. Recent working papers evaluate the effectiveness of a wide range of projects/aid that include cash transfer programs, rural electrification, and nutrition

programs. However, given the countless projects and their different impact under varying country circumstances, it is impossible to generalize the results found from one project in one country to all others. Evaluations can be misleading when projects or programs are applied outside the country context in which they were evaluated.

We need a way in which we can learn more about the impact of aid than we do from the macro perspective but be able to reach more general conclusions which we cannot do from micro/project evaluations. This study and other recent ones have in some way considered aid disaggregated by purpose in order to better understand how it works. Owens and Hoddinott (1999) find that household welfare in Zimbabwe is increased by development aid (infrastructure, agricultural extension, etc.) far more than by humanitarian aid (food aid, emergency transfers, etc.), even in humanitarian emergencies. Mavrotas (2003) disaggregates aid to Uganda into “program”, “project”, and “technical assistance” flows and finds a significantly positive effect of “program” aid much larger than of “project” aid, but significantly negative impacts of “technical assistance”. In a new World Bank working paper, Helble, Mann, and Wilson (2009) make one of the first attempts to analyze how foreign aid spent on trade facilitation increases trade flows of developing countries. The authors find that the bulk of the relationship between aid and trade appears to come from a narrow set of aid flows directed toward trade policy and regulatory reform, rather than broader aid-for-trade categories directed toward sectoral trade development or infrastructure development. Other studies on the effect of aid on trade have found similar positive results to those found by Helble, Mann, and Wilson (2009). For example, Cali and te Velde (2008) argue that there are two ways in which aid affects trade. They argue that besides the direct effect of aid on trade flows there is also

an indirect effect in which aid affects trade by improving the investment climate in which trade takes place. The authors find that aid for trade can have a positive effect on investment climate indicators. They find that aid in the area of “trade policy and regulations” has helped reduce the costs of trading. They also find a robust, positive, and non-linear effect of aid in productive capacity on exports. These last two papers relate closer to the work of this paper in that our target is to measure aid to its direct objective instead of attempting to measure the impact of aid on growth. We, however, take a new approach by analyzing how aid affects firm perceptions.

Another important contribution of this paper is that we identify and analyze firms’ needs. There is little mention, if any, about firms in the current aid literature even though firms are the biggest source of employment, production, and growth.<sup>1</sup> From the endogenous growth literature we know that firms are a key element in the development of innovation and technology which drives growth.<sup>2</sup> Innovation, the key for long term growth, results from the process of trying to solve production problems, to learn from experience, to find new and better ways of doing things, and/or to profit from opening up new markets. Institutions, market structure, market imperfections, trade, government policy, and legal framework affect (and are affected) by long run growth through their effects on firms’ incentives to engage in innovation activities. Therefore understanding the needs of firms is essential to be able to provide aid more effectively such that it will create the right environment for innovation and growth. Also because firms interact with

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<sup>1</sup> The only study that we know which relates recipient country’s perceptions and aid is Birdsall and Kharas (2010). The authors create an index of aid quality for each donor using as one of their measures the support by each donor to a recipient country’s priorities. They identified priority sectors based on submissions of individuals in partner countries to surveys, asking them to identify development priorities for their country.

<sup>2</sup> See, for instance, Aghion and Howitt (1992); Mankiw, Romer and Weil (1992); Romer (1990); Schumpeter (1942).

all these elements of the economy on a daily basis they are the most capable of grading and gauging which areas affect their growth the most.

### **Data Description**

The objective of this paper is to analyze whether aid targets areas which firms in developing countries have identified as obstacles for their growth. We also examine whether greater aid flows in the past are reflected in better firm perceptions today. With these objectives in mind we classified aid flows from the OECD's Creditor Reporting System (CRS) database into seven areas—access to finance and land, business environment, infrastructure, labor force, rule of law (courts, corruption and crime), economic and political stability, and trade—and matched them to firm perceptions of these seven areas from the World Bank Enterprise Survey Database.

The World Bank's Enterprise Survey is intended to capture business perceptions of the biggest obstacles to enterprise growth, the relative importance of various constraints to employment and productivity, and the effects of a country's business environment on its international competitiveness. This unique and comprehensive survey collects data from key manufacturing and service sectors in every region of the world. It uses standardized survey instruments and a uniform sampling methodology to minimize measurement error and to yield data that are comparable across the world's economies. This new database is such a rich source of homogeneous information across countries and regions that it has already been used for studies relating to labor markets, export markets, and institutions.<sup>3</sup> The Enterprise Survey is an ongoing project by the World Bank; it is continuously surveying countries and updating the database. The data used for this

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<sup>3</sup> Go to [www.enterprisesurveys.org/researchpapers/](http://www.enterprisesurveys.org/researchpapers/) for a complete list of recent research papers that use Enterprise Survey data.

analysis are the most updated version of the data available at the time this paper was written.

The key question in which we are interested from the Enterprise Survey asks firms in over 100 countries between 2005 and 2009 to identify the biggest obstacle to their operation and growth. Firms have the option to choose among 25 options which we have grouped into seven categories which are displayed in Table 1.

Using the adequate weights from the survey instrument we aggregate the firm level data to country-obstacle level by calculating the percentage of firms that identified each category as their obstacle to growth.<sup>4</sup> This is our measure of firms' perceptions; the higher the percentage the greater the obstacle to firms in a given country. Once we matched the Enterprise Survey with the OECD CRS database we are left with 67 countries. Table 2 displays all countries in the sample.

The other key ingredient of this paper is the disaggregated data on aid flows. Data on aid flows for the years 2004 to 2008 come from the OECD CRS database, which documents Official Development Aid (ODA) flows from donor to recipient countries starting in the year 1973. This database is very comprehensive and covers almost every country of the world. It includes aid extended by about 40 individual country donors as well as multilateral agencies. Each entry contains the value of the aid flow from donor to the recipient and other valuable information such as the donor and recipient's name, the year of the aid flow, the type of aid (i.e., grant or loan), the general purpose of the grant/loan and a detailed description of the project.

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<sup>4</sup> Enterprise Surveys use either simple random sampling or random stratified sampling. Individual observations are weighted by the inverse of their probability of selection which is equivalent to the weighted average of the estimates for each stratum, with weights equal to the population shares of each stratum.

In order to match the aid flows from the CRS database to the seven obstacle areas from the Enterprise Survey we had to perform “key word” searches among the detailed purpose description of the aid flows. We found that the general categories from the CRS database were too broad to give us an accurate understanding of the target of the aid flow. For example, a general purpose category for aid flows is “Business support services and institutions” amongst this category we have many detailed project descriptions including: “The Trade and Transport Facilitation in Southeast Europe Project for Bosnia and Herzegovina, aims at modernizing, and strengthening customs administrations, and border control agencies...”. Under the same category we can also find a project description such as: “Facilitate the adoption of streamlined and inexpensive licensing, registration, and inspection regimes for different categories of businesses, including SMEs, joint-stock companies, and partnerships.” Obviously the nature of the two projects is very different; however, they are grouped into the same category in the CRS database. Being able to use the detailed purpose information for each aid flow clearly has its advantages as we are able to better match the aid flows to the corresponding seven obstacle categories from the Enterprise Survey. The project aimed at modernizing and improving customs was matched to the trade category (key word=customs) while the business licensing project was matched to the business environment category (key word=licensing). This process was very time consuming as we had to investigate the detailed project description of 360,000 aid flows to be able to find “key words” for each category.<sup>5</sup> Even though most project descriptions are in English we also used “key

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<sup>5</sup> The key words used to group the aid flows into the Enterprise Survey obstacle categories are available from the authors at request.

words” in Spanish, Italian, and French as some of the project descriptions are in the donor’s language.

Our method of categorizing aid flows through “key words” also has some drawbacks, starting from omitted “key words” to projects that include more than one key word from different categories. Nonetheless, the gains outweigh the drawbacks; using detailed project information is a crucial element of our analysis as we set out to evaluate the effectiveness of aid on its main objective.

After employing our “key word” search process we are left with close to 41,000 aid flow observations. Most of the observations from the CRS dataset are dropped as they do not match any of the seven categories of interest. Most aid flows are either for disaster relief, humanitarian purposes (including health, water, and food), and/or for primary and secondary educational projects.<sup>6</sup>

The distribution of all aid flows and the distributions of all firm perceptions amongst the different obstacles are presented in Figure 1.<sup>7</sup> The size of the bubbles describes the distribution of aid flows. We can clearly see that the *trade* area has received more money than the other areas as 32.17% of all disbursements in the sample target this area. This is mainly driven by transportation related disbursements such as projects designed to build/improve roads and ports which require sizeable investments and are included under the trade category. The other two areas which aid targets more intensely are *rule of law* and economic and political *stability*.

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<sup>6</sup> We only include projects that target the education of the labor force such as vocational and professional training under our Labor category. Aid targeted for primary or secondary education is not included in our sample.

<sup>7</sup> The distribution of firm perceptions and aid flows will change in each country, region, and year. Figure 1 is intended to display the general data and is not meant to be used to reach any conclusion about the relation between aid and firm perspectives.

Now looking at the distribution of firm perceptions which are described in Figure 1 by how high or low the bubbles are located, we can see that the biggest obstacle to firms is the *business environment* in the country. Almost 35% of firms identified this as their biggest obstacle. This high percentage is explained by two components of the business environment category. Almost 20% of firms identified taxes as their biggest obstacle where as 10% of firms described the informal sector to be their biggest obstacle. The second leading obstacle to firms is the *rule of law* of a country. The court system, corruption, and crime perceptions are all part of this category and all three are known problem areas for most developing countries particularly those in Africa and Latin America. Almost half of all aid in our sample, in USD dollars, targets South Sahara, followed by Europe with 15% and South America with 12%. The distribution of aid disbursements by recipient region is displayed in Figure 2.

### **Methodology and Results**

In order to analyze the effectiveness of aid we first need to understand how aid relates to firm perceptions and *vice versa*. Unfortunately there is no existing literature about this relation that we can refer to, consequently, we suggest two very intuitive relations in this paper.

We identify two relations that are dependent on the timing of when aid disbursements are made and when firms are surveyed. We believe, and hope, that aid targets those areas which firms have identified as obstacles for their growth. Once the aid disbursement has been received and the project has been implemented, we expect that the firms' perceptions for that area would improve. Therefore, past aid disbursements should determine today's firms' perceptions and today's firms' perceptions should determine

future aid. Two fundamental questions about aid effectiveness arise from our reasoning. First, does aid target those areas which firms have identified as obstacles for their growth? And second, are firm perceptions better in those areas that have received more aid in the past? Both questions are essential to gage how effective aid has been in the past few years.

### **Is Aid Going Where Aid Is Needed?**

Since firms are the drivers of economic growth it makes sense that donor countries would want to tackle those problems firms in recipient countries have identified as obstacles for their growth. In this section we analyze the first relation mentioned above and look at whether past firm perceptions determine today's aid disbursements. With this in mind we run regressions of the following form:

$$Aid_{drjt} = \alpha_d + \lambda_r + \tau_t + \delta_j + \beta Perception_{rjs} \quad \text{if } t > s \quad (1)$$

*Aid*, the dependent variable, is the natural logarithm of the amount disbursed in millions of USD dollars by donor country *d* to recipient country *r* to target obstacle *j* in year *t*. *Perception* is the natural logarithm of the percentage of firms in the recipient country, *r* that have identified the area *j* as an obstacle in year *s*. Because we want to distinguish if aid flows to areas where firms have identified previously as an obstacle, the year of the disbursement, *t*, has to be greater than the year of the survey, *s*.<sup>8</sup>

The left panel in Table 3 displays the results for all aid disbursements in which the year of the disbursement is greater than the year of the survey. The right panel displays the same regression as the left panel but with 47 omitted aid disbursements which tested positive as significant outliers. The results with or without outliers do not differ very

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<sup>8</sup> Using perceptions from previous years with respect of aid flows might also mitigate any possible endogeneity that exists between aid flows and firms perceptions.

much thus the results are clearly not driven by outlier data points. I will concentrate in describing the results of those regressions that included all data points.

The regression used to obtain the results presented in the first column of Table 3 controls for recipient country effects, donor country effects, and loan-year effects. We can see that the coefficient on *Perception*, our variable of interest, is positive and statistically significant. This means that the greater the percentage of firms that identify a certain area as an obstacle to their growth, the greater the amount of aid is disbursed to target that area. A 10% increase in the percentage of firms which identified an area as an obstacle results, on average, in 0.9% more aid flowing into that area in the following years. This is an invigorating result as we can conclude that aid is going where it is needed.

In the next regressions we take advantage of the variation across countries and the variation of firms' perceptions amongst obstacles of the same country to study in more detail how firm perceptions affect aid disbursements. Column 2 in Table 4 displays the results of a regression that allows for different intercepts for each of the obstacle areas. The effect of different intercepts for each obstacle is statistically significant. *Perception* remains positive and significant. Now the slope of perception is greater. In this case, a 10% increase in the percentage of firms which identified an area as an obstacle results, on average, in 1% more aid flowing into that area.

*Business environment*, *labor*, and *trade* are all statistically different from the control group, *access to finance*. The intercept for *business environment* and *trade* is notably bigger than for all the other obstacles. This means that for any given percentage of firms there will be more aid flowing into *business* and *trade* related projects than into

any of the other obstacles. The opposite is true for *finance* and *labor*; for any given percentage of firms, there is less money that will flow into *finance* and *labor* related projects than for any other obstacle.

Column 3 of Table 3 displays the results of a regression that not only allows for different intercepts for each obstacle but also for different slopes.<sup>9</sup> With the exception of *business environment*, all obstacles have statistically different slopes than the control group, *access to finance*. Even though the coefficient on *Perceptions* becomes negative and is now less statistically significant, the effect of different slopes for each obstacle is statistically significant. Now the overall effect of firms' perceptions on aid depends upon each individual obstacle, and is estimated by adding up the coefficient on *Perception* and the coefficient of each interaction term. We see that the overall effect for most obstacles is still positive, meaning that the greater number of firms that identify an area as an obstacle the more aid that flows into that area in the following years. *Access to finance* and *business environment* now have negative slopes, meaning that donor countries have not invested in these areas even though they are a priority for most firms.

It is important to highlight the higher slope coefficient on *trade*. This higher coefficient suggest that for every marginal firm that finds the *trade* area as an obstacle the greater the influx of aid compared to the other obstacles. Figure 3 depicts this idea more clearly. Figure 3 graphically shows the results from the regression on Column 3 in Table 3. It is clear from this graph that aid flows more effectively into some areas compare to others. It is encouraging to find that most obstacle areas have a positive slope meaning that aid flows where firms say they need the most help, particularly in the areas of *trade*,

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<sup>9</sup> We tested if separate regressions for each obstacle were a better fit but found that separate intercepts and slopes led to a more robust specification. We also tested for omitted variables and non-linear forms but found the best fit with the regressions presented in Table 3.

*stability*, and *rule of law*. *Finance* and *business environment* have high intercepts which make up for their negative slopes. While it is encouraging to find that there is aid that is flowing into these two areas (high intercepts), it seems like donor countries are not targeting the right countries (negative slopes), especially when it comes to *finance* related aid. The *labor* area seems to be the most neglected; although it has a positive slope there is very low levels of aid that flow into any country with the objective of educating and training the workforce and/or to improve labor regulations.

### **Does More Aid Lead to Better Firm Perceptions?**

In the previous section we found that aid indeed targets those areas which firms in recipient countries have identified as obstacles for their growth. Now the question is whether aid actually improves those areas so that fewer firms find them to be obstacles for their growth. Once the aid disbursement has been received and the project has been implemented we expect that the firms' perceptions for that area would be better than if no aid has been received. In this section we attempt to answer the question: are firm perceptions better in those areas that have received more aid in the past?<sup>10</sup> With this objective in mind we run regressions of the following form:

$$Perception_{rjs} = \alpha_d + \lambda_r + \tau_s + \delta_j + \beta Aid_{rdjt} \quad \text{if } s > t \quad (2)$$

*Perception*, the dependent variable in this case, is the natural logarithm of the percentage of firms in a recipient country *r* that have identified the area *j* as an obstacle in year *s*. *Aid* is the natural logarithm of the amount disbursed in millions of USD dollars from donor country *d* to recipient country *r*, for obstacle *j*, and year *t*. Since we want to identify

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<sup>10</sup> We would like to analyze whether aid *improves* aid perceptions. For this we need to analyze the *change* in firms' perceptions; however, there is no panel data available for this specific question on the Enterprise Survey. We are left with the second best analysis which is identifying whether firms' perceptions are better for those areas that have received more aid in the past than for those areas that did not receive as much aid.

whether firm perceptions are better in those areas that have received more aid in the past, the year of the survey,  $s$ , has to be greater than the year of the aid disbursement,  $t$ . We also control for recipient country effects, donor country effects, survey-year effects, and obstacle effects. Since *Perception* is the percentage of firms that have identified an area as an obstacle we expect that *Aid*, our variable of interest, would have a negative sign. A negative sign would mean that the more aid that flows in a target area the fewer firms that would identify that area as an obstacle.

As in the previous section we run every regression with and without observations that tested as significant outliers. The results between the two are essentially the same so in this section we only present the results for those regressions that included all available observations. Table 4 displays the results.

The first column in Table 4 shows that after controlling for recipient country, donor country, and survey-year effects aid does not seem to affect firm perceptions. The coefficient on *Aid* is not statistically significant. In the second column we include obstacle effects. Allowing for different intercepts for each obstacle is statistically significant and clearly is an important determinant of the relation between aid and firm perceptions as the R-squared nearly doubles. However, it is not until we allow for the slopes to vary by obstacle that we start to get a better fit. The effect of different slopes by obstacle is statistically significant and shown in Column 3 of Table 4. *Trade*, *infrastructure*, and *rule of law* all have statistically significant different slopes than *finance*, the control group. The overall effect that aid disbursements have on firm perceptions now varies by obstacle and is estimated by adding the coefficient on *Aid* and

its interaction term with each obstacle. To clearly understand these relationships we graphed the results from Column 3 of Table 4 and are displayed in Figure 4.

In Figure 4 it becomes clear that the relationship between aid and firms' perceptions is mostly determined by the obstacle that the aid disbursement is set out to improve. *Finance, stability, business environment* and *labor* have negative slopes. In these four areas, aid seems to be more effective than in the other three. The projects being financed with this influx of aid are effective enough that once they are completed fewer firms find these four areas to be obstacles for their growth. These four areas are direct determinants of a firm's profitability and hence a firm is more likely to feel the impact of any improvement made in those areas. Aid disbursements targeting the *business environment* is the one that works more effectively in improving firms' perceptions as it has the largest negative slope.

On the other hand, *infrastructure* and *trade* projects seem to be the least effective; they both have steep positive slopes. This indicates that the more aid that is being distributed among *trade* and *infrastructure* projects the greater the number of firms that find the two areas to be obstacles for their growth in the following years. We can think of a number of reasons why this is possible. Most likely, *trade* and *infrastructure* projects—such as building ports or roads—take longer to be completed than projects included in the other five categories. It is possible that even though there are disbursements that have been received by developing countries, the projects might not be fully completed and available to firms by the time the firms were surveyed; therefore, firm perceptions could not have improved. From the previous section we know that aid does flow where firms say they need help; however, it is possible that aid for *trade* and *infrastructure* is not

enough to “solve” the problem and improve the perception of firms and it rather works as a spotlight that highlights the poor *trade* and *infrastructure* environment in the country.

*Rule of law* even though it has a slope close to zero it has a low intercept. This suggests that high or low amounts of aid lead to the same improvement in firm perceptions. Nevertheless, any aid disbursements used to finance *rule of law* projects leads to fewer firms identifying this area as an obstacle for their performance and growth.

The regression used to obtain the results displayed in Column 4 of Table 4 allows for a nonlinear relationship between aid and firm perceptions. Besides all the explanatory variables used in the regression from Column 3 we include the squared term for aid disbursements. This new term is positive and significant. Figure 5 displays graphically the results shown on Column 4 of Table 4. We can see that the fitted values for each of the obstacles now attain a slight U- shape form. This reveals that bigger grants/loans do not necessarily have better results. On the contrary, it seems like smaller disbursements are more effective. Smaller disbursements improve firm perceptions more for every obstacle where as bigger disbursements seem to make matters worse, as more firms indicated an area to be an obstacle after that area received bigger disbursements.

### **Robustness Check**

A major concern about the methodology used for this analysis is whether results are driven by the way that aid flows have been categorized into different obstacle groups.<sup>11</sup> In most cases the classification of aid is straightforward and not controversial. However, transportation projects can easily be classified either as *trade* or as *infrastructure*. Furthermore, transportation projects are a noteworthy fraction of aid, they represent 25% of all aid disbursed in our sample. In this section we regroup transportation as an element

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<sup>11</sup> See Table 1.

of *infrastructure* and analyze the differences with the previous results. With this adjustment, aid for *infrastructure* increases from 13% of aid disbursements to 38% whereas aid for *trade* drops from 32% to 7% of aid.

In column 2 of Table 5 we have the effect of firms' perceptions on the distribution of aid. We can see that both *infrastructure* and *trade* remain statistically significant. However, the overall effect of *infrastructure* (i.e.,  $\ln\_perception + infrastructure * \ln\_perception$ ) which was previously positive is now zero. This means that firms' perceptions on infrastructure are not a significant factor in the distribution of aid by donors. *Trade* maintains its positive slope meaning that aid in trade related projects is distributed across countries according to firm perceptions.

These are interesting results in the sense that transportation aid seems to be efficiently distributed according to *trade* perceptions and not by *infrastructure* perceptions. These results highlight the need for further research to analyze the composition of firm perceptions and aid distributions. It is possible that aid disbursements are more closely linked to foreign-owned firms' perceptions than to local ones. The difference between the results in the main regressions and the ones found in this section could be due to differences in the composition of firms that find *trade* and *infrastructure* as obstacles.

Column 2 of Table 6 shows the effect of aid on firms' perceptions. The overall results are practically unchanged with the ones found in the main regressions. *Infrastructure* and *trade* maintain their positive slope meaning that even though aid targets those areas effectively it does not have the expected effect of reducing the number of firms that find those areas as obstacles.

## Conclusions

In this paper we propose a new framework to analyze aid effectiveness. Using World Bank firm survey data and OECD aid flow data we analyze whether aid targets areas which firms in developing countries have identified as obstacles for their growth and whether aid actually helps improve firms' perceptions of those areas.

We find that aid, for the most part, does target the areas which firms have identified as obstacles; particularly aid funding *trade* related projects is effective in targeting the right countries. Unfortunately, we find that aid does not do much to improve firms' perceptions of those areas which aid was set out to improve, except for aid that targets the *business environment* of the country. We also find that for each target area, smaller aid disbursements seem to be more effective at improving firm perceptions than larger disbursements.

As mentioned previously, there is room for further research. It would be interesting to look at the composition of the type of firms that find each area as an obstacle and its links to aid disbursements. More foreign firms than local firms might find the trade area as an obstacle for their growth and thus the close positive relation between firm perceptions and aid disbursement in the trade area. It would also be interesting to take a closer look at the type of donors. Does aid from multilateral donors match better to firm perceptions than aid from bilateral donors? We leave these questions for future research.

Since firms are the drivers of economic growth it is imperative that we understand the needs of firms in developing countries. If donor countries and agencies want to have an impact on growth, they need to make firms' needs a priority in their aid agenda.

Bilateral lenders have increasingly advocated for engaging the private sector. In this paper we highlight the importance of interacting with the private sector in order to provide aid where it is needed and where it is more effective. We encourage any efforts by lenders to engage firms in developing countries and hopefully our research can open a discussion among policy makers in this direction.

Within the context of the global financial crisis, these findings are particularly noteworthy. They suggest that economic growth could be effectively stimulated through a targeted aid agenda that emphasizes investments where they have the biggest impact on the performance of firms. Even though we find that aid does target countries that need it, it seems like there is definitely room for improvement of dialogue and coordination among donor countries, particularly in the areas of *finance* and *labor*.

We feel that we have made an important stride in unraveling the “black box” that is the aid-growth relation as we now have a better understanding of the links from aid to final outcomes.

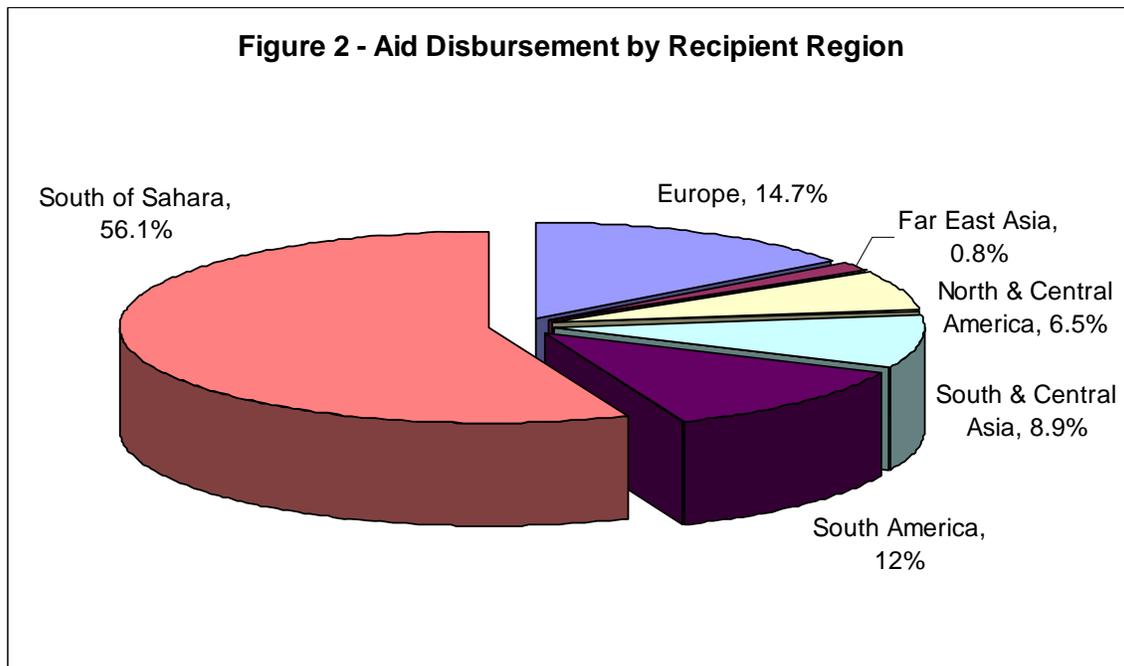
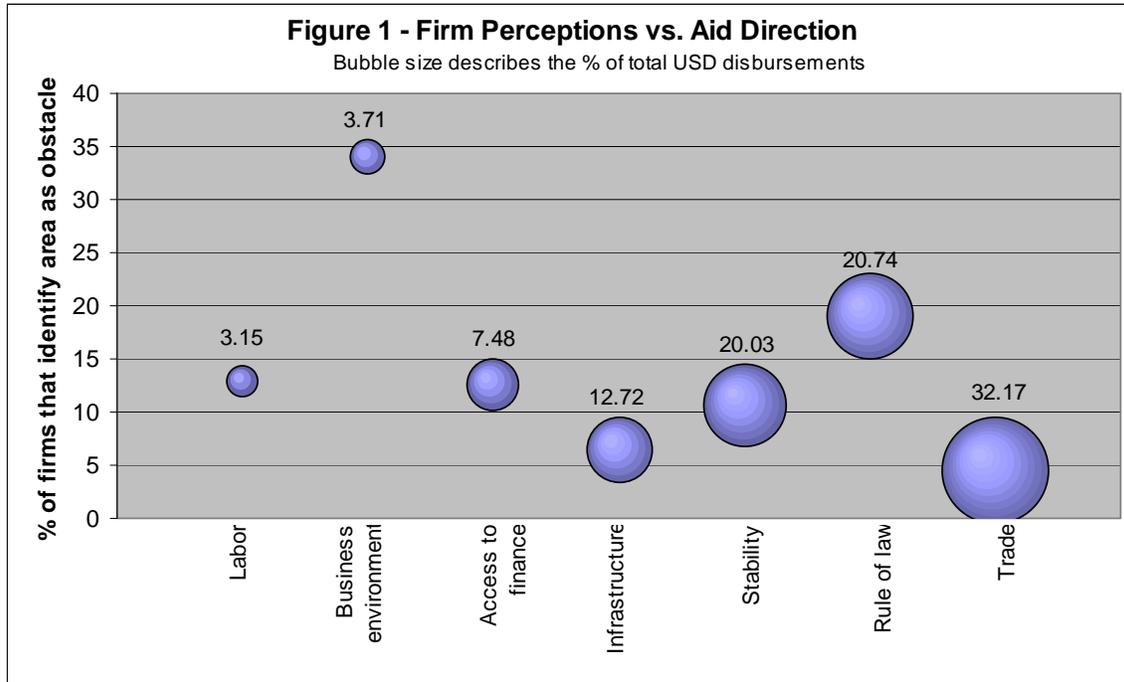
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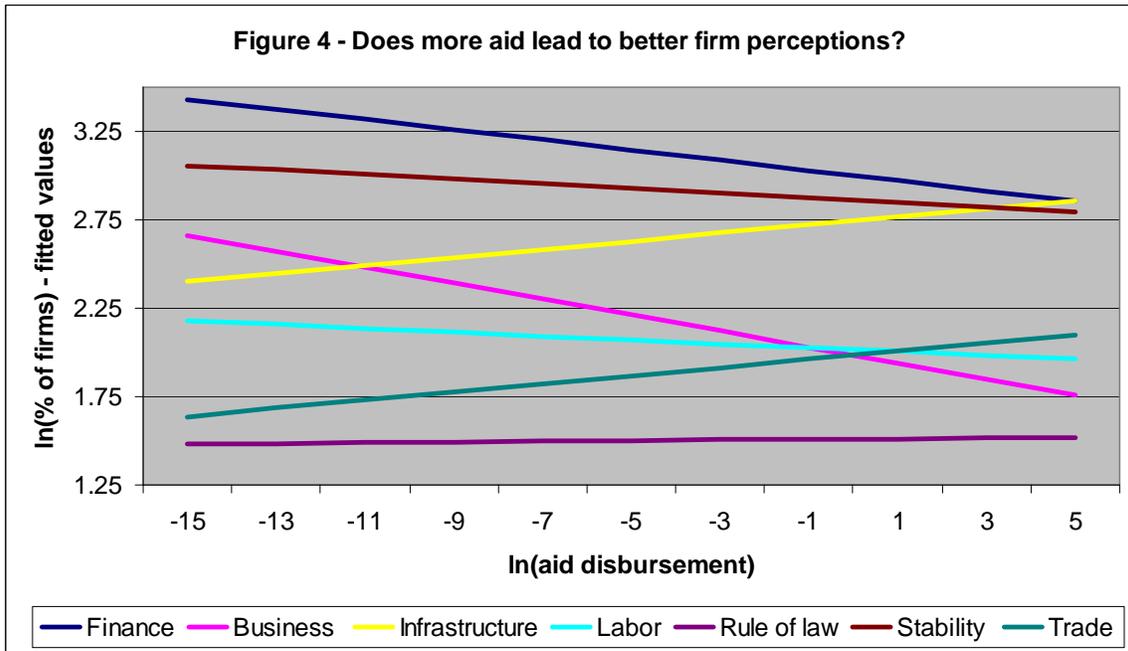
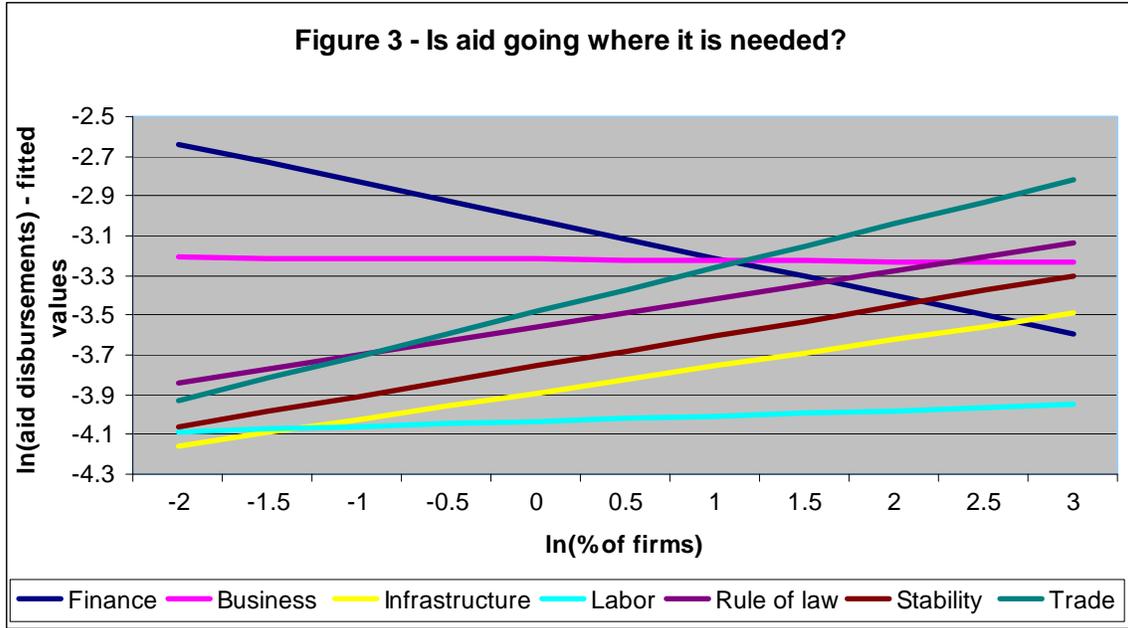
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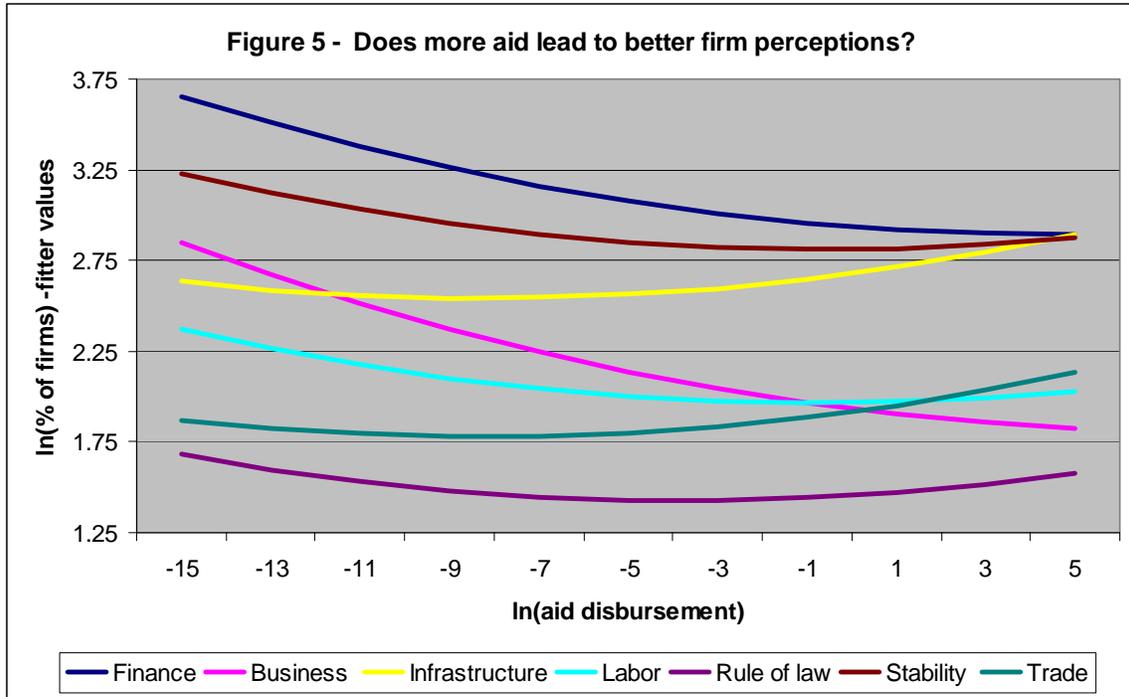
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**Table 1 – Enterprise Survey’s obstacles to growth**

Access to finance and land	Access to finance (availability and cost) Access to finance (availability) Access to finance (cost) Access to land
Business environment	Business licensing and permits Regulation of prices and margins Regulatory policy uncertainty Practices of the informal sector Tax rates Tax administration
Infrastructure	Telecommunications Electricity
Labor	Inadequately educated workforce Labor regulations
Rule of law	Corruption Crime, theft, and disorder Court system/resolution of commercial disputes Functioning of the courts
Stability	Macroeconomic instability Macroeconomic policy (inflation, exchange rate) Political and macroeconomic framework Political instability
Trade	Transportation Customs and trade regulations

**Table 2 - List of countries**

Albania	Congo	Lao PDR	Paraguay
Angola	Croatia	Lesotho	Peru
Argentina	DRC	Liberia	Rwanda
Armenia	Ecuador	Madagascar	Senegal
Azerbaijan	El Salvador	Malawi	Serbia
Belarus	Fyr (Macedonia)	Mauritania	Sierra
Bhutan	Gabon	Mauritius	South Africa
Bolivia	Gambia	Mexico	Swaziland
Bosnia	Georgia	Moldova	Tajikistan
Botswana	Ghana	Mongolia	Tanzania
Brazil	Guatemala	Montenegro	Turkey
Burkina Faso	Guinea	Mozambique	Uganda
Burundi	Guinea Bissau	Namibia	Ukraine
Cameroon	Honduras	Nepal	Uruguay
Cape Verde	Ivory Coast	Nicaragua	Uzbekistan
Chile	Kazakhstan	Niger	Venezuela
Colombia	Kyrgyz	Panama	

**Table 3 - Is aid going where it is needed?**

Dependent variable is USD aid disbursements

	all data			dropped outliers		
	(1)	(2)	(3)	(4)	(5)	(6)
In_perception	0.085*** 0.022	0.097*** 0.024	-0.177* 0.101	0.089*** 0.021	0.107*** 0.023	-0.191* 0.101
Business (d)		0.280* 0.147	-0.171 0.33		0.294** 0.139	-0.198 0.32
Infrastructure (d)		-0.175 0.108	-0.776*** 0.287		-0.164 0.104	-0.871*** 0.285
Labor (d)		-0.513*** 0.098	-1.023*** 0.248		-0.454*** 0.094	-1.012*** 0.246
Rule of law (d)		0.098 0.097	-0.526** 0.242		0.143 0.093	-0.537** 0.24
Stability (d)		-0.038 0.099	-0.722*** 0.262		-0.013 0.096	-0.736*** 0.259
Trade (d)		0.254** 0.11	-0.560** 0.283		0.345*** 0.104	-0.463* 0.276
Business (d) x perception			0.169 0.176			0.186 0.175
Infrastructure (d) x perception			0.276** 0.124			0.325*** 0.122
Labor (d) x perception			0.197* 0.115			0.218* 0.114
Rule of law (d) x perception			0.302*** 0.109			0.332*** 0.108
Stability (d) x perception			0.327*** 0.118			0.343*** 0.117
Trade (d) x perception			0.433*** 0.147			0.413*** 0.144
Constant	-3.181*** 0.482	-3.350*** 0.487	-2.740*** 0.539	-3.174*** 0.398	-3.676*** 0.414	-3.020*** 0.466
Recipient Country Effects	yes	yes	yes	yes	yes	yes
Donor Country Effects	yes	yes	yes	yes	yes	yes
Loan-Year Effects	yes	yes	yes	yes	yes	yes
Observations	8650	8650	8650	8603	8603	8603
R-squared	0.16	0.16	0.16	0.17	0.18	0.18
Robust standard errors in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%. Dependent variable is the ln (USD disbursements). (d) for dummy variables. OLS regressions of the following form: $Aid_{drtj} = \alpha_d + \lambda_r + \tau_t + \delta_j + \beta Perception_{rjs}$ if $t > s$ .						

**Table 4 - Does more aid lead to better firm perceptions?**

Dependent variable is the % of firms that identified an area as an obstacle for their growth

	(1)	(2)	(3)	(4)
In_aid disbursement	0.001	0.001	-0.029***	-0.018
(In_aid disbursement)^2	0.004	0.004	0.011	0.013
				0.002**
				0.001
Business (d)		-0.969***	-1.012***	-1.005***
		0.047	0.064	0.064
Infrastructure (d)		-0.350***	-0.254***	-0.258***
		0.04	0.05	0.05
Labor (d)		-1.004***	-0.982***	-0.971***
		0.038	0.056	0.056
Rule of law (d)		-1.544***	-1.487***	-1.481***
		0.034	0.043	0.043
Stability (d)		-0.153***	-0.135***	-0.124**
		0.037	0.05	0.05
Trade (d)		-1.109***	-1.015***	-1.020***
		0.031	0.038	0.038
Business (d) x In_aid disbursement			-0.016	-0.013
			0.02	0.02
Infrastructure (d) x In_aid disbursement			0.052***	0.051***
			0.017	0.017
Labor (d) x In_aid disbursement			0.018	0.021
			0.017	0.016
Rule of law (d) x In_aid disbursement			0.031**	0.033**
			0.014	0.014
Stability (d) x In_aid disbursement			0.016	0.02
			0.015	0.015
Trade (d) x In_aid disbursement			0.052***	0.051***
			0.013	0.013
Constant	-0.002	-0.012	2.998***	2.936***
	0.784	0.908	0.156	0.136
Recipient Country Effects	yes	yes	yes	yes
Donor Country Effects	yes	yes	yes	yes
Survey-Year Effects	yes	yes	yes	yes
Observations	16384	16384	16384	16384
R-squared	0.21	0.37	0.37	0.37
Robust standard errors in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%. Dependent variable is the ln (% of firms). (d) for dummy variables. OLS regressions of the following form: $Perception_{rjs} = \alpha_d + \lambda_r + \tau_s + \delta_j + \beta Aid_{rdjt}$ if $s > t$ .				

**Table 5 – Is aid going where it is needed?  
Robustness Check - Transportation as part of Infrastructure**  
Dependent variable is USD aid disbursements

	Previous Results	Robustness Check
	(1)	(2)
ln_perception	-0.191*	-0.432***
	0.101	0.094
Business (d)	-0.198	-0.794**
	0.32	0.311
Infrastructure (d)	-0.871***	-0.978***
	0.285	0.256
Labor (d)	-1.012***	-1.602***
	0.246	0.229
Rule of law (d)	-0.537**	-1.166***
	0.24	0.223
Stability (d)	-0.736***	-1.319***
	0.259	0.243
Trade (d)	-0.463*	-1.226***
	0.276	0.267
Business (d) x perception	0.186	0.410**
	0.175	0.173
Infrastructure (d) x perception	0.325***	0.432***
	0.122	0.113
Labor (d) x perception	0.218*	0.466***
	0.114	0.108
Rule of law (d) x perception	0.332***	0.571***
	0.108	0.101
Stability (d) x perception	0.343***	0.604***
	0.117	0.111
Trade (d) x perception	0.413***	0.759***
	0.144	0.154
Constant	-3.020***	-2.655***
	0.466	0.422
Recipient Country Effects	yes	yes
Donor Country Effects	yes	yes
Loan-Year Effects	yes	yes
Observations	8603	8603
R-squared	0.18	0.18

Robust standard errors in parentheses. \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%. Dependent variable is the ln (USD disbursements). (d) for dummy variables. OLS regressions of the following form:  

$$Aid_{drjt} = \alpha_d + \lambda_r + \tau_t + \delta_j + \beta Perception_{rjs} \quad \text{if } t > s.$$

**Table 6 – Does more aid lead to better firm perceptions?  
Robustness Check - Transportation as part of Infrastructure**

Dependent variable is the % of firms that identified an area as an obstacle for their growth

	Previous Results (1)	Robustness Check (2)
ln_aid disbursement	-0.029*** 0.011	-0.022** 0.011
Business (d)	-1.012*** 0.064	-1.015*** 0.063
Infrastructure (d)	-0.254*** 0.05	-0.600*** 0.041
Labor (d)	-0.982*** 0.056	-0.950*** 0.055
Rule of law (d)	-1.487*** 0.043	-1.488*** 0.044
Stability (d)	-0.135*** 0.05	-0.154*** 0.049
Trade (d)	-1.015*** 0.038	-1.052*** 0.046
Business (d) x ln_aid disbursement	-0.016 0.02	-0.017 0.019
Infrastructure (d) x ln_aid disbursement	0.052*** 0.017	0.032** 0.014
Labor (d) x ln_aid disbursement	0.018 0.017	0.02 0.016
Rule of law (d) x ln_aid disbursement	0.031** 0.014	0.028** 0.014
Stability (d) x ln_aid disbursement	0.016 0.015	0.015 0.015
Trade (d) x ln_aid disbursement	0.052*** 0.013	0.064*** 0.015
Constant	2.998*** 0.156	0.016 0.887
Recipient Country Effects	yes	yes
Donor Country Effects	yes	yes
Survey-Year Effects	yes	yes
Observations	16384	16384
R-squared	0.37	0.36
<p>Robust standard errors in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%. Dependent variable is the ln (% of firms). (d) for dummy variables. OLS regressions of the following form:  <math>Perception_{rjs} = \alpha_d + \lambda_r + \tau_s + \delta_j + \beta Aid_{rdjt}</math> if <math>s &gt; t</math>.</p>		