Institutions and Economic Performance in Mexican States

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Preliminary Results

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Abstract

This paper investigates the relationship between institutional quality and economic performance the 32 Mexican states over the period 2003 – 2010. Using dynamic panel GMM estimation and the Fraser Institutes index of economic freedom, I find that freedom has an ambiguous impact on economic growth and improvements undermines employment. These results are corroborated with dynamic OLS model and panel fixed and random effects models.

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Introduction

The role institutions play in determining economic performance has increasingly attracted interest in the empirical literature over the past few decades. The inclusion of total factor productivity or the Solow residual as an unobserved component in traditional growth models, such as the the Solow (1956) or Swan (1956) models of economic growth, leave many questions unanswered regarding how country specific unobserved 'fixed effects' contribute to growth. As a potential answer to these questions North and Thomas (1973) and North (1989) argued that well developed, and liberal, institutions contribute to economic growth via incentives, property rights, and the reduction of transaction costs. North (1990) further developed a theory of the impacts of institutional change on economic growth.

However, identifying and quantifying institutional quality is understandably difficult. In past two decades, however, two separate indices of economic freedom, the Heritage Index and the Fraser Institute's Economic Freedom of the World (EFW) have quantified "economic freedom" as measured by various institutional sub-components. While these indices may not have specifically been constructed as measuring institutional quality, they have become increasingly popular as institutional variables in empirical applications. Dawson (2007) provides an overview of the use economic freedom as a stand-in for institutions and notes that prior to the construction of these indices in the empirical growth literature. de Haan et al. (2006) also note that authors may be reluctant to use them given the difficulty of quantifying economic freedom and/or because of the perceived political bent, i.e. libertarian, of the organizations producing them.

In this paper, I utilize the concept of economic freedom as proxy for institutional quality across Mexican states (Estados Unidos Mexicanos) to investigate their impact on economic performance. For economic performance I use the level gross state product (GSP) and state specific unemployment rates as measures of long and 'medium' run macroeconomic variables, respectively. The use of GSP ties this research with the empirical growth literature while the unemployment rate acts as a measure of labor market performance.

There has been considerable of research on the relationship between institutions and economic growth. North (1989, 1990) and North and Thomas (1973) essentially argue that well defined and enforceable legal structures are necessary for protecting property rights and well operating markets. Barro (1991) looked at a panel of 98 countries and found that growth is positively associated with political stability and negatively with market distortions.

Others include, Sala-I-Martin (1997), using economic growth or per capita real GDP as the dependent variable. The institutional variables considered include: religion, (Barro and McCleary [2003] and McCleary [2008]); language as human capital (Lee, 2012); corruption (Mo [2001] and Podobnik et al. [2008]); war (Blomberg and Hess, 2006), etc. The general consensus is somewhat intuitive: countries with less autocratic rule, be it government or religious, less corruption, and less disruption have better economic performance than those that do.[1]

Acemoglu et al. (2005) corroborate the finds of North (1989, 1990) and North and Thomas (1973) in that the protection of property rights and the allocation of resources are necessary for economic growth. More recently, Siddiqui and Ahmed (2013) use dynamic panel GMM methods to investigate institutional changes on economic growth over 82 countries. They construct three different institutional indices – Institutionalized Social Technologies (IST), Factor of Institutional and Policy Rents (FIPR), and Factor of Political Rent (FPR) – and demonstrate that improvements to IST and FIPR positively contribute to growth whereas FPR is not a statistically significant contributor to growth.

Recently, the *intranational* effects of institutional differences on state or province economic performance have been given more attention. For example, Ashby and Sobel (2006) find evidence that improvements to institutions across US states – as measured by the Fraser Institutes *Economic Freedom of North America* index, see Stansel and McMahon (2013) – positively impacts growth and reduces income inequality. Bennet and Vedder (2013) use fixed effect models across the US states and find increases in freedom reduce income inequality. In Mexican states, Ashby et al. (2013) use a simple OLS with lagged dependent variables and demonstrate a positive relationship between real wages, growth, and economic freedom.

In the role of institutions in labor markets markets across US states has been investigated by Garrett and Rhine (2011). They adopt North's measure of institutional quality as protection of property rights and the rule of law and demonstrate a positive relationship between labor growth and freedom. In a panel of the 50 US states over the period 1981-2009 Heller and Stephenson (2014) show that more freedom is associated

[1] A special edition of the *Quarterly Journal of Economics* (1993), was dedicated to various determinants of economic growth including institutional differences.

with lower unemployment rates and greater labor participation.

Freedom has been used as proxy for institutional soundness in a variety of other settings such as trade (Depken and Sonora, 2002, Assane and Chiang, 2014, and Sonora, 2014); Olympic success (Ruseski and Maresova, 2014); and income inequality (Ashby and Sobel, 2006, Apergis, Dincer and Payne, 2014). A survey of the use of economic freedom can be found in the Introduction to "Symposium on Economic Freedom", Hall and Lawson (2014).

This paper continues to work on intranational impacts of freedom on the growth of states in a single country. Considering the impacts of freedom on growth on states reduces the magnitude of unobservable fixed effects that might be present in a panel of countries. The use of a single country also allows the analysis to more fully concentrate on differences in economic freedom across states as intra-country analysis allows us to "correct for" differences in languages, religion, central government and bank practices, the military, etc. While a country such as Mexico does have significant state specific idiosyncracies, they are relatively homogeneous as compared to analyses which utilize country wide data.

In this paper, I use dynamic panel GMM methods and demonstrate that improvements to freedom have an ambiguous impact on economic growth and exacerbate unemployment across Mexican states. The results here are similar to those found in Ashby et al. (2013), but also extends their research by using more dynamically appropriate modelling and investigating the impacts of freedom on labor markets.

The remainder of the paper is structured as follows: Section 1 outlines the empirical strategy and discusses the results; Section 2 reviews the data used and provides some descriptive statistics; Section 3 presents the results of the OLS and fixed and random effect models, 4 introduces the dynamic panel methods used and provides the results. Finally, Section 5 provides some brief summary remarks.

1 Empirical Model

We begin our discussion by specifying a standard dynamic pooled-panel model given by:

$$y_{it} = \alpha + \rho y_{it-1} + \theta efw_{it} + x_{it}'\gamma + \lambda_t + \varepsilon_{it};\ |\rho| \in (0,1) \tag{1}$$

where y is a measure of economic performance, given alternatively as the natural log of state real gross state product (GSP) and the unemployment rate, ur, efw is the state economic freedom index. x is a vector of control variables

$$x = (s, z)'$$

where s represents Mexican state specific controls:

$$s = (\text{Education, Infant Mortality, Net Income, Maquiladora})'.$$

Education is the percent of the state population which has graduated from high school and infant mortality is infant deaths per 1,000 residents. These two variables capture human capital stocks in each state. Net Income is after tax income per family, which captures differences in Mexican incomes across the states, similar in flavor to initial conditions, and differences in labor productivity. Maquiladora represents the maquiladora production for each state, which can be considered as a proxy for FDI in each state as well as local taxes and subsidies for foreign producers. z is a vector of country characteristic time dummy variables,

$$z = (\text{Drug War, Recession})'.$$

Drug war escalation began in 2008 when then President Calderón enlarged the Mexican military's role in going after drug lords of the largest Mexican cartels. While the war was predominately waged in the states which were the 'home-base' to the drug cartels, the effects of the government's efforts were likely felt throughout Mexico: WAR $= 1$ if $t \geq 2008$ and 0 otherwise.[2] During the sample period, Mexico faced two recessions, in 2003 and 2008-09, similar to the timing of the US's Great Recession. REC=1 if $t = 2003, 2008-2009$ and 0 otherwise. λ_t is a time fixed effect. ε_{it} is a random disturbance. I will consider two versions of equation (1), one which includes country dummies $z \neq 0$ and another which restricts $z = 0$ to concentrate solely on state specific control.

The inclusion of the lagged dependent variable accounts for dynamic changes in the economy, i.e. economic growth and/or changes in labor markets and helps correct for potential serial correlation. In addition it also acts as a proxy for omitted variables. Because of the relatively short sample time, a lag length of one is selected in this model. It also controls for a feedback effect. There is considerable evidence that economic

[2] States which have cartel influence are: Baja California, Durango, Sinaloa, Guerrero, Chihuahua, Michoacán, Tamaulipas, Nuevo León, Veracruz, Coahuila, Jalisco, San Luis Potosí, Nayarit, Zacatecas, Oaxaca, Morelos, and Sonora (no relation).

freedom and, particularly, growth suffer from the endogeneity issues, specifically the simultaneity problem.

Of most interest is the estimated coefficient on the economic freedom index, efw, which, *ex ante*, we anticipate should be positive, $\hat{\theta} > 0$ when income is used as the dependent variable and $\hat{\theta} < 0$ for unemployment. This model is similar to regressions run in Ashby et al. (2013) for Mexican states. However, their specification only controlled for one state specific variable, average years of schooling. Ashby and Sobel (200x) ran a similar model in their study of the impacts of freedom on economic outcomes in US states.

The specification in equation (1) was estimated using a variety of pooled-panel estimates. We begin the analysis with pooled OLS estimation with time fixed effects. Next, the model is estimated using panel fixed and random effect models, nested in equation (1). If $\alpha = 0$ and

$$\varepsilon_{it} = \mu_i + u_{it}; u_{it} \sim N(0, \sigma_u^2) \tag{2}$$

we have the fixed effect model where μ_i is a time invariant unobserved state fixed effect and u_{it} is a random disturbance, with the orthogonality condition $E(\mu_i, \varepsilon_{it}) = 0$ equation (1) is the fixed effect model. On the other hand, if μ_i is random with

$\mu_i \sim iid(0, \sigma_\mu^2)$

$E(\mu_i, x_{it}) = 0$, and

$\alpha = 0$

equation (1) is the random effects model. $E(\mu_i, x_{it}) = 0$ represents the orthogonality condition that the fixed effects and regressors are uncorrelated

2 Data and Characteristics

The sample period covers the years 2003 – 2010. The primary reason for this sample period is the availability of the Mexican state freedom data, which is from the Economic Freedom of North America (Ashby et al., 2012), published by the Fraser Institute. The overall index is the average of four components: Area 1, the Size of Government; Area 2, Takings and Discriminatory Taxation; Area 3, Labor Market Freedom; and Area 4, Legal System and Property Rights. Each of these components are themselves constructed from subcomponents. Ashby et al. (2012) and Ashby et al. (2013) for a more complete overview of the construction of each index.[3] For more information on the individual state freedom data see Ashby et al. (2013).

The state specific variables are available from the Banco de Información INEGI at the Instituto Nacional de Estadística y Geografía, or INEGI, (2013). Gross state product (GSP), from INEGI, is in nominal terms and is converted to real using the Mexican state average (national) consumer price index available from the OECD (2013) as is the recession indicator dummy. The remaining state data is from INEGI. The dates for the drug war are from news sources.

Descriptive statistics can be found in Table 1. The two dependent variables are the real gross state product (RGSP) and unemployment rate (UR).[4] For the state specific independent variables the state freedom index (MX-EFW), high school graduation rates (HiSch), net personal income (NetInc), and infant mortality rates (InfMor) are in natural logs. The two country-wide structural controls are recession (REC) and drug war (DRUG) are time dummy variables. Alternative control variables of such as illiteracy, number of doctors, median age, number of emigrants, and percentage of population employed in the primary sector were also considered, however, these data are unavailable for most of the sample period. For maquiladora production (MAQ), I use an index (2003 = 100) of physical output for each state relative to Mexico City (Distrito Federal, DF), $MAQ = MAQ_i/MAQ_{DF}$. The data is quarterly and I use the fourth quarter index to capture the level of maquiladora output.

For comparison purposes, Table 1 also provides descriptive statistics for the US state freedom indices (US-EFW) over the same period, also from the Fraser Institute. One issue discussed with research in the impacts of economic freedom on economic growth in the US is that there may be insufficient variability in the state freedom indices to provided efficient estimates of the impacts of economic freedom on growth, see Ashby and Sobel (2006). Beginning the discussion with the freedom the Mexican and US indices we an see that, overall, the Mexican freedom mean is lower than in the US but has higher overall volatility as measured in standard deviation.

Figure 1 shows the intra-year standard deviation for each country. As can be seen over the sample period freedom across Mexican states diverges, with a slight levelling

[3]Individual observations for each of the four components is only available for 2010.

[4]In the growth literature, real per capita gross state product is frequently the preferred measure, however, per capita income is unavailable in Mexican states for all years in the sample period. An alternative labor market indicator is either total employed in, say, manufacturing, but, similarly, data is unavailable for each year in the sample.

out 2009 – 2010 over the sample period whereas across US states it converges. It should be noted that the financial crisis and Great Recession, which impacted both countries, falls in within the sample period. Secondly, Mexico ended its three year recession in September of 2003 which may account for the relatively low standard deviation of freedom in the first two sample years.

Table 2 has simple correlation coefficients of the variables and their $p-$values. As can be seen economic freedom is statistically significantly correlated with both real GSP (RGSP) and unemployment. Freedom is also significantly correlated with all the other variables, except the recession, lending credence to potential endogeneity issues.

Figures 2 and 3 are scatter plots for $\ln RGSP$ and the unemployment rate with an simple 'unconditional' regression fitted line. As can be seen, there appears to be a positive slope with respect to each of the regressand and $\ln EFW$.

3 Results

Results of panel fixed and random effects models are presented in Tables 3 and 4.[5] Two versions of each regression are presented, including a lagged dependent variable and an alternative which restricts $\rho = 0$ in equation (1). Table 3 presents results including country wide control variables, z. As a robustness check, and to observe the effects of institutional factors on economic performance without country-wide effects, the model which restricts $z = 0$ results are in Table 4. Coefficients and their $p-$values, in parenthesis, are presented as is the adjusted R_0^2, stars are used to denote significance. Each table also has the the p values of the Hausman test, $p(H)$ to determine which of the panel regressions is the "best" model. While this test is not specifically intended to test for the appropriate panel model, low estimated $p(H)-$values, at, say, $p(H) \leq 5\%$, are generally interpreted as a rejection of the random effects model. First we observe the Hausman statistics generally rejects the random effect models.

First perusing the model which includes country effects, Table 3, we see some interesting results. Concentrating first on the country wide structural dummies we see that both are highly statistically significant with the appropriate sign, negative.[6] For GSP the drug war and recession contributed to a decline in income, while both con-

[5]Pooled OLS regressions with time fixed effects were also conducted, with relatively little change in the results. Results available on request.

[6]Given Mexico's trade ties to the US, I also tried using a US recession dummy variable, but this had no effect on the results.

tributed to gains in unemployment. The effects of maquiladora production on income and unemployment are also intuitively attractive. Statistically significant positive impacts on GSP, with a negative, albeit insignificant, impact on unemployment. On the other hand, infant mortality and education likewise reveal some confounding implications. A high school education decreases GSP, strongly with the fixed effect model, and increases unemployment, significantly with the random effects model, though the Hausman statistic does "reject" this model.

Turning our attention to the variable of interest, economic freedom, we see it has a *positively* significant impact, with the random effects model, on unemployment, which is contrary to *ex ante* expectations, as one of the components of freedom is labor market freedom which should imply more fluid labor markets and less unemployment, with estimated responses about 2.0, though this can be partially explained by the relatively low skill level for production in rural states. On the other hand, institutional improvements do positively impact GSP, though it is only statistically significant when the lagged dependent variable is not include, estimated elasticities are in the 0.2 range.

When we restrict the country control to zero, $z = 0$, the results are dramatically different, see Table 4. In all cases, the Hausman test favors the fixed effect model. Maquiladora production is statistically positively significant for GSP, with estimates between about 0.2 and 0.5. None of the estimates are significant for their impact on unemployment, moreover, the signs are predominately positive. Contrary to the results presented in Table 3, infant mortality now is significant with expected response, positive for GSP and negative for unemployment, but high school eduction becomes less relevant.

The absence of country effects increases the importance of institutions on GSP, with all the estimates statistically significant and positive, particularly using the, preferred, fixed effect model, with estimates between 0.2 and 0.6. Reassuringly, estimates for the effect of institutions on unemployment are negative, though they are not statistically meaningful.

4 Dynamic Panel Methods

However, as discussed above, growth models have endogenously determined variables such that $y \Leftrightarrow x$ which leads to the simultaneity problem. This "chicken-and-egg" question is particularly acute in growth models which use economic freedom. In this context higher levels of output lead to a desire for more economic freedom while concurrently freedom improves conditions for growth. For example, lower taxes provide an incentive to increase investment and, hence, growth which, in turn, leads to incentive to improve economic freedom for a variety of reasons such as rent seeking behavior, political influence, and for more "laissez-faire" reasons such as a low inflationary environment requires less central bank heavy-handedness.

Dawson (2003) demonstrates that while freedom does Granger-cause output when using levels, when the variables are converted to growth variables the causality goes in both directions, as do Chong and Calderon (2000) and Farr et al. (1998), in their paper on freedom and economic well being.

Econometrically, as is well documented, fixed effect models with a lagged dependent variable biases the estimated coefficients, given that $E(y_{it-1}, \varepsilon_{it}) \neq 0$. Without any exogenous regressors Nickell (1981) demonstrated that ρ is biased by $1/T$ so that $bias(\hat{\rho}) \to 0$ as $T \to \infty$. Because of this, the panels discussed above are only useful with a large time dimension.

Given these caveats I employ generalized method-of–moments (GMM) based IV estimation which has advantages over standard IV estimation in that it is more efficient in the presence of heteroskedasticity. While this may be less of a problem in a single nation, given, in particular, that we use GSP and not per capita GSP there is a potential for considerable heteroskedasticity. Moreover, Judson and Owen (1999) demonstrate that the least squares dummy (LSDV) model, i.e fixed effect model with lagged dependent variables, performs badly with small T. They show that the GMM estimator works well with small T while the Anderson and Hsiao (1981), hereafter AH, estimator performs well as $T \to \infty$.

To remove the panel fixed effects we can employ a dynamic framework by first converting equation (1) into first differences, as in AH:

$$\Delta y_{it} = \delta_1 \Delta y_{it-1} + \delta_2 \Delta efw_{it} + \Delta x'_{it}\delta_3 + \Delta\varepsilon_{it}, \tag{3}$$

where Δ is the one period difference operator. By construction, this specification still contains correlation between the errors and lagged dependent variable. As such, we can employ an IV approach using the second or higher order lagged dependent variable as a valid instrument. This strategy can be employed even if φ_{it} follows an $AR(1)$ process by using higher order lagged dependent variables for instruments. This transformation reduces potential biases from omitted variables and the state specific fixed effects, which in standard IV models would be nested in the panel error term in equation (2), μ_i.

However, as outlined above, Judson and Owen (1999) found the AH estimator performs badly with small T. Arellano and Bond (AB, 1991) use a GMM approach to exploit the larger amount of information contained in the sample. They argue that AH is consistent but fails to account for all potential orthogonality conditions. In this approach they include lagged levels of the endogenous variable, in differenced form and the exogenous variables. Later Arellano and Bover (1995) and Blundell and Bond (1998), hereafter $AB - BB$, demonstrated that lagged levels are poor instruments for differenced variables, as in equation (3). They modified the AB model to also include lagged differenced variables.

Dynamic Panel Results

Dynamic panel GMM estimates can be found in Tables 5, including the country effects, and 5, without country dummies. Estimated coefficients, denoted $\hat{\delta}$, and their respective $p-$values, $p(\hat{\delta})$ – calculated using two-step GMM standard errors – are presented side by side. Given that most of the estimates are highly significant, I have forgone the standard use of $*$s to denote significance. As a measure of overall model fit, the $p-$value of the overall Wald, $p(W)$, statistic is also tabulated.

First, we note that all estimates are statistically significant at the 1% level or better except for the elasticity of GSP and economic freedom using the AB model. In Table 5 we start by examining the overall Mexican structural dummies, REC and $DRUG$, estimates have the hypothesized sign and are significant. As are estimates for the maquiladoras. Estimates for the two human capital proxies – infant mortality and education – raise questions. With respect to GSP the estimates are negative while for unemployment, coefficients are positive. For GSP the education elasticities are about 0.06 while for unemployment they are about 3.0.[7] Mortality rate elasticities are similar, but of a larger magnitude. Net income estimates have the hypothesized sign and are significant.

Institutional elasticities are, with one exception, strongly significant. The estimates using GSP are dependent on the method, with the AB model the institution coefficient is positive, but not statistically meaningful. On the other hand, with the $AB - BB$ model, the elasticity is negative and strongly significant. For the unemployment rate,

[7] I also experimented with secondary school rates given that returns to education are non-linear, however, the results were similar.

once again, the elasticity is positive, more proof that unemployment is positively impacted by higher freedom.

When we restrict country wide impacts to zero, the result change dramatically. Again, the majority of estimated coefficients are significant at the 1% level, and the majority of the estimates have the predicted sign. The maquiladora industry elasticity is positive for GSP and negative for unemployment. It is notable that the $AB-BB$ maquiladora estimates with respect to unemployment are about four times larger than than in the AB specification. The human capital variables also fall in line with expectations, with the exception of infant mortality and GSP, where estimates are contrary to *a priori* conjectures. The signs for net income are as expected, however, for GSP regressor they are not significant.

For the freedom variable, estimates do fall in line with expectations. Its elasticity with respect to GSP and unemployment is positive and negative, respectively. In both cases, the AB estimator is about twice, in absolute value, of the $AB-BB$ coefficient, with estimates 0.52 and 0.19 for GSP and -7.45 and -2.92 for unemployment.

These results for this paper provoke a couple of questions. First, and most importantly, is the positive effect of economic freedom on unemployment rate, contrary to Heller and Stephenson's (2014) results for US states. Secondly, the estimates for the human capital variables appear to be sensitive to the estimation technique employed and are frequently contrary to expectations. And third, the inclusion of country wide structural dummies has a significant impact on the results, affecting both the sign and statistical significance of the estimates. For example, institutional elasticity estimates for the unemployment rate switch signs from positive, with the country dummies, to negative, without them.

5 Summary

In this paper I explore the economic effects of institutions on economic performance across Mexican states using the Fraser Institute's Economic Freedom of North America index as a proxy for institutional quality. This paper uses new data and continues, and considerably extends, the empirical work by Ashby et al (2013). Given the variety of unobservable state specific fixed effects, it might be tempting to solely explore this relationship with a panel, however, research has shown that economic performance and institutional improvements are endogenous, especially the freedom indices, see Dawson

(2003). Therefore, in addition to fixed and random effect panel methods, I also the employ Arellano and Bond (1991), Arellano and Bover (1995) and Blundell and Bond (1998) dynamic panel models.

Results show that institutions, as measured by economic freedom, do have a statistically significant impact on economic performance. However, some of the results of the analysis are confounding. In particular, the *a priori* expectation of freedom's impact on unemployment would be unambiguously negative. However, the results change when country wide dummy variables are present in the analysis. When country specific variables are included the estimates are positive, contrary to theory. However, then the country effects are excluded, the estimated signs switch. This result is robust to various model specifications.

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Tables

Table 1: Descriptive Statistics

	Mean	SD	Min	Max	$N \times T$
RGSP	12.565	0.818	11.087	14.656	256
UR	3.465	1.464	0.500	8.100	256
MX-EFW	1.896	0.106	1.631	2.100	256
NetInc	15.425	0.710	13.477	17.520	248
HiSch	4.134	0.154	3.669	4.443	256
InfMor	2.711	0.184	2.272	3.203	256
MAQ	0.008	0.054	-0.132	0.168	256
DRUG	0.250	0.434	0.000	1.000	256
REC	0.375	0.485	0.000	1.000	256
US-EFW	1.916	0.096	1.629	2.104	400

Table 2: Correlation

	RGSP	UR	EFW	HiSch	NetInc	InfMor	MAQ	DRUG
UR	0.189	1.000						
	(0.002)							
EFW	0.306	0.139	1.000					
	(0.000)	(0.027)						
HiSch	0.068	0.563	0.106	1.000				
	(0.280)	(0.000)	(0.092)					
NetInc	0.761	0.172	0.217	-0.057	1.000			
	(0.000)	(0.007)	(0.001)	(0.372)				
InfMor	-0.057	-0.445	-0.177	-0.535	0.053	1.000		
	(0.361)	(0.000)	(0.005)	(0.000)	(0.404)			
MAQ	-0.047	0.189	0.239	0.160	0.015	-0.308	1.000	
	(0.458)	(0.002)	(0.000)	(0.011)	(0.809)	(0.000)		
DRUG	-0.059	0.498	-0.182	0.157	0.170	-0.337	0.199	1.000
	(0.344)	(0.000)	(0.003)	(0.012)	(0.007)	(0.000)	(0.001)	
REC	-0.017	0.089	-0.076	-0.069	0.052	-0.021	-0.035	0.149
	0.792)	(0.157)	(0.226)	(0.271)	(0.418)	(0.742)	(0.577	(0.017)

Notes: $p-$values of statistical significance of the null hypothesis of no correlation are in parenthesis.

Table 3: Panel Results: Includes Country Effects

	Real GDP				Unemployment			
	Fixed Effects		Random Effects		Fixed Effects		Random Effects	
Lag	0.634***		0.969***		0.138**		0.553***	
	(0.000)		(0.000)		(0.041)		(0.000)	
EFW	0.000	0.186**	-0.031	0.244**	2.378	1.771	1.718***	2.635**
	(0.996)	(0.049)	(0.121)	(0.018)	(0.237)	(0.333)	(0.005)	(0.016)
NetInc	0.002	0.003	0.037***	0.032	-0.367	-0.171	-0.063	0.038
	(0.861)	(0.893)	(0.000)	(0.171)	(0.412)	(0.689)	(0.497)	(0.828)
HiSch	-0.097***	-0.141***	0.022	-0.151**	1.072	0.397	1.959***	2.290***
	(0.004)	(0.009)	(0.125)	(0.011)	(0.317)	(0.706)	(0.000)	(0.003)
InfMor	-0.190***	0.077	-0.035***	0.122	1.546	-1.748	0.527	-0.598
	(0.000)	(0.267)	(0.008)	(0.109)	(0.336)	(0.199)	(0.195)	(0.409)
MAQ	0.419***	0.727***	0.219***	0.695***	-1.962	-1.490	-0.984	-1.538
	(0.000)	(0.000)	(0.000)	(0.000)	(0.214)	(0.307)	(0.367)	(0.247)
DRUG	-0.077***	-0.102***	-0.038***	-0.099***	1.742***	1.588***	0.956***	1.626***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
REC	-0.053***	-0.011**	-0.067**	-0.013**	0.487**	0.096	0.619***	0.141
	(0.000)	(0.045)	(0.000)	(0.038)	(0.001)	(0.372)	(0.000)	(0.175)
R^2_O	0.992	0.031	0.999	0.148	0.429	0.382	0.680	0.497
$p(H)$			0.000	N/A			0.000	0.096
$N \times T$	217	248	217	248	217	248	217	248

Notes: First column for each regression are estimated coefficients $p-$values are in the second column. Stars indicate statistical significance at the standard levels. $p(H)$ refers to $p-$values of the Hausman efficient estimator test to identify which panel model is appropriate.

Table 4: Panel Results: No Country Effects

	Real GDP				Unemployment			
	Fixed Effects		Random Effects		Fixed Effects		Random Effects	
Lag	0.570***		0.985***		0.183**		0.604**	
	(0.000)		(0.000)		(0.015)		(0.000)	
EFW	0.267***	0.577***	0.053*	0.656***	-3.284	-4.123**	-0.252	-1.790
	(0.010)	(0.000)	(0.098)	(0.000)	(0.170)	(0.038)	(0.701)	(0.106)
NetInc	-0.025	0.02	0.008	0.059	-0.398	-0.511	0.171*	0.495***
	(0.256)	(0.451)	(0.261)	(0.037)	(0.452)	(0.288)	(0.098)	(0.007)
HiSch	0.036	0.006	0.029	-0.010	-1.166	-1.731	1.748***	1.819**
	(0.504)	(0.923)	(0.228)	(0.890)	-0.368	-0.141	(0.002)	(0.032)
InfMor	0.283***	0.476***	0.045**	0.517***	-7.013***	-8.004***	-0.630	-3.722***
	(0.000)	(0.000)	(0.025)	(0.000)	(0.000)	(0.000)	(0.161)	(0.000)
MAQ	0.416***	0.587***	0.177***	0.547***	-0.398	0.766	0.293	0.731
	(0.000)	(0.000)	(0.002)	(0.000)	(0.837)	(0.645)	(0.816)	(0.640)
R^2_O	0.984	0.997	0.113	0.225	0.145	0.560	0.066	0.288
$p(H)$			0.000	N/A			0.000	0.000
$N \times T$	217	217	248	248	217	217	248	248

Notes: First column for each regression are estimated coefficients $p-$values are in the second column. Stars indicate statistical significance at the standard levels. $p(H)$ refers to $p-$values of the Hausman efficient estimator test to identify which panel model is appropriate.

Table 5: Dynamic Panel GMM Estimates: With Country Effects

	Log RGSP				Unemployment			
	AB		*AB-BB*		*AB*		*AB-BB*	
	$\hat{\delta}$	$p(\hat{\delta})$	$\hat{\delta}$	$p(\hat{\delta})$	$\hat{\delta}$	$p(\hat{\delta})$	$\hat{\delta}$	$p(\hat{\delta})$
Lag	0.539	0.000	0.943	0.000	0.211	0.000	0.324	0.000
EFW	0.056	0.180	-0.220	0.000	2.957	0.018	4.878	0.000
NetInc	0.019	0.000	0.023	0.002	-0.518	0.000	-0.715	0.000
HiSch	-0.056	0.000	-0.069	0.000	3.718	0.000	2.685	0.000
InfMor	-0.095	0.000	-0.177	0.000	2.740	0.001	1.825	0.003
MAQ	0.354	0.000	0.287	0.000	-3.756	0.000	-8.590	0.000
DRUG	-0.077	0.000	-0.053	0.000	1.794	0.000	1.781	0.000
REC	-0.048	0.000	-0.073	0.000	0.633	0.000	0.678	0.000
Cons	5.886	0.000	1.552	0.000	-18.187	0.000	-12.343	-0.040
No. Instruments	29		35		29		35	
$p(W)$	0.000		0.000		0.000		0.000	
$p(S-H)$	0.138		0.339		0.342		0.727	

Notes: *AB* refers to Arellano-Bond dynamic panel estimators and *AB-BB* refers to the Arrellano-Bover/Blundell-Bond estimators. First column, $\hat{\delta}$, for each regression are the estimated coefficients $p-$values are in the second column, $p(\hat{\delta})$. The Sargan test statistics are the $p-$values for the null that the instruments are orthogonal to the residuals, $p(S-H)$. All results are using two-step GMM errors.

Table 6: Dynamic Panel GMM Estimates: No Country Effects

	Log RGSP				Unemployment			
	AB		*AB-BB*		*AB*		*AB-BB*	
	$\hat{\delta}$	$p(\hat{\delta})$	$\hat{\delta}$	$p(\hat{\delta})$	$\hat{\delta}$	$p(\hat{\delta})$	$\hat{\delta}$	$p(\hat{\delta})$
Lag	0.408	0.000	0.858	0.000	0.255	0.000	0.440	0.000
EFW	0.515	0.000	0.187	0.000	-7.447	0.000	-2.922	0.000
NetInc	0.003	0.731	0.003	0.696	-0.543	0.000	-0.310	0.000
HiSch	0.161	0.000	0.119	0.000	-1.901	0.085	-2.980	0.001
InfMor	0.378	0.000	0.250	0.000	-6.206	0.000	-6.601	0.000
MAQ	0.291	0.000	0.470	0.000	-0.992	0.325	-4.968	0.015
Cons	4.667	0.000	0.186	0.352	49.838	0.000	42.648	0.000
No. instruments	27		33		27		33	
$p(W)$	0.000		0.000		0.000		0.000	
$P(S-H)$	0.061		0.239		0.117		0.415	

Notes: *AB* refers to Arellano-Bond dynamic panel estimators and *AB-BB* refers to the Arrellano-Bover/Blundell-Bond estimators. First column, $\hat{\delta}$, for each regression are the estimated coefficients $p-$values are in the second column, $p(\hat{\delta})$. The Sargan test statistics are the $p-$values for the null that the instruments are orthogonal to the residuals, $p(S-H)$. All results are using two-step GMM errors.

Figures

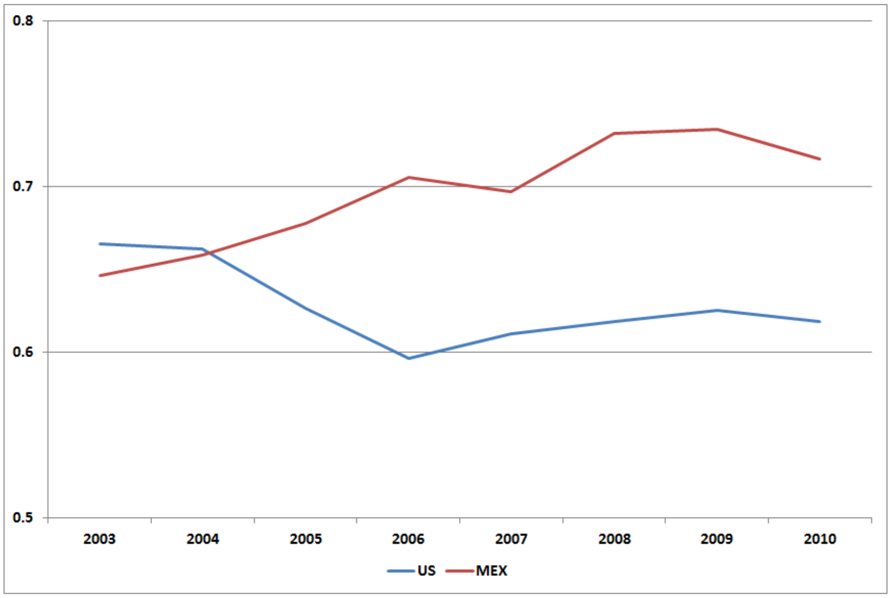

Figure 1: Economic Freedom: Standard Deviation

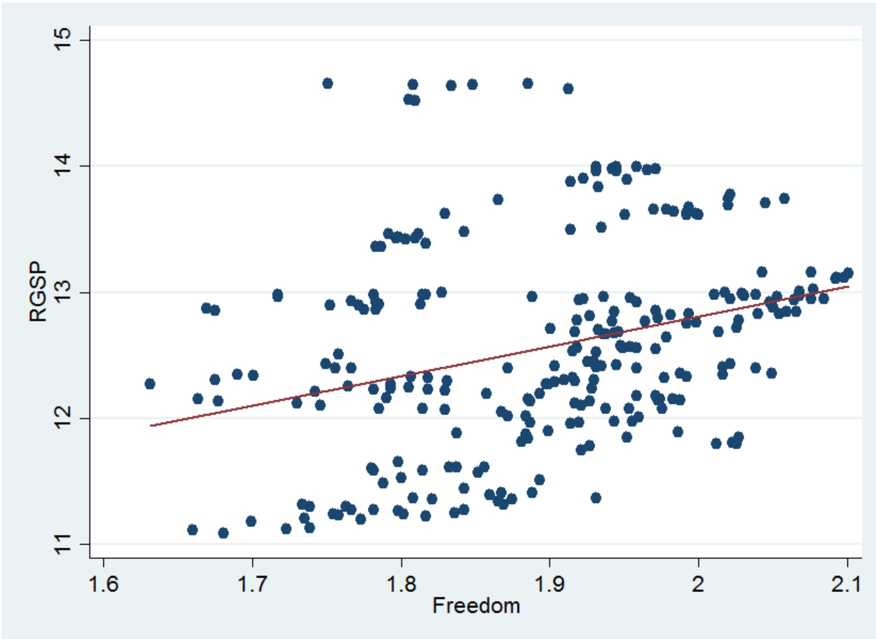

Figure 2: $\ln(RGSP)$ and EFW

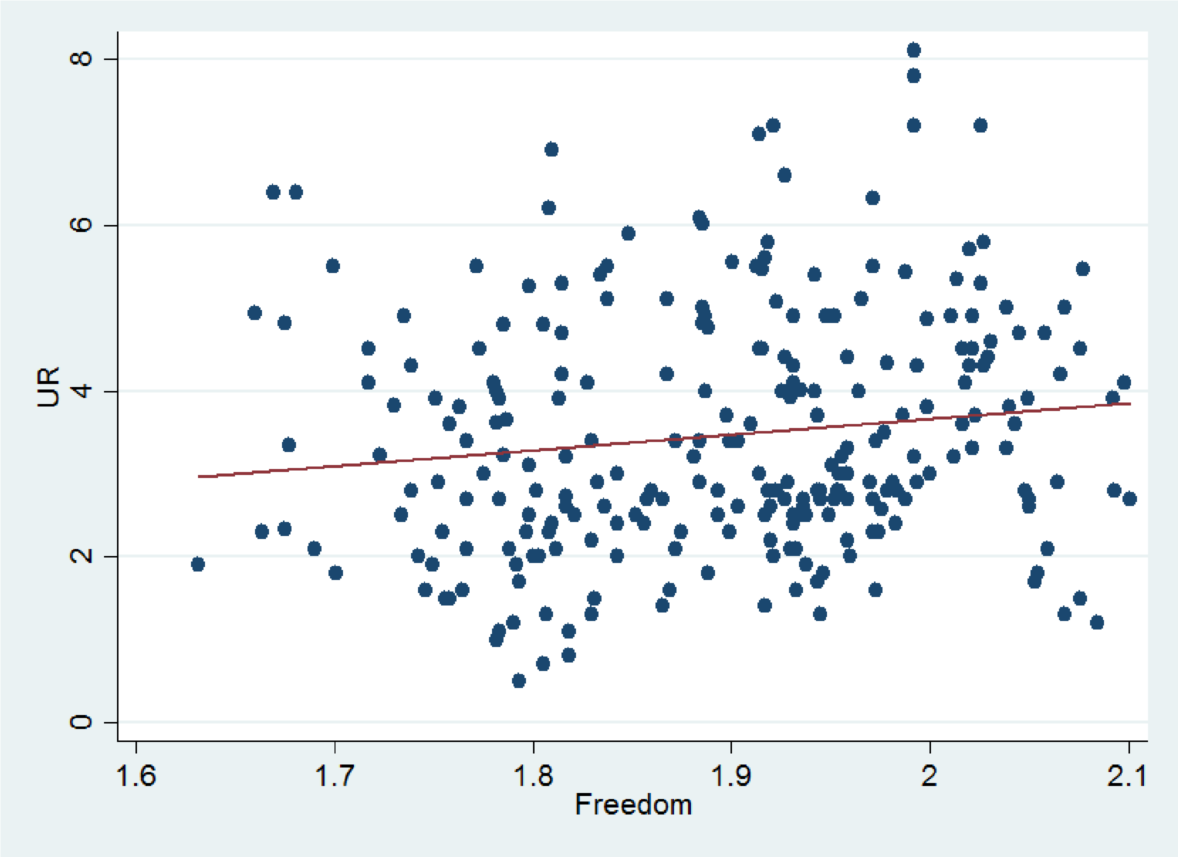

Figure 3: UR and EFW