Optimal Timing of Regulatory Policy and Economic Performance

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Abstract

This paper looks at one of the ten Washington Consensus policies — the overall deregulation policy consisting of credit-, labor-market, and business deregulation — and studies the effects of the timing of deregulation on economic growth in more than 70 economies over a period of 30 years. Using difference-in-difference estimation, this study finds that deregulation contributed to economic growth of the early reformers relatively more than to the late reformers. Further, the paper argues that late reformers' growth did not increase more than the growth of the non-reformers.

1 Introduction – statement of the problem

Starting in the late 1970s, the developed countries around the world embarked on a way towards deregulation of the airline, transport and communication industries, and towards simplification of administrative procedures to start and run firms. This process was followed by the new

democracies and many developing countries in the 1990s and continued in the 2000s. The reasoning behind these large-scale administrative and economic reforms is that improving the way governments interact with local and foreign firms in the country and introducing competition to protected industries allegedly fosters firm performance and economic growth. This paper looks at the effects from deregulation policies in capital and labor markets, and in business regulation, and answers the following main question: What is the overall effect of the timing of deregulation on economic growth? To illustrate the importance of the timing of deregulation reform, we review the arguments of two recent papers — by Acemoglu, Aghion, and Zilibotti (2006), and by Rodrick (2008) — who argue that under certain conditions, imposing limitations on competition may benefit economies far from the world technology frontier.

To answer our main question, aggregate long-term data on economic growth and on deregulation policies is used over a period of 30 years for more than 70 developing and developed countries for which the prescriptions of the Washintgon Consensus were applied. A difference-in-difference approach is employed to look for the impact on deregulation on growth. That is, we analyze the difference between average growth rates of reformers and non-reformers in two periods: from 1975 to 1989, and from 1990 to 2004. Our main finding is that deregulation contributed to economic growth of the early reformers relatively more than to the late reformers.

2   Literature review

The early empirical literature on deregulation is dealing mainly with the overall institutional impact on economic development. Djankov, La Porta, Lopez-de-Silanes and Shleifer (2002) show how governments around the globe regulate the starting up of a firm, and how the differences in start-up regulation correlate with different economic results.

The authors compare the entry regulations in 75 countries. This large-scale study provides the opportunity to conclude that less regulation of market entry procedures yields more incentives for entrepreneurs to create business. In the context of Central and Eastern Europe (CEE), more new enterprises during transition means increased growth potential of the economy and actually higher economic growth, as suggested by the World Bank (2002) report. Thus, countries with fewer regulation procedures in market entry enjoy faster recovery from the transition recession in the initial phase of transition. The World Bank (2002) report supports this claim. Most of the conclusions in the report concern the enterprise development and its implications for the outcomes of the economic transition. Both works however have one limitation: The changes of regulations over time are not considered as a distinct factor for changing firm performance because both of them use cross-sectional data.

The World Bank (2007) report is grounded in the Doing Business Database. It is an extensive source of data and evaluates the existing types of regulations in 175 countries. It focuses on ten main areas of government regulation that influence business activity, including start-up of firms, labor regulations and trade procedures. The annual World Bank Doing Business Reports and their complementary database are an indispensable reference for empirical work in the field of regulatory reforms. However, they share the same deficiency as some of the sources above: Rather than evaluating the impact of policy changes on changes in economic performance on an industry or firm level, they use cross-sectional country-level data on economic growth and regulatory indicators to show some existing correlations between economic growth and level of regulatory reforms thus omitting the impact of policy *changes* on firm-level performance changes.

All the sources so far describing the impact of PMR rely on country-level data for inference of the deregulation effects on firms. An excellent review of the existing cross-country analyses on the effect of PMR on

macroeconomic performance is the paper by Schiantarelli (2005). It reviews both the micro theory on the impact of regulation on firms and the empirical evidence based on some firm- and country-level data. There are empirical efforts in the recent literature on more detailed datasets featuring industry- and firm- level data. Alesina, Ardagna, Nicoletti and Schiantarelli (2005) explore the OECD STAN and ISDB databases and match it with the OECD product market regulation database.[1] They establish a causal relationship between deregulation and investment in seven OECD industries, and find that deregulation has a positive and significant impact on investment in the transport, communication, and utilities industries.

We replicate the cross-country approach using two subsamples across time. Indeed, we find that regulation reformers within each period did encounter higher economic growth rates which may be interpreted wrongly as a causation going from deregulation to economic growth. This finding is in line with the theory, it is very intuitive, and is therefore appealing to economists, policy advisers, and policymakers. Therefore, it would be natural to close further discussion on the impact of deregulation on growth, since there seems to be a consensus on the matter. However, looking at the growth acceleration between two large periods of interest, we conclude that countries that deregulated extensively in the 1990s following the Washington Consensus prescriptions did not accelerate growth faster than non-reformers. This finding is at odds with the theory that predicts more liberalized and more competitive labor and capital markets to reduce the unit costs of firms, thereby increasing productivity and value added, thus increasing economic growth. This finding also contradicts the plethora of studies on the impact of administrative deregulation that show lower entry barriers to reduce fixed costs of entry, thereby increasing competition, productivity and growth. Therefore, the discussion on the institutional impact on growth is far from being closed

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[1]http://www.oecd.org/eco/pmr

yet.

One recent paper exploring the effect of institutions on firm performance using the BEEPS data is Commander and Svejnar (2007). In it, Commander and Svejnar link firm performance to a wide range of explanatory variables deemed to be determinants of the institutional environment. Contrary to many preceding empirical works, they do not find any impact of the institutional constraints on firm performance in the CEE. In addition, Commander and Svejnar introduce some novel approaches to deal with the endogeneity problems that were plaguing the preceding firm-level studies on the effects of institutional environment on firms. These approaches can turn out to be highly instructive for us as well.

The focus of Commander and Svejnar's paper is how different firms generate revenues given the institutional constraints they face. Their main finding is that when the institutional constraints (e.g. tax policies or corruption) are included one by one in the regressions, they are all significant. However, when all the constraints are included together, then very few of them retain significance, perhaps due to the multicollinearity between the institutional constraints. This result is similar to Alesina et al. (2005) industry level regressions: Recall that when one additional explanatory variable was included in Alesina et.al., some of the coefficients lost significance and decreased in magnitude.

Another important finding in Commander and Svejnar's (2007) paper is that country fixed effects[2] explain firm performance better than the jointly included institutional constraints, almost all of which lost significance when introduced together in the estimation. This result allows them to arrive at the conclusion that the effect of the institutional environment has been overestimated up to date. Then, going one step further and acknowledging that economic and administrative deregulation is part of the institutional environment, we could ask whether the

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[2]Taken as the time-invariant differences in the institutional environment across countries.

effect of deregulation on economic performance might have been thus far overestimated as well. Using the economic growth data from the Penn World Table, and the Gwartney and Lawson (2007) database, we can aim for an answer to this question which has caused some controversies in the literature.

Several more papers support the existence of a controversy on the impact of institutions on firm- and on aggregate performance. Their results are somewhat inconclusive on whether more burdensome regulation hampers performance. Babetskii and Campos (2007) for example summarize results from 43 studies in a detailed meta-analysis of the impact of reforms on economic growth. They conclude that the institutional impact on firm performance shows remarkable variation both in terms of sign and significance. These inconclusive results from various empirical works summarized by Babetskii and Campos are additional motivating material for our goals. The "remarkable variation" they document requires further investigation, and our work would deliver it.

In another attempt to tackle the institutional impact on performance and the possible endogeneity problems inherent to it, Merlevede (2003) estimates a simultaneous equation model in which both performance is dependent on institutional factors such as regulations and regulations are dependent on firm performance. In an attempt to extend the debate on the institutional impact on firm performance, Staehr (2005) creates a measure of the speed of reforms that can be explicitly incorporated into the regression analysis. He finds that the speed of reforms is also a significant component in estimating firm performance.

All of the papers above rely on either objective or subjective measures of the impact of regulation on firm performance. The objective measures are those that analyze the legal reality without imposing personal judgments on their impact given by the firm respondents. Objective studies are particularly suitable for analyzing the effect of deregulation on firm performance because the explanatory variables are measured with very

little error. An example of this type of study is Alesina et al. (2005) where the explanatory variable is constructed using objective measures of the regulatory reality. An example of the subjective types of studies is Svejnar and Commander (2007). The study relies on subjective measures of the impact of regulations on firm performance, that is, firms give their opinion on how good or bad the regulations are for them. The obvious disadvantage of these studies is that the risk of a measurement error in the dataset is high enough to undermine the main conclusions.

The advantage of our approach is that we shall use largely objective measures of how the regulation was developing rather than evaluations of its impact on firms as primary explanatory variables. Matching it with economic growth data contains less risk of measurement error than relying solely on the BEEPS or other survey data for both the explanatory and the explained variables, which is what Commander and Svejnar do. Nicoletti and Pryor (2006) discuss extensively the advantages and disadvantages of the two types of studies above. In the end however, claim Nicoletti and Prior, the results of the subjective and objective types of studies show robustness to their types: The results from the estimations are very similar.

One of the ways to avoid subjectivity is to use an aggregate dataset with sufficient cross-sectional and time variation for conclusive results on the impact of institutional reforms on growth. In their recent paper on the effects from trade policy on economic growth, Estevadeordal and Taylor (2008) use aggregate data on 71 economies over a period of 30 years and study the effects from one of the ten policies in the Washington Consensus – the trade liberalization. Since trade liberalization is a specific type of deregulation, the results from this work would be relevant for us as well. Estevadeordal and Taylor review the debate, and present the ambiguities in the recent empirical results which stem from improving methodology and data availability. As a result of these methodological advancements in the literature, claim Estevadeordal and Taylor, trade

7

policies are found to have less pronounced effect on economic growth than initially thought. However, looking only at static evidence which, at best, uses a cross-section on a differenced data and normally would simply regress the current GDP on tariff levels, is argued not to be able to capture the dynamic improvements in productivity that are at hand when studying the effects from trade liberalization. The simulations that they offer demonstrate that the dynamic gains from liberalizing trade which reduces the input costs could be in an order of magnitude higher than the static ones. Therefore, they argue, a novel estimation strategy is needed to capture those dynamic effects.

The novel empirical design Estevadeordal and Taylor use is actually a difference-in-difference estimation that is going to be helpful for our strategy as well. In this estimation, they regress the difference in growth rates of trade reformers and non-reformers in two consecutive periods: from 1975 to 1989 and from 1990 to 2004. They assert that these two 15-year periods are long enough to capture the dynamic effects from trade liberalization that many countries in the world have undergone in the 1990s. To identify the reformers and the non-reformers, they use the mean tariff rate from the Economic Freedom of the World (EFW) data. They define the reformers to be the countries with an above-median decrease in tariffs between 1985 and 2000, and find that trade liberalizers conformed to international trade theory and experienced higher economic growth, compared to non-liberalizers.

This procedure bears a direct correspondence to our empirical design. Instead of measuring the impact of a direct change in regulation indices, which is easy to implement but whose policy impact interpretation is very hard and possibly misleading, it is better to rather map those indices into four groups: early reformers, late reformers, non-reformers, and, finally, "marathon" reformers, and define a treatment and control empirical problem in the spirit of Estevadeordal and Taylor (2008), applied in the context of deregulation. The difference with their approach

8

in our work will be to enrich the groups of reformers and non-reformers with two more groups (see equation (1) below). The advantages of our approach are explained below in the empirical section.

After establishing the groups of reformers and non-reformers, Estevadeordal and Taylor (2008) proceed to their difference-in-difference estimation in which they find a significant improvement in economic growth for the trade liberalization reformers. Augmenting slightly their methodology and placing in into the context of deregulation would enable this paper to answer the following question: Did early deregulation reformers accelerate economic growth in the 1990s? To jump ahead in the paper, the answer is yes, they did. However, did late reformers also improve growth? Here the answer is no. In fact, early reformers did significantly better than late reformers. Given the results in the paper by Acemoglu, Aghion and Zilibotti (2006), and the reasoning of Rodrik (2008), the results are not surprising.

3 Empirical strategy

3.1 Identification

In our empirical design, we utilize the variation in the data more efficiently than Estevadeordal and Taylor (2008). More specifically, instead of designing a treatment and control problem with only one treatment (reformers) and one control group (non-reformers), we introduce a richer policy variation in the sample. Estevadeordal and Taylor designed their treatment and control problem based on the tariff variation in only one period: 1985 to 2000. As a specific form of deregulation, tariff cuts and any evidence that they might have an impact on growth produces relevant results for us as well. Estevadeordal and Taylor define the trade reformers as being countries with an above median cut in tariff rates. In our sample, we have two periods of policy change, namely, 1975 to

1989, and 1990 to 2005, which enables us to use additional variation in the policy data. Precisely, we define reformers between 1975 and 1990 as those countries with an above-median increase in the EFW index of regulation, and non-reformers otherwise. Identically, we define reformers between 1990 and 2005 as countries with an above-median increase in the EFW index of regulation. Thus, four distinct groups of countries emerge: 1) those who were reformers in the first period and turned into non-reformers into the second period are called *early reformers*; 2) those who were non-reformers in the first period but were reformers in the second period are called *late reformers*; 3) those who were reformers in both periods are called *"marathon" reformers*; and finally, 4) those who were non-reformers in both periods are called *non-reformers*. We treat the non-reformers as a control group, and the rest of the countries are considered to be assigned a deregulation policy treatment.

Naturally, the issue of endogeneity arises. Are those countries who reformed early assigned this treatment at random? Obviously not — there had to be a reason for deregulating early, while other countries did not reform. This reason might have been an oil shock, an ambition to join a supranational organization such as the WTO or the EU, or the legal origin of the countries. Therefore, ideally, we need to account for selection into early and late reformers in our estimation.

Doing this would be a daunting task for the present research work. We are using a way out: We first assume that the treatment was assigned at random, and therefore acknowledge the inconsistency and possible bias in our estimates. Second, we assume that non-reformers in the first period were similar countries with identical initial conditions. Thus, estimating the effect from a deregulation reform in the second period on the sub-sample of initial non-reformers would not cause endogeneity concerns. We make identical assumption about the initial reformers, and estimate the effect from turning into a non-reformer in the second period.

Grouping the countries into the aforementioned treatment and control

groups has one crucial advantage over the approach used by Estevade-ordal and Taylor. The approach here allows for both richer conclusions on the overall impact of deregulation, and also is able to answer our main research question about the impact of timing of the reform.

3.2 Estimation Strategy

The main empirical goal in this paper corresponds to the following research question: Do early reformers achieve higher economic growth? The empirical strategy to answer this question is presented below.

To answer the question, we utilize the empirical approach by Estevadeordal and Taylor (2008) in the context of deregulation, enrich their definition of reformers and non-reformers, and estimate the following main equation:

$$\Delta Avg. \log(GDP^{c,w})_{it} = \beta_1 + \beta_2 \text{EarlyRef}_{it} + \beta_3 \text{LateRef}_{it} + \qquad (1)$$
$$+ \beta_4 \text{MarRef}_{it} + \beta_5 X_{it} + \Delta \varepsilon_{it},$$

where $Avg. \log(GDP^{c,w})_{it}$ is either the average log-GDP per capita for country i in period t, denoted by $\log(GDP^c)_{it}$, or the average log-GDP per worker for country i in period t, denoted by $\log(GDP^w)_{it}$; $EarlyRef_{it}$ is a dummy variable equal to 1 if the country was an early reformer, and to 0 otherwise; $LateRef_{it}$ is a dummy variable equal to 1 for the late reformers, and equal to 0 otherwise; $MarRef_{it}$ are the countries who were reformers in both periods; X_{it} is a given country characteristic, such as initial level of GDP in 1975 and 1990 to control for growth convergence, and various institutional dummy variables such as size of the government early and late reformer, property rights early and late reformer, freedom to trade internationally early and late reformer, which are constructed identically to the early and late reformers in deregulation, a dummy equal to 1 for OECD countries controlling for the fact that developed countries may be inherently different from the

11

rest of the world (e.g. they did not experience transformation recession in the beginning of the 1990's like many developing and transition countries); and $\Delta\varepsilon_{it}$ is an error term about which we assume that standard linear regression assumptions are satisfied. It is important to note that all the explanatory variables above except the OECD dummy and initial levels of GDP reflect switches between being a non-reformer and reformer or vice versa and therefore are already presented in a differenced form.

The results from these estimations are presented in table 2 on page 23 which concludes our work in answering the question above. Does the timing of deregulation improve economic growth? In short, the results suggest that early deregulation did indeed accelerate economic growth but countries that were late reformers and deregulated extensively after 1990 did not benefit from this process as expected.

3.3   Data

3.3.1   Economic Growth and Deregulation Data

Perhaps the most comprehensive source of a long-term economic growth data computed from the national accounts of 188 countries is the Penn World Table (PWT) 6.2.[3]   That is why we use it for our dependent variable in the initial estimations of equation (1) on page 11. Our main dependent variables are the GDP per capita and the GDP per worker which are the RGDPCH and the RGDPWOK variables is the PWT. For every country in our sample, we construct the dependent variables as follows: we take the average log-level of GDP per capita or per worker for the first period (1975-1989), and difference it from the log-level of the respective GDP indicator for the second period (1990-2004). As a result, for every country we have a datapoint indicating the difference in

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[3]Heston A., Summers R., & Aten B. (2006). Penn World Table Version 6.2, Center for International Comparisons of Production, Income and Prices at the University of Pennsylvania, September 2006. Retrieved Sept. 8, 2008 from http://pwt.econ.upenn.edu/

Table 1: Summary statistics on the difference of Average Log(GDP/c.,w.) across groups

	Early Ref.	Mar. Ref.	Late Ref.	Non-ref.
Δ Avg. Log(GDP/c.)	.341	.358	.150	.061
Δ Avg. Log(GDP/w.)	.275	.249	.112	-.010
N	22	14	16	20

Source: Penn World Table 6.2, and Economic Freedom of the World data

average growth rates between the two periods.

Our explanatory variables on the changes of the index of regulation are taken from the Gwartney and Lawson (2007) index of Economic Freedom of the World (EFW) data, which traces back the economic policy development in 141 countries since 1970 in several policy areas: 1) Size of Government: Expenditures, Taxes, and Enterprises; 2) Legal Structure and Security of Property Rights; 3) Access to Sound Money; 4) Freedom to Trade Internationally; and 5) Regulation of Credit, Labor, and Business.[4] Our main explanatory variable is taken from the changes in the index of Regulation of Credit, Labor, and Business. We have a match between the PWT growth rates and the EFW index of regulation in 71 countries which is the final size of our sample. Table 1 presents summary statistics on the two variables of interest for the four groups of interest in this work. The section below elaborates on them.

3.3.2 Deregulation and Economic Growth Trends since 1975

This section illustrates graphically how the deregulation policies developed since mid-1970s up to 2005. This fairly long period of following those policies escapes the risk of having almost no policy change within a shorter span.

Labor market regulation and credit market regulation policies, together with the business regulation of prices, entry and exit, form the

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[4]For further detailed description of the EFW data see Gwartney and Lawson (2007), p.8-12
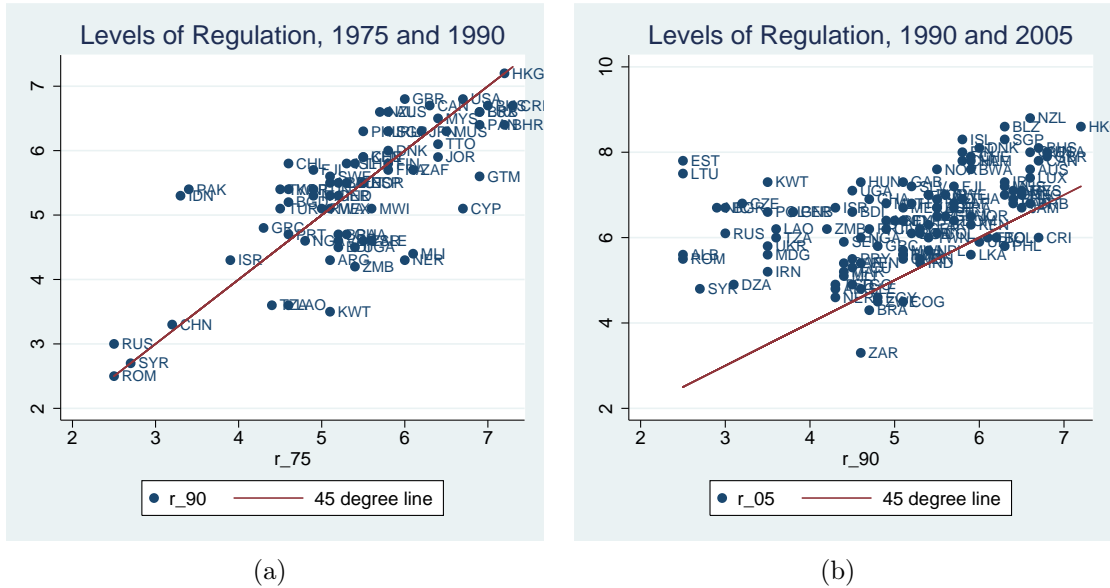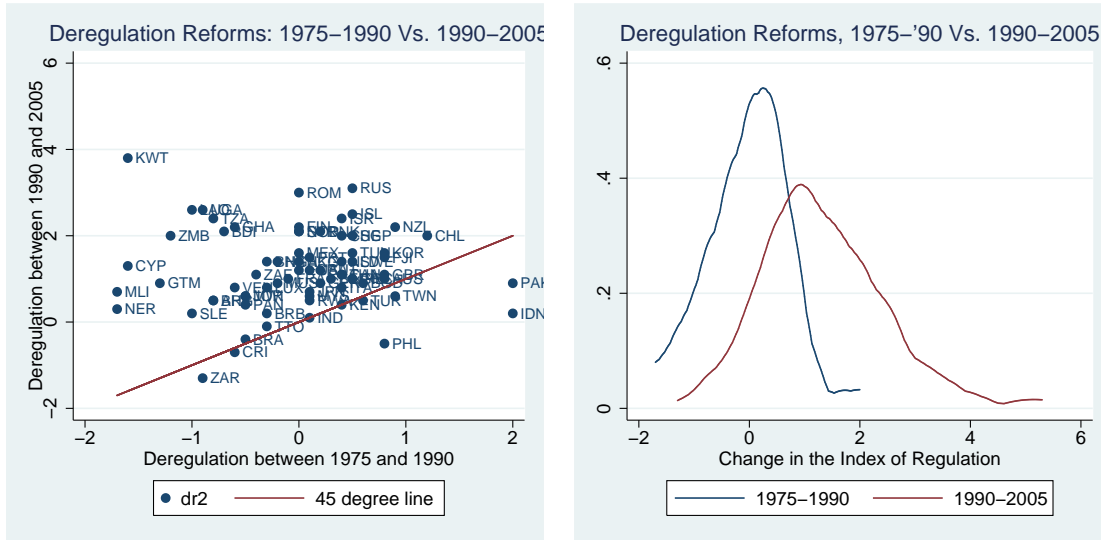
Figure 1: Overall Deregulation within Each Period

overall deregulation policy this paper is about. The next figures examine the development of the overall indices of regulation for the two periods of interest. On Fig.1(a) we plot the index of regulation in 1975 against the same index 15 years later, and on Fig. 1(b) we repeat the procedure for the period that followed. A variation in the data in both directions is observed for both periods. In the first period, more countries lagged behind in their overall deregulation policies, while in the second period most of the countries stand above the 45-degree line which indicates that they improved their position with respect to the policies they enacted in the 1990's. The graphs above however do not yield a sufficient representation of how the reform was moving across the two periods. This is made more explicit on the next figure 2(a) where the relative change in the second period can be observed. The graphs demonstrate that in the 1990s there was indeed a far more explicit consensus as to the direction of policy change: Most of the countries embarked on a way to further relax the burdens on their labor and capital markets, as well as to

14

Figure 2: Overall Deregulation between Each Period

improve their business registration procedures, eliminate price controls, and decrease the state support for given number of firms. For a very limited number of countries there was a relative decrease in the index of regulation in the second period. The overall positive trend is also clearly demonstrated on fig.2(b) where we can see what was the change in the distribution of deregulation policies.

However, does the positive trend in deregulation policies mean that the countries benefitted from it in terms of higher economic growth? The next several figures provide some initial observations on this issue. Indeed, as the earlier literature suggests, there is positive association between deregulation and average GDP/c. and GDP/w. *within* each period (Djankov et.al. 2002). This can be seen from fig.3 and fig.4, where we plot a linear fit between the absolute change in the regulation index within each period, and the average change in $\log(GDP/c.)$ or $\log(GDP/w.)$ for each country. The figures effectively confirm the existing cross-country evidence that boils down to a positive association
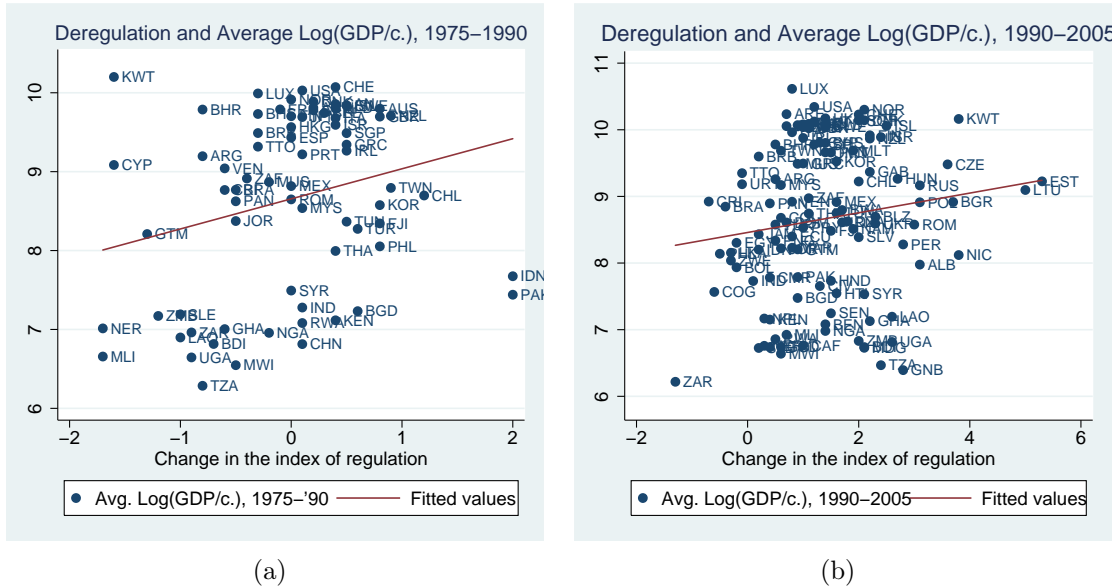
Figure 3: Deregulation and Log(GDP/c.) within Each Period

between deregulation and performance which some authors claim might mean a causation as well. Yet, if a longer period is taken into account, and the difference in deregulation *between* the two periods is fitted with the difference in the average log($GDP/c.$) or log($GDP/w.$) for each country, then the picture is actually reversed. Figure 5 suggests that if we focus not on the alleged impact of deregulation on GDP in a given period, but rather inquire on whether it indeed contributes to economic growth, we arrive at a surprising result: the growth of the average GDP is actually higher for the early reformers — those countries that deregulated extensively in the late 1970s and 1980s but slowed down reforms between 1990 and 2005.
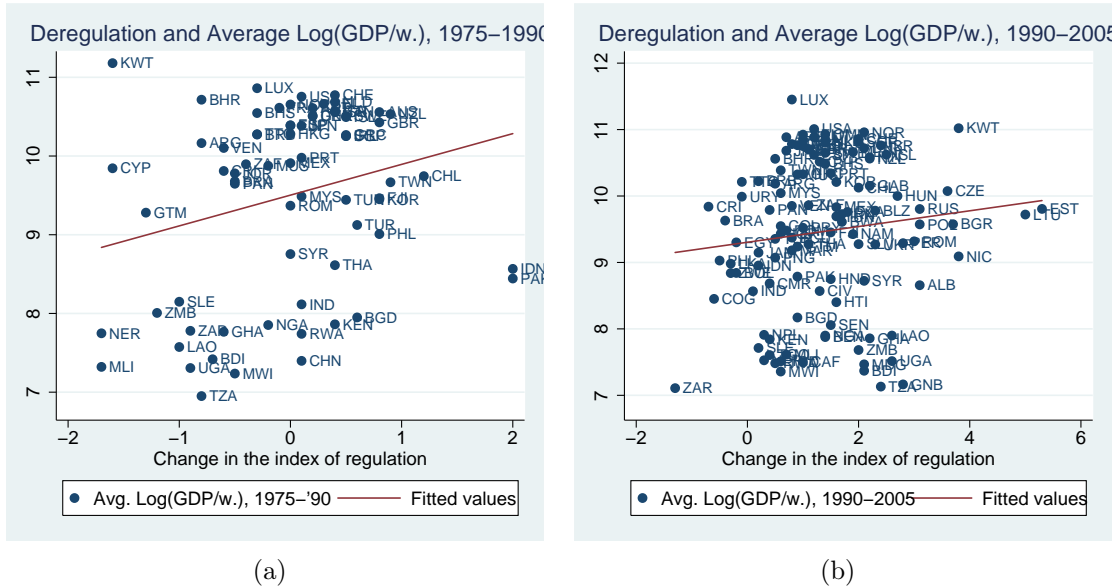
Figure 4: Deregulation and Log(GDP/w.) within Each Period

4 Results

The results from OLS estimation of different versions of equation (1) are presented in Table 2 on page 23. The table demonstrates clearly that late deregulation reformers, or those countries who lagged behind in their deregulation reform in the late 1970s and in the 1980s but accelerated the reform in the 1990s and early 2000s, underperformed with respect to the early reformers and those countries who reformed extensively in both periods — the "marathon" reformers. In model (1) we simply regress the difference in average $log(GDP/c.)$ between 1990 and 2004, and between 1975-1989, on dummy variables indicating early and late deregulation reformers, as well as "marathon" reformers. In this estimation, and in all following estimations, the control group are the non-reformers as defined in the identification section. Model (1) produces a statistically significant difference of slightly below 30% points of average log-GDP/c. growth for the entire period which corresponds to
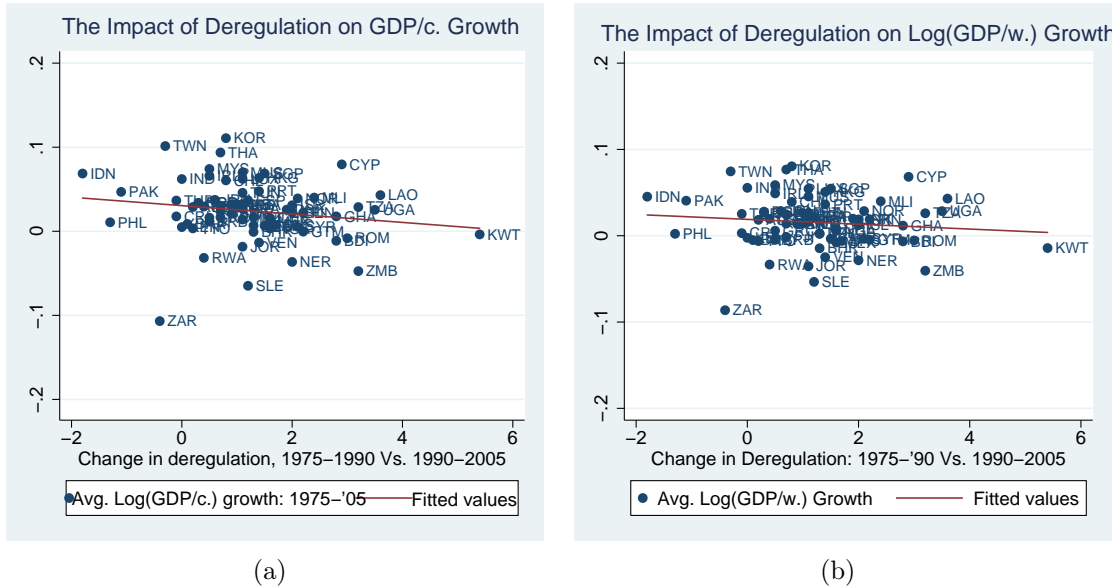
Figure 5: Deregulation and the Growth of Log(GDP/c.) and Log(GDP/w.), 1975-2005

approximately 2% point growth difference per year in favor of the early reformers and "marathon" reformers.

Models (2) and (3) gradually enrich the specification with more control variables. In model (2) a dummy for OECD countries is included to account for some possible systematic differences between developing and developed countries. The OECD dummy is also interacted with the above reform dummies to control not only for the difference in growth between OECD non-OECD countries but also for the way timing of deregulation affected the economies within the OECD countries. Contrary to the overall impact of deregulation, in OECD we evidence that early and persistent reformers in deregulation also lagged behind in their average log-GDP/c. growth which emerges as about 30 average GDP/c. growth points for the entire 15-year period after 1990. In effect, this means that early reformers within OECD lagged behind in their growth with about 2 percentage points per year.

In model (3) we control for some possible growth convergence as well, and find that including the initial levels of GDP in 1975 and in 1990 improves significantly the goodness of fit of the model, and in addition, that the evidence of a convergence is significant, although almost negligible in terms of magnitude. In model (3) we also control for other institutional variables that might affect economic growth, such as size of the government, property rights, and freedom to trade internationally. We acknowledge the fact that these variables are omitted from the previous models and thus the results in them are biased. We notice that the timing of reform in this model loses significance, with the only marginally significant deregulation variable being the persistent, the "marathon", reformers. However, an F test demonstrates that we cannot reject equality between the persistent reformers and the early reformers, while we strongly reject the hypothesis that the coefficients on late reformers and the persistent reformers are equal to each other. Therefore, we infer that in the richest model there is also enough evidence to conclude that timing of reform mattered for economic growth.

Models (4) through (6) in table 2 repeat the work from the previous four models on the right-hand side of the estimation equations but use the difference in average $log(GDP/w.)$ as an explained variable instead. This is done not so much to add new arguments but to check for robustness using a closely related variable to GDP/c., and for completeness of the exposition. Similar conclusions in terms of sign, magnitude and significance can be drawn about the GDP/w. indicator, including about the richest model.

In the above estimations, we do not control for selection into early and late reformers. At present, it is not entirely possible and we acknowledge that it may invalidate the results presented above. However, if we disregard how the countries ended up being early and late reformers, and consider those as being initial conditions for further growth, we can still check the validity of our results by running separate estimations for

the initial reformers only, and then for the initial non-reformers. Thus, we can double-check whether early reformers differed from the persistent reformers, and whether late reformers were different from the persistent non-reformers. Our results demonstrate that there is no significance difference between the countries within those two groups.

5   Conclusion

Does timing of deregulation matter for economic growth? Yes, it does. Early deregulation reformers enjoyed faster economic growth in 1990s, while late reformers did not differ significantly from the non-reformers. Our results are consistent with the arguments presented in Acemoglu, Aghion and Zilibotti (2006), where scrapping limits on competition too early may not bring the desired benefits to countries that are still driven by an investment-based growth strategy. This turns out to be the case for the late reformers in the 1990s who not only incurred the costs from deregulation of their labor- and capital markets but also did not improve growth. Thus, empirical evidence from aggregate data used in this work shows that reforming early is optimal only if the country is developed enough to be able to reap the benefits from deregulation. Indeed, if we inquire as to which countries were early and persistent reformers, we notice that the majority of those are in the upper-middle group of income.

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7 Tables

Table 2: Timing of Deregulation and Growth: 1975-2004

	Difference in GDP/c. growth			Difference in GDP/w. growth		
	(1)	(2)	(3)	(4)	(5)	(6)
EarlyRef	.280***	.355***	.172	.286***	.352***	.191
	(.089)	(.124)	(.164)	(.082)	(.114)	(.170)
LateRef	.089	.113	-.117	.122	.161*	-.070
	(.097)	(.097)	(.133)	(.092)	(.092)	(.145)
MarRef	.297***	.301***	.188*	.260***	.259***	.166
	(.097)	(.095)	(.099)	(.089)	(.091)	(.109)
OECD		.135	.069		.188*	.105
		(.112)	(.139)		(.100)	(.144)
Early*OECD		-.370***	-.138		-.384***	-.187
		(.137)	(.167)		(.123)	(.167)
Late*OECD		-.182	.108		-.275**	-.001
		(.112)	(.248)		(.104)	(.231)
Mar*OECD		-.289*	-.068		-.293**	-.110
		(.147)	(.208)		(.130)	(.196)
RGDP-1975		-.000024**	-.000082***		-.000025**	-.000079***
		(.000011)	(.000017)		(9.77e-06)	(.000015)
RGDP-1990		.0000296***	.000058***		.000028***	.000058***
		(8.33e-06)	(9.65e-06)		(8.07e-06)	(9.06e-06)
SG-early			-.013			.001
			(.093)			(.081)
SG-late			-.127			-.075
			(.101)			(.095)
SG-marref			.032			.043
			(.117)			(.098)
PR-early			.057			.048
			(.091)			(.095)
PR-late			.029			.037
			(.097)			(.094)
PR-marref			.072			.082
			(.054)			(.056)
FT-early			.008			-.002
			(.066)			(.061)
FT-late			.077			.090
			(.102)			(.097)
FT-marref			.042			.067
			(.100)			(.101)
Const.	.061	-.042	.184	-.010	-.097	.044
	(.072)	(.089)	(.146)	(.067)	(.080)	(.143)
R-sq.	0.191	0.424	0.763	0.191	0.445	0.765
N	71	71	43	71	71	43

Notes: Robust standard errors in parentheses; RGDP-1975 indicates Real GDP per capita in 1975 for the regressions from (1) to (3) and Real GDP per worker in 1975 for the regressions from (4) to (6). OECD is a dummy variable indicating membership into the OECD, and Early*OECD indicates an interaction between being early deregulation reformer and that dummy. The variables XY-early, XY-late, and XY-marref are constructed identically to the Early and Late Reformer variables, where the feeding data is the EFW of XY, where XY is Size of Government (SG), Property Rights (PR), and Freedom to Trade Internationally (FT), respectively.