DEVELOPMENT BLOSSOMING: INDUSTRIAL POLICY AND FLOWER EXPORTS IN ETHIOPIA

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Abstract

As private sector development re-gains centre stage on the development agenda, there is an increasing need to understand the design of optimal industrial policies. This paper presents a preliminary investigation of the effects of the industrial policy that has spurred the development of the Ethiopian Flower Sector. In contrast to existing empirical analysis of entry – which condition on entry – the analysis rests on an originally assembled dataset that contains information on all the approved projects in the industry. We find that less than 20% of all projects approved eventually lead to an operational farm. While the entry process has been hindered by the global crisis, we also find large difference in behavior, decisions and outcomes between domestic projects and projects involving foreign investors. Domestic investors are less likely to fill the application forms and, conditional on filling the forms, are less likely to bring the project to the implementation phase and to become operational, even conditional on implementation. Furthermore, domestic investors respond to the industrial policy by increasing the capital-labor ratio of the proposed projects – but not of realized projects. These facts are not driven by cohort effects, activity type or region of investment. Differential access to credit and misallocation of investment projects (are likely to) explain part of these differences. While the industrial policy might have relaxed financing constraints for domestic investors, it is possible that it has failed to maximize its potential due to imperfect targeting. The results show how crucial it is for industrial policies to be designed with "incentive compatibility" as a core objective. Further theoretical analysis is required to shed light on the design of optimal industrial policies in the presence of credit constraints.

[1] We are grateful to IGC for providing funds for this project. We are especially indebted with researchers at GRIPS for sharing the survey conducted in the industry. The project would have not been possible without the help of several people in the industry and working in various Ethiopian Government Agencies. We also thank Stefan Dercon, John Page, John Sutton, Chris Woodruff and seminar participants to the IGC-Trade meeting in 2010 for comments. Christina Ammon has provided valuable research assistance. Corresponding Author: r.macchiavello@warwick.ac.uk.

1. Introduction

Recent work in development economics has highlighted two important facts about the development process. First, aggregate disparities in income per capita are largely driven by differences in aggregate productivity (see, e.g., Caselli (2004)) a large fraction of which can be attributed to misallocation of capital and labour across sectors and firms (see, e.g., Hsieh and Klenow (2008)). Second, poverty reduction is about creating jobs in larger firms (see, e.g., Banerjee and Duflo (2006, 2008)). The combination of these two facts naturally lead to the questions such as "Where do jobs in larger firms come from?", "how can government promote high productivity sectors and firms"? As a consequence, recent years have witnessed a surge in interest by policy makers, donors and researcher alike towards issues related to private sector development in general and the role that industrial policy can play in promoting development in particular (see, e.g., Lin and Monga (2010)).

These questions assume particular relevance in the context of promoting non-traditional agricultural activities in Africa. Non-traditional agriculture has the potential to create jobs and reduce poverty in rural areas, reduce the vast productivity gap in African agriculture, and foster diversification into export oriented sectors that would contribute to more stable macroeconomic conditions. In this project we look at the development of the flower industry in Ethiopia. The flower industry in Ethiopia has witnessed a remarkable growth in recent years having increased exports from USD 2 million in 2004 to 104 million in 2008 and represents now more than 20% of the value of all exports from Ethiopia. This expansion has been driven by a rapid process of entry by new farms, from a handful in the early 2000s to almost a hundred in the late 2000s. This process has been facilitated by quasi-ideal agro-climatic conditions for the cultivation of flowers (e.g., wide highland, high daily temperature and cool nights, abundant water, cheap labour, etc.) as well as by a very favourable policy regime that was initiated at the end of 2002. The policies included exemptions of taxes for inputs, a revised law for foreign investors, leased land at low prices and special loans provided through the Development Bank of Ethiopia.

Alongside this stunning success, Figure 0 presents an important caveat. Detailed records we have collected in the field reveal that more than 500 projects have been approved by the investment authority. Consequently, only about a fifth of all projects and land concessions awarded for the development of the industry, have ever turned into operational farms. Theoretical analyses of entry processes (see, e.g., Jovanovic (1982), Hopenhayn (1992), Melitz (2003)) highlight the importance of selection forces in determining industry equilibrium. The large empirical literature on entry, however, necessarily focuses on entry and exit of firms conditional on entry (see, e.g., Ericson and Pakes (1995) and Klepper and Simons (2000)). To the best of our knowledge, this project will be the first empirical study in which the overall set of potential entrants is observed and, therefore, the entry decision becomes an outcome variable as opposed to the status on which the analysis has to be conditioned upon. This opens the possibility to a new approach to study the effects, and optimal design of, industrial policies. The gap between applicants and entrants gives – in some sense – a measure of the selection effects that cannot be analysed in standard datasets. As shown by Figure 0, this gap in knowledge is – at least for the case of Ethiopian flowers – potentially very large.

This fact has important implications for the study (and design) of industrial policies. The overall effect of an industrial policy that promotes a sector depends on the balance between a variety of opposing forces: i) compensating for existing externalities or market constraints that lead to socially sub-optimal entry – with the resulting potential benefit from the fact that higher entry

increases competitive pressures and lead to exit of the least productive firms, iii) a potential worsening of the selection of firms entering the industry stemming from misallocation of resources induced by the industrial policy.

In this research project we propose to analyse a comprehensive dataset on the evolution of the flower industry in Ethiopia to shed light on the relative importance of these forces and derive implications for the optimal design of industrial policies. The dataset includes information on all applications that investors have submitted in order to invest in the Ethiopia floriculture sector. These applications were necessary to obtain land from the government. We combine these data with two extremely detailed surveys of all existing firms in the industry active in 2008 and in 2010 that were conducted by researchers at GRIPS. Finally, the dataset include detailed transaction-levels imports and exports record for all farms in the industry which will be analysed in the future.

This document focuses on a descriptive analysis of the information contained in the license form and provides some preliminary findings that will guide future research on the dataset.[2] Besides the fact that less than 20% of all applications that were given land ever turn into operational farms, the main finding is that there are large difference in behavior, decisions and outcomes between domestic projects and projects involving foreign investors. In particular, domestic investors are less likely to fill the application forms and, conditional on filling the forms, are less likely to bring the project to the implementation phase and to become operational. Furthermore, domestic investors respond to the industrial policy by increasing the capital-labor ratio of the proposed projects on the application forms – although no differential trend can be observed in the capital-labor ratio in projects that become operational. These facts are not driven by cohort effects, activity type or region of investment. While there is some evidence that access to funds might explain some of this differential behavior, the differential capacity to turn a project from the implementation to the operational phase is not driven by access to finance.

The findings have some preliminary implications for the design of industrial policies. Subject to the caveat that the lessons need to be tested under the lens of further analysis of the data, it seems that the industrial policy might have relaxed financing constraints for domestic investors. However, it is possible that the policy has failed to maximize its potential due to imperfect screening and/or targeting. We argue that it is of crucial importance that industrial policies be designed with "incentive compatibility" as a core objective. The two implications are highly interdependent: the design of "incentive compatible" industrial policies is significantly more complicated in the presence of credit constraints (see, e.g., Banerjee (1997) for a related idea in a different context). Further analysis will allow shedding some light on the optimal industrial policy. After all, as many observers have documented, review of the existing literature on the effects of industrial policy suggests that there is a lot of heterogeneity on the effectiveness of industrial policy and, therefore, issues of design and implementation are likely to drive the observed differences (see, e.g., Harrison and Rodriguez-Clare (2009)).

As private sector development regain front-stage on the development agenda of emerging countries and donors alike, understanding how to integrate incentive considerations in the design of industrial policies aimed at developing particular sectors will become an increasingly important task

[2] As described in the Appendix, it has been extremely difficult to obtain access to the application forms and to the customs record. Besides the usual difficulties in gaining access to administrative records in developing countries, it is important to stress that we needed all the relevant information to include the names of particular companies and investors, therefore creating substantial confidentiality concerns.

for researchers and policy makers alike. Despite some early efforts in the context of privatization and regulation of natural monopolies (see, Laffont (1996, 2003)) further work integrating theory and empirical evidence (potentially with data similar to those collected for this project) should remain a priority in the research agenda.

Section 2 presents a descriptive analysis of some of the data collected. Section 3 offers some concluding remarks and ideas for optimal policy design to be explored in future research. An appendix describes all the data sources used in the analysis and provide some background information on the policy environment.

2. Descriptive Analysis

Information in Application Forms

We begin by describing the main variables in the dataset. It has been very difficult to get access to the application forms and it has been impossible to set up an arrangement to verify the quality of the information recorded in the application forms. However, from the central office of the investment authority dealing with the applications, it has been possible to recover some information for all applications. Beside the names and the contact numbers of the investors, a few other variables are available for all the application form submitted.

The dataset contains observations for 518 land applications forms. This represents the universe of all land application forms filled to start projects in floriculture (and other vegetables). While all applications where accepted, about 10% of the applications has eventually been withdrawn, mostly due to the fact that investors were not putting the land to the use that had been assigned to.

In total, 54% of the applications were submitted by foreign investors, while another 20% were submitted by joint ventures involving a domestic investor and a foreign investor. Among the projects with foreign involvement, the nationalities that are most represented are Israeli, Dutch, Indian, American and Sudanese. Quite remarkably, the number of Kenyan investors is relatively small (although many farms in Kenya are owned by foreign investors, particularly Dutch and Israeli (see, e.g., Ksoll et al. (2011))). The remaining 26% of applications was filled by domestic investors. Figure 1 shows that over time, there is a strong increase in the frequency of applications involving foreigners – either in partnership with domestic investors or not. However, Table 1B shows that these time effects are entirely captured by a dummy that marks the year in which the industrial policy was set up, rather than a more persistent trend. An important part of the industrial policy was a change in the law regulating foreign investment in the country.

Applications can also be categorized according to whether they are meant to start a new investment project or whether they are for the expansion of an existing process. Unfortunately, only 304 out of the 515 applications report this information. On the sample of applications that report whether they are for expansion or for a new project, the proportion of expansions tends to increase over time. More notably, expansions are disproportionately more likely to be submitted by joint ventures, i.e., by partnerships involving domestic and foreign investors.

The application forms contain some information on the type of activity of the farm. Almost seventy percent of all application forms are for projects that ate exclusively related to floriculture. The vast majority of these projects are for rose cultivation, although there is a small minority of

projects for summer flowers and for other types of flowers. The remaining 30% of observation is mostly for mixed projects, i.e., projects that combine flowers cultivation with other fruits and vegetable produce. Few projects are engaged in altogether different activities (e.g., import of agricultural inputs).

Figure 1 also illustrates the temporal dynamic of applications filled by investors. As it can be seen, there has been a marked increase in the applications following the establishment of the industrial policy in 2003-04. The financial crisis in 2009-10 has significantly slowed down the number of application received.

It has been possible to recover information on the status of the projects that have been awarded land. The most striking fact is that only 23% of all applications submitted have ever become operational. This figure is confirmed by the survey data. While part of this small number can be explained by the financial crisis and – potentially – by delays, it has to be noted that about two thirds of the applications are still in the pre-implementation phase. As Figure 2 shows, the proportion of applications that have entered the implementation phase declines over time. As mentioned above, this is surely in part due to a combination of right censoring and the financial crisis. Unfortunately, it has not been possible to reconstruct the time at which applications have been categorized in the implementation phase.[3]

The application forms contain a number of important variables on the expected amount of capital to be invested in the venture, the expected amount of workers to be employed, as well as on the expected amount of stems to be produced. The capital to be invested and the number of workers to be employed have been filled in essentially all the applications. The average number of workers expected to be hired is above 500, once temporary and permanent workers have been combined. This is very much in line with the size of farms in Kenya, where the average firm in a representative sample of 76 firms surveyed in 2008 employed 570 workers (see Ksoll et al. (2011)). While some further investigations on some extremely large numbers need to be cleared, it seems that the information on expected employment is of good quality.

Unfortunately, the expected amount of production, instead, is only available for about half the applications forms. Moreover, Table 1 shows that both the investment variables and the expected production display an enormous degree of variation.

The application forms also contained information on the amount of land requested and on the source of the funds to finance the initial investment in the project, broken down by equity and loans. These variables are available for a relatively large fraction of applications. Regarding the source of funds, the data seem to reveal that the proportion of the investment that is financed through loans has declined over time. Note, however, that the percentage of missing values in the application forms increases when the number of application increases and, therefore, the observation could be entirely driven by sample selection. The figure, however, has continued to decline even in the very last few years in the sample – as expected given the financial crisis.

In principle, the applications should have included a record for the amount of land obtained. This is almost never recorded, however. The amount of land required in the application can be

[3] However, the customs data that have not yet been analysed might allow to check the time at which farms have imported material that is necessary to set up the farms, thereby allowing us to compute some proxy for when a project entered the implementation phase. At this stage it is not clear, however, the quality of the match between the customs records and the application forms.

confronted with the amount of land obtained which is available from the survey data. Similarly, the percentage of the initial investment financed with loans can be confronted with the same variable computed from the survey data for the sample of firms that ended up being operational.

There are, unfortunately, a number of variables that – although they are supposed to be in the application forms, they are actually almost never recorded. First, the applications forms are not very precise is the location of the applications. While information over the competent regional office is always recorded, the Zone, Woreda and Kebelle of the land to be acquired through the application are available only for a very restricted sample of applications. Currently, the research team is contacting government officials to try to rectify this problem.

Second, the application forms are supposed to contain information on when the project is supposed to become operational and, if there are delays, the reasons for the delays. A bound on the expected date of operation could be obtained by looking at the time it took farms that became operational to set up their operations. Because of the obvious sample selection of the farms that end up producing, however, this measure is unlikely to measure the beliefs of investors at the time the application was submitted. Reasons for delays were, unfortunately, a crucial part of the research strategy designed in the research proposal. The information is filled only in just more than 10% of the applications. Among those, however, it appears that delays in obtaining land are by far the main reported reason for the delays. This view is somewhat confirmed by the information collected in the survey for the set of farms that ended up producing. A striking fact, however, is that there is no single application filled by domestic investors that reports the reasons for delay.

So, in sum, the following variables are available in the dataset: origin of investor, region of investment, year of application form, expected number of workers and investment size. Other variables, instead, are partially missing. These are: expected production, land required, loans, type of application. We, therefore, investigate which project characteristics correlate with the missing values in the application forms.

Analysis of Missing Values

Table 2 shows that the missing values in the application forms are not random. The presence of missing values across the four main variables for which there is incomplete information (the expected production, the amount of required land, the source of funds and the investment type) are highly correlated with each other. Table 3, therefore, explores which variables correlate with the presence of missing values. We focus our attention on the sample of approved projects, since this is the sample on which an analysis of entry can be performed. The first column considers missing values in the expected amount of stems to be produced. Even controlling for the status of the project, we find that the domestic investor dummy has the strongest correlation with the presence of missing value. The remaining three columns consider the three other variables of interest: the amount of required land, the percentage of the initial investment to be financed through loans and the investment type. In all the regressions we also control for whether expected production is also missing. Because of this, the partial correlations described by the regressions are on top of the correlations captured by Table 2. With the exception of missing information on the amount of land

required, the dummy for domestic investor is the variable that most strongly correlates with incomplete information on the form.[4]

Comparison of Projects by Status

Table 4 compares the projects along a number of dimensions, according to their status. Table 4a compares firms that are operational or at the implementation stage with projects that have not even reached the implementation phase. Firms that haven't reached yet the implementation phase report plan *larger* investments, and to get a higher share of the investment from loans. Table 4b, instead, compares firms that are being operational with projects that are at, or before, the implementation phase. Projects that have become operational are larger, older and – very clearly – are less likely to solely domestic.

Table 5 asks which variables correlate with the current status of the application. The first two columns predict the probability that a project has reached at least the implementation phase. The first column allows for a time trend and controls for a pre-policy implementation dummy. The second column, instead, control for cohort of application fixed effects. First, later cohorts are less likely to have reached the operational status. Second, larger projects – measured in terms of the size of investment stated on the application form – are more likely to have reached the implementation phase. Finally, in both specifications, solely domestic projects are significantly less likely to have reached the implementation stage. We find some evidence, instead, that joint ventures are more likely to have reached the implementation phase relative to solely foreign investor projects.

The third and fourth columns repeat the exercise, however focusing on whether the project is operational or not as outcome variable. While the size of the project doesn't correlate any longer with the likelihood of the project being operational, we still find that more recent projects and domestic projects are less likely to have become operational.

Finally, Columns 5 and 6 repeat the exercise in Columns 3 and 4, on the sample of projects that have reached the implementation stage. The results now show that, conditional on having reached the implementation phase, involvement of domestic investors – either solely or, to a lower extent as partners in a joint venture with foreign investors – is less likely to be associated with the project being operational.

A potential explanation for the fact that domestic investors are less likely to get their project to the implementation phase and, even conditional on reaching the implementation phase are less likely to have the project operational, is that they have worse financial access. For this reason, Table 6 repeats the specifications in the even columns in Table 5 (which include cohort fixed effects) including the share of the initial investment financed by loans as control (as well as a dummy for when the information is missing). The results indicate that the domestic investor dummy is not any longer statistically significant (although it conserves a negative sign in all the specifications) in explaining the overall probability of reaching the implementation phase or of being operational, suggesting that differential access to finance might be a potential explanation for the worse performance of projects involving domestic investors. Conditional on financial access, there is some

[4] The table also controls for the activity of the project, whether it is only flowers, mixed or in other sectors. Conditional on information on expected stems missing, mixed projects and projects in other sectors are less likely to report missing values.

evidence that joint venture projects involving domestic and foreign partners are more likely to reach the implementation phase. The share of initial investment to be financed by loans, moreover, is not statistically significant. Conditional on the project having reached the implementation phase, however, we find strong evidence that projects involving domestic investors, either alone or in partnership with foreign investors, are less likely to become operational. Moreover, we find that projects with initial investments financed by a higher share of loans are less likely to become operational. The evidence, therefore, suggests that – at least in terms of turning a project operational – financial access is unlikely to explain the differential performance between foreign and domestic investors.[5]

Expected versus Realized Input and Output

We now turn to a preliminary analysis of how the information in the application forms compare with the realized outcomes of operational projects. We focus on four key variables: expected and realized annual production, requested and obtained land, expected and realized investment and expected and realized employment. We compare the realized values to the first year of operation, as well as with the realization of the variables in 2009, controlling for the cohort of the farm.

Table 7 shows that, in general, there is a positive correlation between the expected outcomes reported in the application forms and the corresponding values for the initial year in which the farm was operating, which are obtained for all operative farms from the survey.

Figure 4 plots the corresponding figures for expected production and for expected employment. A stark difference between the two figures, however, is that in the case of expected production, the expected production figures are systematically smaller than the realized ones. In contrast, the employment figures are comparable with the realized ones. Unreported results show that the correlation between expected and realized figures does not depend on whether the application was filled in by domestic or foreign investors.[6]

Table 8 compares estimates of the production functions implicit in the application forms and the ones that were eventually realized by operating firms. It regress log of output on log of capital, labor and land. The first column estimates the model over the entire sample of application forms for which the variables are available. The second column estimates the model on the application forms, but only on the sample of projects that ended up becoming operational. Finally, the third column estimates the model on the realized figures in the first year of operation of the projects that ended up producing. Reassuringly, unreported results from a pooled regression show that there is no statistical difference in the estimated production function that can be estimated on the two different types of data.

[5] The specifications include a dummy for the missing value for the source of finance. Results are identical in the restricted sample for which there are no missing values. The results are also robust to the inclusion of dummies for the other missing variables in the applications, to control for the overall quality of the application form.

[6] These results should be taken as preliminary. The figures regarding land on the application forms need to be cleaned while the figures for capital invested from the survey need to be double checked and constructed. This might explain the somewhat worse results on these dimensions.

Finally, Table 9 examines the capital labor ratios in the application forms and in firms that have subsequently become operational. Column 1 considers the sample of all the application forms. It finds that, following the implementation of the policy, domestic investors increased the capital labor ratio stated on the application forms. This is, in principle, consistent with the industrial policy having relaxed the capital constraint of domestic investors.

Column 2 finds the same result when looking only at the applications of those projects that eventually became operational. Column 3 and 4, instead, turn to the capital-labor ratio of the projects that became operational. In contrast to what stated on the application forms, there is no evidence that domestic investors have changed the capital-labor ratio following the industrial policy. This is, a priori, not consistent with the policy having relaxed the credit constraint of domestic investors. In contrast, this is potentially consistent with domestic investors (strategically) changing the stated capital-labor ration on the application forms to manipulate the incentives offered by the industrial policy. Consistently with this interpretation, unreported results show that the patter is robust to controlling for the percentage of capital to be financed from with loans.

3. Concluding Remarks

The descriptive analysis presented above suggests some preliminary lessons as well as some avenues for further research. Despite the difficulty in obtaining the license forms and the unfortunate fact that many of the license forms have not been properly filled, the description of the information in the license forms has shown that there are large difference in behavior, decisions and outcomes between domestic projects and projects involving foreign investors. In particular, it has shown that domestic investors are less likely to fill the forms and, conditional on filling the forms, are less likely to bring the project to the implementation phase and then to become operational. Furthermore, domestic investors respond to the industrial policy by increasing the capital ratio of the proposed projects on the application forms – although not in the realized operations. These facts are not driven by cohort effects, activity type or region of investment. While there is some evidence that access to funds might explain some of this differential behavior, the differential capacity to turn a project from the implementation to the operational phase is not driven by access to finance.

These preliminary findings have only used a part of the data collected for the project. In particular, the analysis hasn't yet included the customs data on export and import, the surveys, and some further background information on the domestic investors. These data will be integrated in the present analysis to better understand the process of implementation and set up of the farms (particularly by looking at imports of material and capital) as well as how the entry process affect the subsequent performance of the farms (conditional on ever becoming operational).

The findings have some preliminary implications for the design of industrial policies. Subject to the caveat that the lessons need to be tested under the lens of further analysis of the data, it seems that:

1. The industrial policy might have relaxed financing constraints for domestic investors,

2. However, it is possible that the policy has failed to maximize its potential due to imperfect screening and/or targeting. Unfortunately, at this stage it is not yet possible to conclude whether the impact of the policy hasn't been maximized because projects lacking the skills – or the

will – to become operational have been allocated inputs, e.g., loans and land. Trying to distinguish between these forces is a priority area for future research.

3. Obviously, it is extremely difficult to assess ex-ante the merit of particular projects. However: A) the information theoretically collected in the application forms would allow a better modeling of the prospect of the proposed project. In turn, this might guide individual negotiations with investors; B) precisely because it is hard to screen projects ex-ante, it is important that the industrial policy be designed with "incentive compatibility" as a core objective. This task is plausibly complicated by the fact that potential investors might lack access to capital that would be necessary to screen out bad applicants. It is, therefore, plausible that the optimal industrial policy entails some sort of forced savings during the implementation phase of the project (to be handed back to investor in the form of future subsidies) coupled with a clear temporal limit within which the project has to become operational (see, e.g., Drugov and Macchiavello (2011)). Existing successful investors might be given the right to apply for land / slots given to non-performing projects.

As private sector development regain front-stage on the development agenda of emerging countries and donors alike, understanding how to integrate incentive considerations in the design of industrial policies aimed at developing particular sectors will become an increasingly important task for researchers and policy makers alike.

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APPENDIX: Industry Background, Industrial Policy and Data

- **TO BE SENT LATER**

Table 1A: Descriptive Statistics

Variable	N obs.	Mean	St. Dev.	Min	Max
Accepted Applications (yes = 1, no = 0)	518	0.89	--	0	1
Domestic (= 1)	518	0.26	--	0	1
Foreign (= 1)	518	0.54	--	0	1
Joint Venture (= 1)	518	0.20	--	0	1
Type of Applications (new = 1, exp. = 0)	304	0.93	--	0	1
Type of Activity (only flowers = 1)	518	0.69	--	0	1
Region (Oromia = 1)	518	0.73	--	0	1
Year of Application	460	2006	2.84	1992	2011
Ever exporting (yes = 1)	460	0.23	--	0	1
Status (= 1 Operational)	460	0.23	--	0	1
Status (= 1 Implementation)	460	0.11	--	0	1
Status (= 1 Pre-Implementation)	460	0.66	--	0	1
Investment	515	1574.23	23827	.095	531,150
Permanent Workers (expected)	509	200.77	620.31	0	10000
Temporary Workers (expected)	507	380.58	1565.80	0	27770
Land Required (application)	419				
Loans / Investment	296	0.49	0.32	0	1
Expected N. of Stems Produced	243	40349.73	201675.3	.2	2307000

Table 1B: Foreign vs. Domestic Investors over Time

	Foreign = 1	Domestic = 1
Year of Application	0.022	-0.03
	(0.042)	(0.39)
Pre-Policy Dummy	-0.82**	0.95**
	(0.40)	(0.39)
N. of Observations	504	504

Table 2: Correlation of Missing Values

	Expected Production	Required Land	% Investment Loan Financed	Investment Type
Expected Production	**1**			
Required Land	**.274*** **	**1**		
% Investment Loan Financed	**.849*** **	**.870*** **	**1**	
Investment Type	**.786*** **	**.166*** **	**.872*** **	**1**

Table 3: Correlates of Missing Values

	Expected Production Missing	Required Land Missing	% Invest. Under Loan Missing	Investment Type Missing
Expected Production Missing		.161***	.704***	.581***
		(.048)	(.047)	(.050)
Oromia Region	-.152**	-.103***	.030	.034
	(.043)	(.048)	(.032)	(.029)
Pre-Industrial Policy	-.016	-.061	-.012	.124*
	(.059)	(.058)	(.039)	(.063)
Domestic Investor	.660***	.049	.247***	.346***
	(.036)	(.060)	(.046)	(.052)
Joint Venture	-.025	-.033	-.032	.005
	(.052)	(.036)	(.036)	(.037)
Size	.009	-.002	.008	-.034***
	(.013)	(.013)	(.007)	(.009)
Pre-Implementation	-.013	.092***	.022	-.025
	(.039)	(.036)	(.026)	(.028)
Number of Observations	460	460	460	460

Table 4a: Comparison of Projects by Status, Implemented vs. Non-Implemented

	Mean in Non-Implemented	Mean in Implemented	p-value and significance
Size (lnI)	3.334	2.694	0.000***
	(.176)	(.080)	
Region (Oromia = 1)	.771	.693	0.0651*
	(.033)	(.0245)	
Application Cohort	2004	2006	0.0000
	(.252)	(.134)	
% Capital from Loan	.542	.456	0.0298**
	(.029)	(.024)	
Domestic Investor	.217	.276	0.1504
	(.032)	(.024)	
Joint Venture/Foreign	.488	.549	0.1919
	(.039)	(.026)	

Table 4b: Comparison of Projects by Status, Operational vs. Non-Operational

	Mean in Operational	Mean in Non-Operational	p-value and significance
Size/lnI	3.264	2.805	0.0193**
	(.221)	(.0814)	
Region (Oromia = 1)	.822	.691	0.0069***
	(.037)	(.023)	
Application Cohort	2004	2006	0.000***
	(.322)	(.128)	
% Capital from Loan	.531	.469	0.1503
	(.035)	(.022)	
Domestic Investor	.168	.280	0.0181**
	(.036)	(.022)	
Joint Venture/Foreign	.533	.529	0.9453
	(.049)	(.025)	

Table 5: Correlates of Status

	Implemented = 1		Operational = 1		Operational = 1	
Oromia Region	**-.022**	**.083***	**.090****	**.001**	**.128**	**.039**
	(.046)	**(.049)**	**(.041)**	**(.035)**	**(.095)**	**(.085)**
Pre-Industrial Policy	**.099**	**-**	**-**	**.195****	**-**	**.097**
	(.092)			**(.092)**		**(.109)**
Domestic Investor	**-.159*****	**-.051**	**-.096****	**-.212*****	**-.221****	**-.481*****
	(.046)	**(.051)**	**(.042)**	**(.037)**	**(.010)**	**(.096)**
Joint Venture	**.101***	**.141*****	**.072**	**.022**	**-.073**	**-.144***
	(.055)	**(.059)**	**(.055)**	**(.049)**	**(.085)**	**(.082)**
Size lnI	**.025***	**.025***	**-**	**.010**	**-**	**-.027**
	(.013)	**(.013)**		**(.011)**		**(.024)**
Year of application	**-.058*****	**-**	**-**	**-.049*****	**-**	**-.055*****
	(.010)			**(.009)**		**(.016)**
Number of Observations	**460**	**460**	**449**	**449**	**158**	**158**

Table 6: Correlates of Status, Finance Access and Incomplete Forms

	Implementation = 1	Operational = 1	Operational = 1
Domestic Investor	**-.107**	**-.907**	**-1.779****
	(.450)	**(0.705)**	**(0.907)**
Joint Venture	**-.474**	**-.002**	**-.771**
	(.289)	**(0.317)**	**(0.501)**
Size	**.139**	**.019**	**-.166**
	(0.095)	**(.111)**	**(.243)**
% Investment from Loan	**.031**	**-.599**	**-.207****
	(.571)	**(.660)**	**(.108)**
Number of Observations	**460**	**460**	**127**

Table 7: Comparing Application Forms and Realized Outcomes

	Correlation with variable in initial year	Number of Observations
Production	**.28****	**61**
Capital	**.25*****	**104**
Labor	**.22****	**81**
Land	**.18**	**69**

Table 8: Comparing Production Functions

	Application Forms	Application Forms (conditional on operational status)	Initial Year of Operation
Capital	**0.32*** **	**0.19**	**-0.00**
	(0.12)	**(0.18)**	**(0.07)**
Labor	**0.54*** **	**0.58*** **	**0.53***
	(0.18)	**(0.18)**	**(0.30)**
Land	**0.11**	**0.29**	**0.21**
	(0.16)	**(0.33)**	**(0.31)**
Number of Observations	**223**	**74**	**74**

Table 9: Changes in Application Forms

	K/L Ratio in Application	K/L Ratio in Application	K/L Ratio in 1st Year	K/L Ratio in 1st Year
Post Policy	**-128.254**	**-115.812**	**1457.94**	**565.590**
Implementation = 1	**(84.689)**	**(90.381)**	**(10813.5)**	**(11051.82)**
Domestic Investor = 1	**-153.120**	**-257.926**	**2018.523**	**2289.977**
	(103.794)	**(156.623)**	**(10820.49)**	**(11832.77)**
Post Policy X Domestic	**199.899***	**339.238***	**-11391.86**	**-10762.06**
Investor = 1	**(104.643)**	**(184.414)**	**(17637.45)**	**(19288.18)**
Application Cohort	**-2.936**	**-14.001**	**3244.408**	**3493.815**
	(5.807)	**(18.798)**	**(2358.553)**	**(2610.95)**
K/L ratio in Application form	**-**	**-**	**-**	**3.828**
				(12.669)
Number of Observations	**441**	**98**	**87**	**85**

Figure 0: Number of Applications and Operational Projects, by Cohort

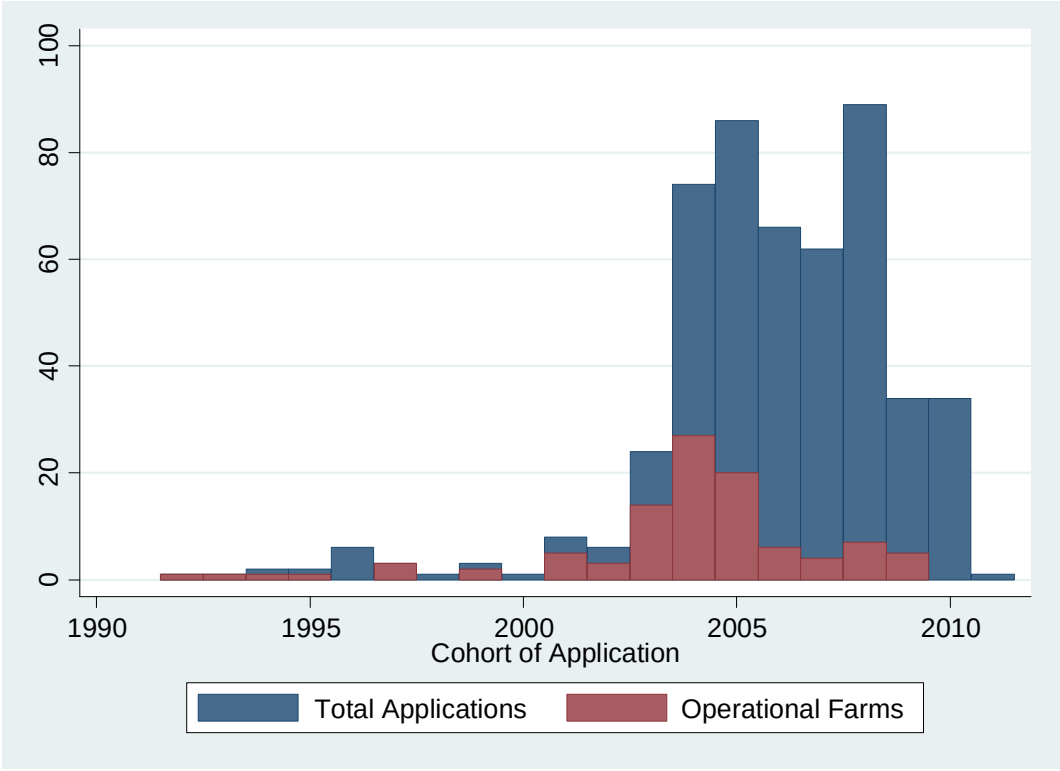

Figure 1: Evolution of Applications by Country of Origin

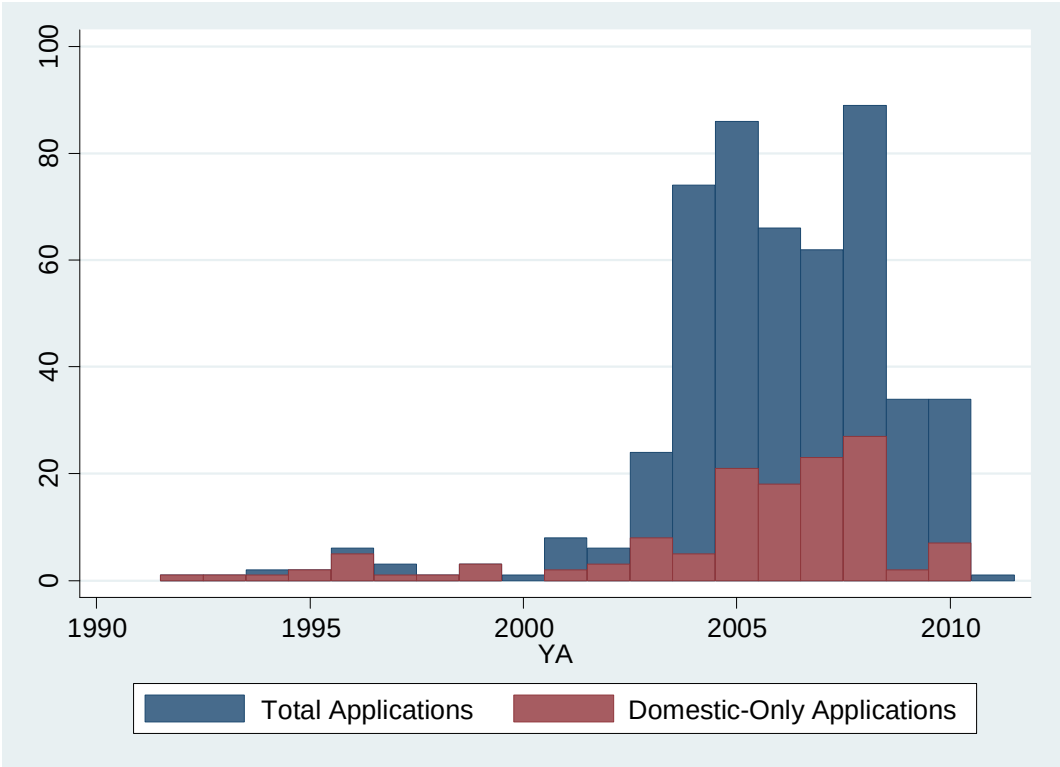

Figure 2: Evolution of Application Status by Cohort

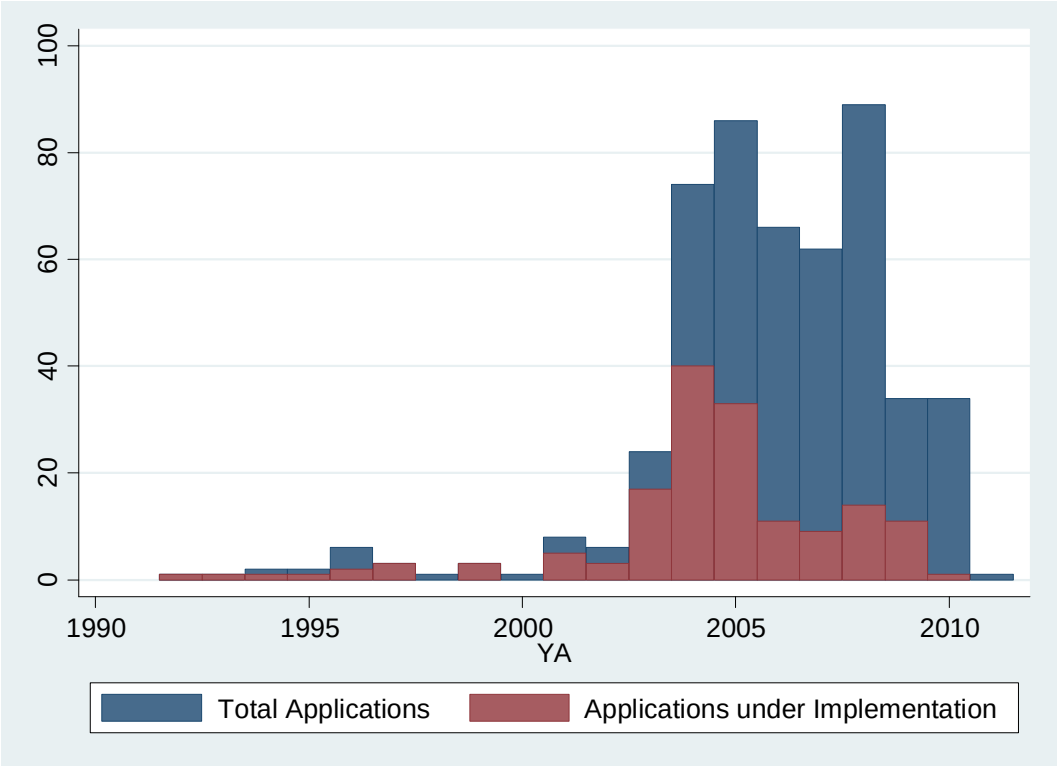

Figure 3: Percentage of Investment Financed with Loans

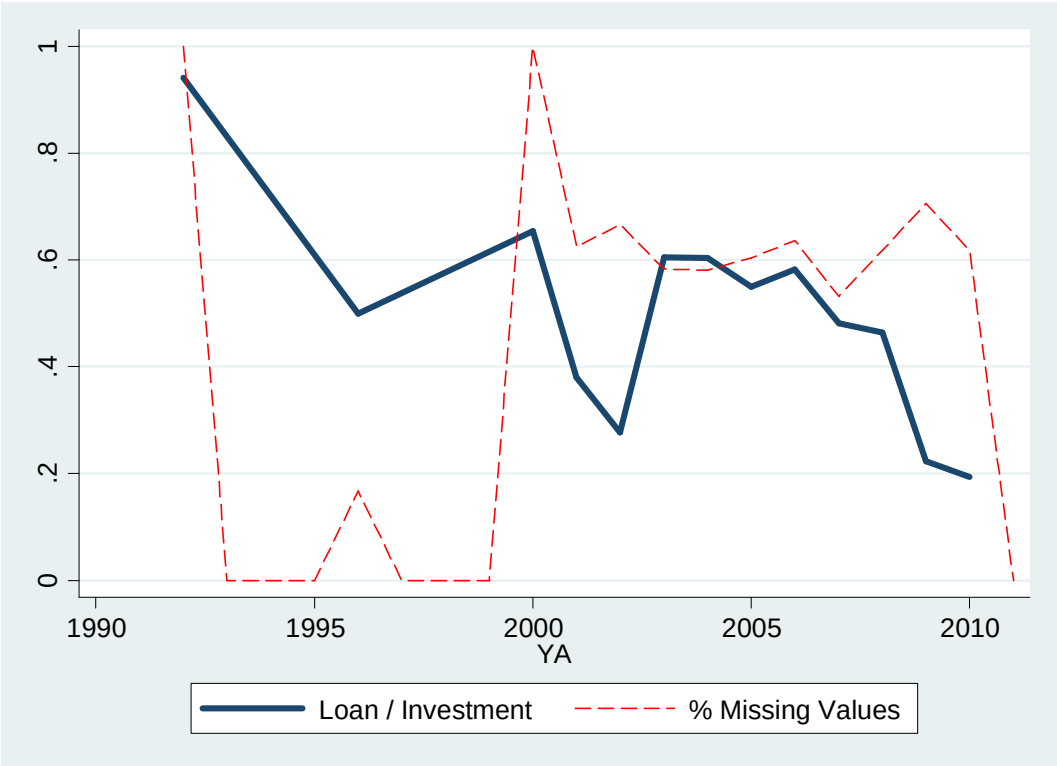

Figure 4: Expected and Initial Year Realized Outcomes