POLITICAL INSTITUTIONS AND TRADE - EVIDENCE FOR THE LONG-RUN RELATIONSHIP AND CAUSALITY

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Political institutions and trade — evidence for the long-run relationship and causality

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Abstract

We examine the long-run effects of the political institutional framework, measured by the political risk component of the International Country Risk Guide, on trade. Our results suggest that an improved political institutional framework is both a cause and a consequence of increased trading activity. However, we find no significant relationship in case of exporting activity for the high-income countries and the countries that possess better political institutions.

1. Introduction

Recent studies found that institutions (Francois and Manchin 2013, Levchenko 2007) or more specifically democracy (Yu 2010, Eichengreen and Leblang 2008) foster trading activity.[1] The literature addresses several reasons for this relationship. In the model of Yu (2010), democracy improves institutions, where better institutions will involve stronger consumer rights, rule of law and property rights. This in turn will improve product quality and consequently the reputation of a country's exports, inducing decreased trade costs. For an importer country, democratization would influence trade costs via tariffs. In that respect, the literature finds that democratization leads to more liberal trade policies in less developed labor-intensive countries (where the political power is transferred from the elites to laborers, who benefit from pro-trade policies), whereas in developed countries protectionism is set up (O'Rourke and Taylor 2006, Milner and Kubota 2005). In this regard, Yu (2005) finds that in democratic states policies of protectionism are better represented and thus maintained.

Studying the relationship between institutions and trade is particularly interesting due to the two-sided effects that are supposed to exist. Francois and Manchin (2013) (page 167) argue that "institutional quality may also be driven by trade…", however, institutions "are more likely to have a more direct and immediate effect on the probability of trading and the amount traded than the other way around." .The authors do not estimate the effect of trade on institutional quality, but rather use an instrumental variable strategy for estimating the one-sided effects on trade. Employing instrumental variables for trade, Eichengreen and Leblang (2008), Lopez-Cordova and Meissner (2005) and Yu (2005) find a positive effect of trading activity for democratization. The literature provides explanations for both positive and negative effects of trade on institutional quality. On the one hand, free trade will raise incomes, communication of ideas and therewith the demand for democracy Lipset (1959, 1960). On the other hand, trade openness might sustain the status quo in a country (Yu 2010), because the land owners/ elites are the ones primarily getting benefits from globalization (Acemoglu and Robinson 2006) and they would fight for maintaining the current set-up of property rights and rule of law.

Non-stationarity issues and the long-run relationship between political institutions and trade so far have not been analyzed in the literature. The present contribution is meant to fill this gap. In fact, it is important to deal with non-stationarity in order to rule out spurious

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[1] Note that the economic literature has drawn attention to the individual countries' regime type for explaining trade instead of using the information on congruence of regime type for pairs of countries, a method which is usually applied in the political science literature (see e.g. Mansfield et al. 2000).

regression results. As we will see in the following, clearly trading activity as well as the political institutional quality increased over time, justifying analyses of non-stationarity. The recent literature has seen various applications of panel cointegration and causality methods which prove as a powerful tool to figure out the long-run relationship, for example between religiousness and growth (Herzer and Strulik 2013) or between trade and income (Herzer 2013). We analyze the relationship between political institutions and trade using data from the International Country Risk Guide and the World Development Indicators for a sample of 94 countries for the time period from 1990 to 2005. We find that in the long-run a one unit increase in the political institutions index is associated with an increase of exports by 0.4 percentage points and an increase of imports by 1 percentage point. Moreover, we can disentangle a bidirectional causality between trade and institutions.

2. Empirical Analysis

2.1 Model and data

In order to investigate the long-run relationship between the political institutional framework and trade, we estimate the following bivariate model:

$$\ln(X_{it}) = \beta_0 + \beta_1 \ (politicalinstitutions_{\ it}) + \varepsilon_{it} \tag{1}$$

where i=1,…,N denotes the cross-sectional unit, t=1,….,T denotes the time unit, and ε is the usual error term. X is the trade variable, either exports or imports, measured as values of exports or imports in goods and services in constant 2000 US-dollars. The trade data are taken from the World Development Indicators 2011. Our measure for the political institutional framework is politicalinstitutions, which is a composite measure defined as the sum of the components of the political risk measure of the International Country Risk Guide. The index is based on a rating of the following components: government stability, socioeconomic conditions, investment profile, internal conflict, external conflict, corruption, military in politics, religious tensions, law and order, ethnic tensions, democratic accountability and bureaucratic quality. We use the weights given by ICRG (see the appendix) such that our measure for political institutions will attain values between min 0 and max 100, a higher value describing an improved political institutional framework. Our data cover the period from 1990 to 2005 and we take up all countries into the sample for which data are available, leading to a total of 94 countries (see the list in the appendix).

A first look at the data reveals that the variables appear to be non-stationary (see figures 1-3 in the appendix). Ln(exports), ln(imports) and the politicalinstitutions variable generally increase between 1990 and 2005. In the following analysis, we will first test for the non-stationarity of the variables. The idea behind is to disentangle economic long-run relationships between variables that have a stochastic trend over time and to differentiate these relationships from spurious regression results. If two non-stationary variables are found to be cointegrated, a long-run equilibrium relationship between these variables exists. Finding a cointegration relationship involves that no other important non-stationary variable has been omitted from the regression, otherwise no cointegration would be detected (Everaert 2011). Furthermore, no endogeneity problems arise, because the cointegrating estimator is superconsistent (Engle and Granger 1987). The direction of long-run causality will be investigated in order to figure out if an improved political institutional framework causes increased trading activity or if the former is an effect of the latter.

2.2 Panel unit root and cointegration tests

We conduct the panel unit root tests of Breitung (2000) and Pesaran (2007) to investigate non-stationarity of the two variables. Among the so called first generation panel unit root tests, the Breitung test has the highest power and smallest size distortions (Breitung 2000), which is why we decided to use this test. The Breitung test, however, assumes cross-sectional independence. Therefore, we also use the Pesaran test which is able to capture heterogeneity across countries. The results in table 1 reveal that the null hypothesis of a unit root cannot be rejected.

Table 1 Panel unit root tests

Variables	Breitung (2000)	Pesaran (2007)
ln(exports)	0.6962	5.479
ln(imports)	-1.2274	1.195
ln(political institutions)	1.7408	0.865

Note: For the Breitung test the number of lags was determined by the Schwarz information criterion. Individual-specific intercepts and time trends were included in the regressions. For the Pesaran test a trend and two lags were included. The unit root tests on the first differences of the variables all reject the null hypothesis (not shown here, but available from the author upon request), revealing that all variables are integrated of order one. ** indicates significance at the 5% level.

We employ the approach of Pedroni (2004) and use the panel and group Augmented Dickey Fuller (ADF) and Phillips-Perron (PP) tests to check for cointegration. All tests reject the null hypothesis of no cointegration, implying that there exists a long-run relationship between the political institutional framework and trade.

Table 2 Panel cointegration tests

	Test statistic for the exports equation	Test statistic for the imports equation
Panel PP	-5.2562**	-5.8565**
Panel ADF	-6.527**	-11.0831**
Group PP	-5.4558**	-6.9923**
Group ADF	-8.0268**	-10.8725**

Note: The number of lags was determined by the Schwarz information criterion. A deterministic trend and an intercept were included in the regressions. ** indicates significance at the 5% level.

2.3 Long-run relationship

We estimate the long-run effect of the political institutional framework on trade using dynamic ordinary least squares (DOLS) and fully modified ordinary least squares (FMOLS). These estimators have been found to be asymptotically efficient. In comparison, however, the DOLS-estimator outperforms the FMOLS-estimator (Kao and Chiang 2000). We will first talk about the pooled panel DOLS estimator and report results of the group mean panel DOLS and pooled FMOLS estimation in section 2.5 as robustness checks.

The pooled panel DOLS estimator (Kao and Chiang 2000) is given by:

$$\ln(X_{it}) = \beta_0 + \beta_1 \, (politicalinstitutions_{it}) + \sum_{j=-k}^{k} B \, \Delta \, (politicalinstitutions_{it-j}) + \varepsilon_{it}$$

(2)

where k lead and lag differences as well as the current difference of politicalinstitutions are included in the regressions, accounting for possible serial correlation and endogeneity of regressors.

The coefficient of the pooled DOLS-estimator for the export equation displayed in table 3 implies that a unit increase in the politicalinstitutions variable yields, in the long-run, a statistically significant increased exporting activity of exp(0.0039) = 0.4%. The long-run increase in importing activity amounts up to exp(0.97) = 1%. In comparison, Yu (2010) found

that total trade increases by 3.6% through democracy (in his study democracy is measured by Polity IV data on a scale ranging from -10 to +10).

We checked for the relevance of cross-sectional dependence for the estimators by employing the test of Pesaran (2004) (see Eberhardt and Teal 2011 for a critical discussion). For every equation and estimator the test indicated cross-sectional dependence, such that we always employed the demeaned data series (substracting the cross-sectional mean for one year from each observation) for the estimations (also for the estimations in subsection 2.4 and 2.5).

Table 3 Long-run effects estimation

	DOLS pooled	DOLS group mean	FMOLS pooled
Exports equation	0.0039**	0.0008	0.0043**
R^2	0.995	0.942	0.991
Observations	1222	1222	1410
Imports equation	0.0097**	0.0072**	0.0093**
R^2	0.995	0.887	0.989
Observations	1222	1222	1410

Note: DOLS-estimation was run with one lead and one lag. The demeaned data series were applied for the regressions. ** denotes significance at the 5% level.

2.4 Granger Causality

It could well be that the positive coefficient we obtained for the relationship between politicalinstitutions and trade is not resulting from an impact of institutions on trade but from an impact of trade on institutions. This would justify research findings by Lopez-Cordova and Meissner (2005) and Yu (2005) in the case of democratization. Consequently, we also need to investigate the direction of causality.

Therefore, we estimate the following panel vector error correction model:

$$\Delta X_{it} = \beta_{0,1} + \beta_{1,1i} Z_{it-1} + \sum_{j=1}^{k} (\gamma_{1,1i} \Delta X_{it-j} + \gamma_{2,1i} \Delta politicalinstitutions_{it-j}) + \varepsilon_{1it} \qquad (3)$$

$$\Delta politicalinstitutions_{it} = \beta_{0,2} + \beta_{1,2i} Z_{it-1} + \sum_{j=1}^{k} (\gamma_{1,2i} \Delta X_{it-j} + \gamma_{2,2i} \Delta politicalinstitutions_{it-j}) + \varepsilon_{2it} \qquad (4)$$

where Z are residuals of individual DOLS long-run estimations. A significant error correction term β_1 indicates long-run Granger causality from the independent to the dependent variable (Granger 1988).

The results in table 4 show that in the long-run trade is both a cause and a consequence of the political institutional framework. In every case, the null hypothesis of no Granger causality is rejected.

Table 4 Long-run causality

	F-Stat	p-value	Observations
Political institutions do not Granger cause lnexports	5.9921	0.0026	1316
Lnexports do not Granger cause political institutions	3.9041	0.0204	1316
Political institutions do not Granger cause lnimports	3.2871	0.0377	1316
Lnimports do not Granger cause political institutions	4.0015	0.0185	1316

Note: The demeaned data series were taken for regressions.

2.5 Robustness checks

We control for the robustness of our results, using different estimation methods, as well as investigating sample-selection bias.

On the one hand, we generate group mean panel DOLS estimates (Pedroni 2001) which account for heterogenous coefficients across countries, on the other hand we use the pooled FMOLS-estimator (Kao and Chiang 2000) which is based on a non-parametric procedure that controls for serial correlation and endogeneity. The estimates are generally similar and robust to different estimation techniques, though for the exports equation the coefficient out of the group mean panel DOLS estimation is insignificant (see results in table 3).

In order to control for sample-selection bias, we run pooled DOLS-regressions for the subsamples of high- and low-income countries (given by the World Bank classification 2012, low-income economies are those countries that have a GNI per capita of 1035 $ or less, high-income economies have a GNI per capita of 12616 $ or more) and for those countries that have higher values of the politicalinstitutions variable than the average and those countries that have values below the average. The results reveal that the long-run relationship between political institutions and imports remains positive and significant. For exports, the coefficients become insignificant in case of the high-income countries and countries that possess better political institutions. Some of our results (the non-significant negative coefficient in the case of political institutions values above the average in the exports equation) lend support to the

findings by Yu (2005), who explains that in more democratic countries protectionist policies are secured.

Table 5 DOLS-estimates for sub-samples

	High-income countries	Low-income countries	Political institutions values above average	Political institutions values below average
Exports equation	0.0008	0.0091**	-0.001	0.0053**
R²	0.997	0.967	0.997	0.991
Observations	455	182	546	676
Imports equation	0.0125**	0.0138**	0.0109**	0.0094**
R²	0.997	0.964	0.997	0.989
Observations	455	182	546	676

Note: Pooled DOLS-estimation with one lead and one lag. The demeaned data series were taken for regressions. ** denotes significance at the 5% level.

3. Conclusions

We examined for non-stationarity and the long-run relationship between the political institutional framework and trade using panel unit root and cointegration techniques. With this methodology we were able to control for omitted variable and endogeneity bias. From our results we can conclude that the political institutional framework has a positive long-run effect on trade. We estimated that a one unit decrease in the political risk is associated with an increase of exports by 0.4 percentage points and an increase of imports by 1 percentage point. In addition, our results show that the long-run causality is bidirectional. An improved political institutional framework is both a cause and a consequence of increased trade. These effects are robust to different estimation methods. We found no significant effects, however, in case of exporting activity for the high-income countries and the countries that possess better political institutions. We specifically address this issue in a following research paper.

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Appendix

Political risk components

Component	points
Government stability	12
Socioeconomic conditions	12
Investment profile	12
Internal conflict	12
External conflict	12
Corruption	6
Military in politics	6
Religious tensions	6
Law and order	6
Ethnic tensions	6
Democratic accountability	6
Bureaucratic accountability	4

Source: ICRG

List of countries
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Algeria, Argentina, Australia, Austria, Bahamas, Bangladesh, Belgium, Bolivia, Botswana, Brazil, Brunei, Bulgaria, Burkina Faso, Cameroon, Canada, Chile, China, Colombia, Congo

DR, Costa Rica, Cote d'Ivoire, Cuba, Cyprus, Czech Republic, Denmark, Dominican Republic, Ecuador, Egypt, El Salvador, Ethiopia, Finland, France, Gabon, Gambia, Germany, Greece, Guatemala, Guinea, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Iran, Ireland, Italy, Japan, Jordan, Kenya, Luxembourg, Madagascar, Malaysia, Mali, Malta, Mexico, Morocco, Mozambique, Namibia, Netherlands, New Zealand, Nicaragua, Norway, Pakistan, Panama, Paraguay, Peru, Philippines, Poland, Portugal, Romania, Russia, Senegal, South Africa, South Korea, Spain, Sudan, Sweden, Switzerland, Syria, Tanzania, Thailand, Togo, Trinidad and Tobago, Tunisia, Turkey, Uganda, United Kingdom, United States, Uruguay, Venezuela, Vietnam, Zambia, Zimbabwe
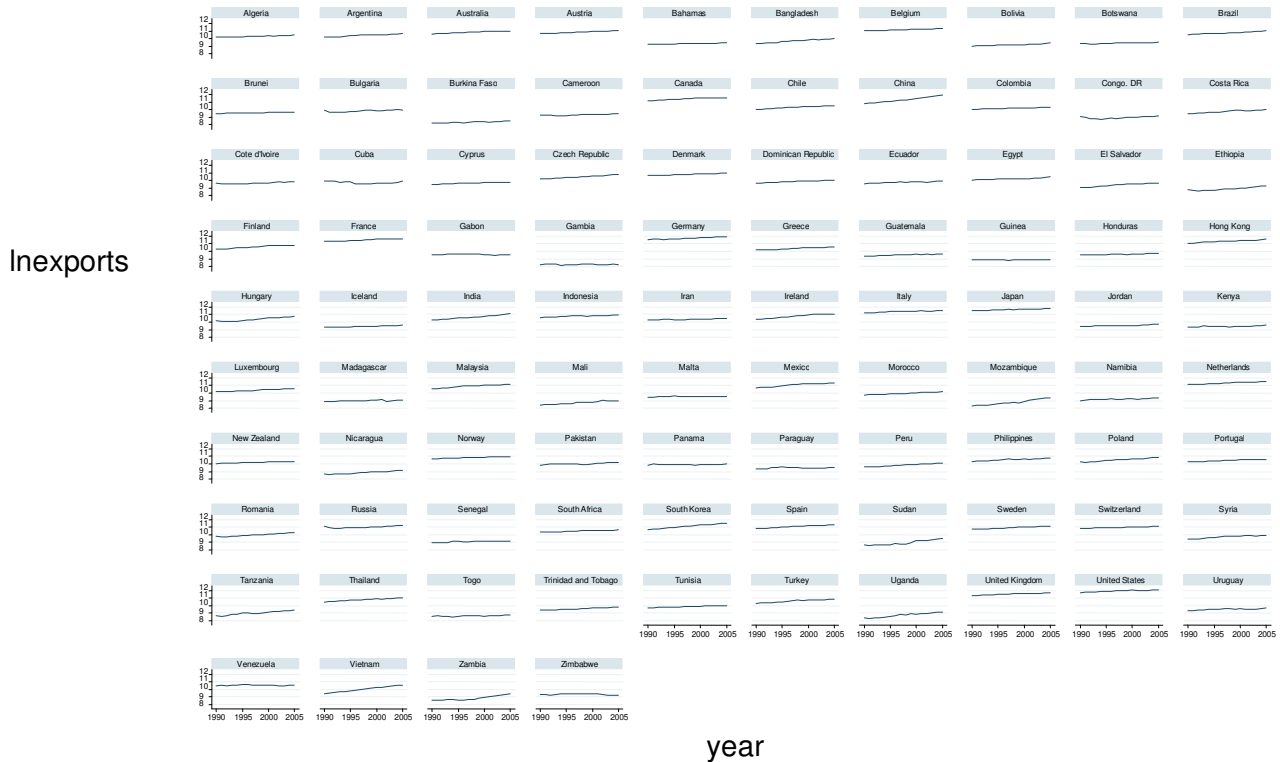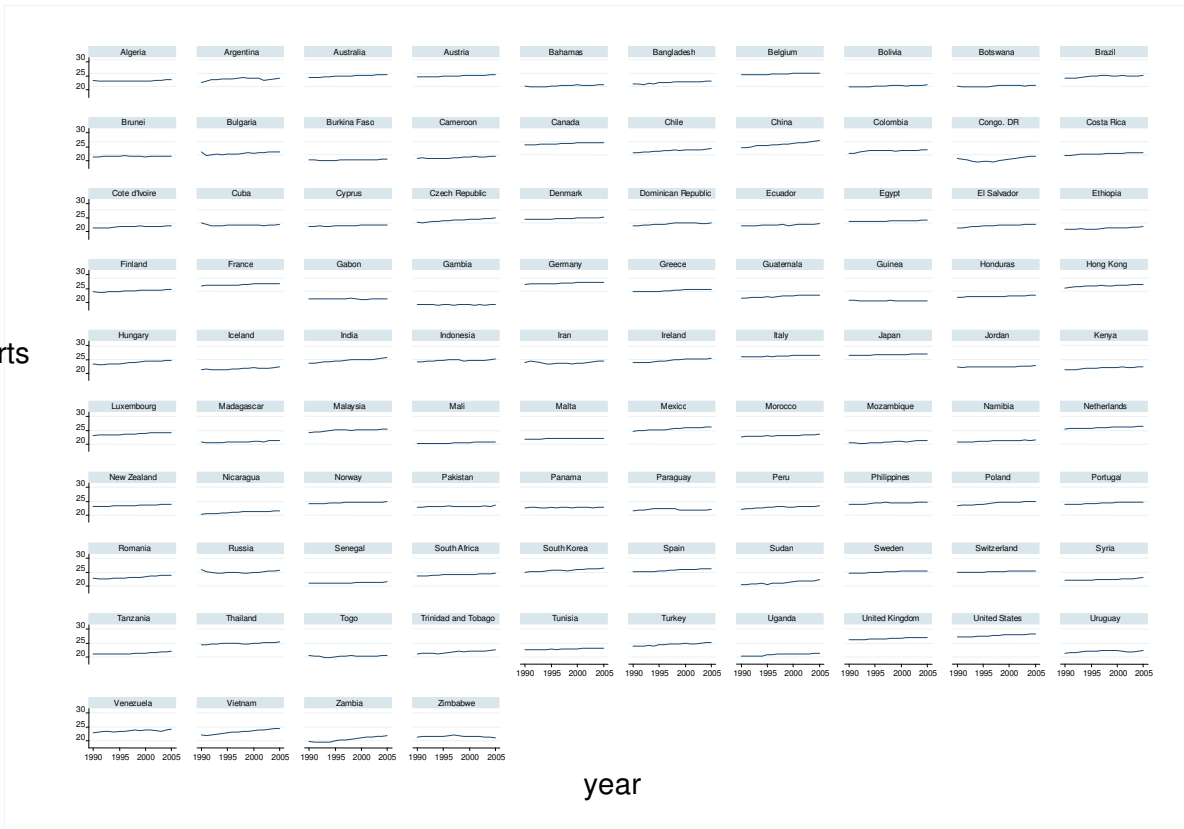
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Figure 1: Time series plots for ln(exports)
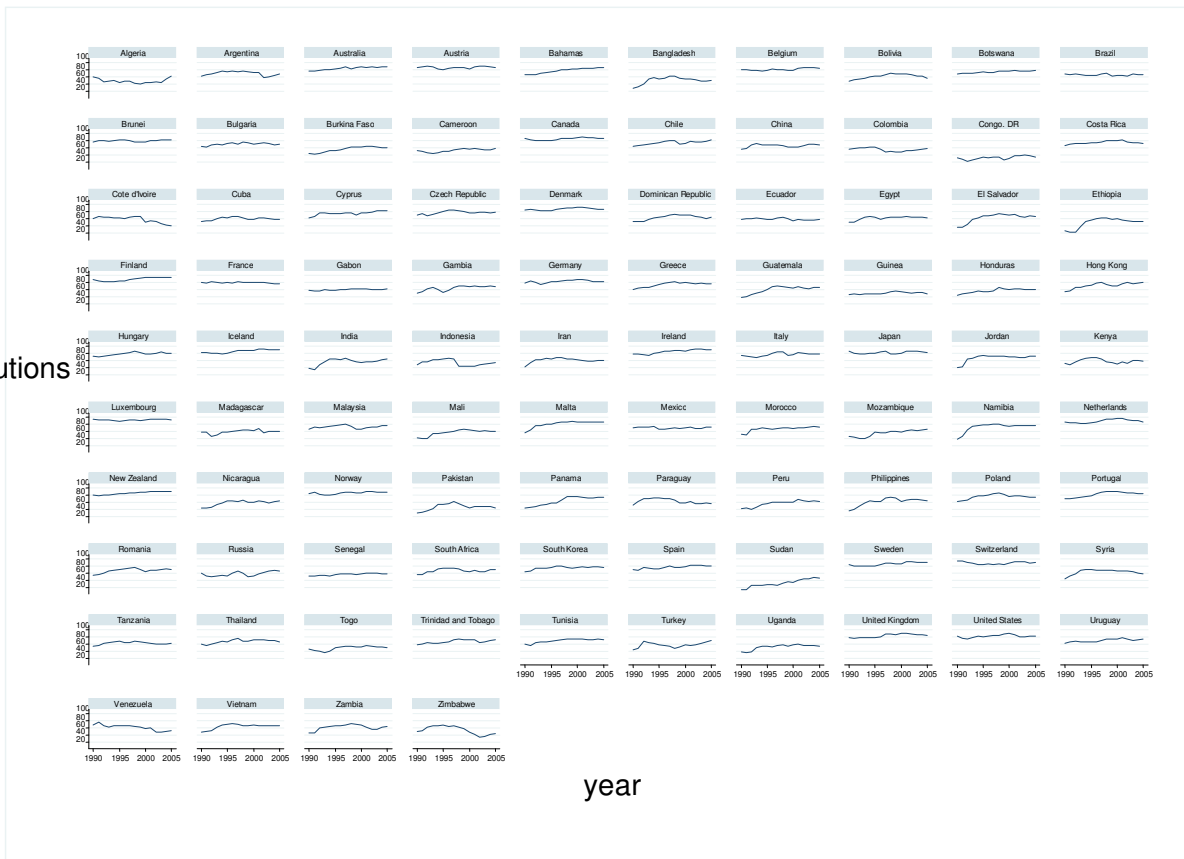
Figure 2: Time series plots for ln(imports)

Figure 3: Time series plots for the politicalinstitutions index