NBER WORKING PAPER SERIES

PROTECTIONISM ISN'T COUNTERCYCLIC (ANYMORE)

Andrew K. Rose

Working Paper 18062
http://www.nber.org/papers/w18062

NATIONAL BUREAU OF ECONOMIC RESEARCH
1050 Massachusetts Avenue
Cambridge, MA 02138
May 2012

B.T. Rocca Jr. Professor of International Business, Associate Dean, and Chair of the Faculty, Haas School of Business at the University of California, Berkeley, NBER Research Associate, and CEPR Research Fellow. The data set, key output, and a current version of this paper are available at my website. For help and comments, I thank: Richard Baldwin, Chad Bown, Meredith Crowley, Lawrence Edwards, Jeffry Frieden, Rob Johnson, Tom Prusa, and seminar participants at Boston College. For hospitality during the course of writing this paper, I thank the Free University of Berlin, the Hong Kong Institute for Monetary Research, and the University of Cape Town. The views expressed herein are those of the author and do not necessarily reflect the views of the National Bureau of Economic Research.

Protectionism Isn't CounterCyclic (anymore)
Andrew K. Rose
NBER Working Paper No. 18062
May 2012
JEL No. E32,F13

ABSTRACT

Conventional wisdom holds that protectionism is counter-cyclic; tariffs, quotas and the like grow during recessions. While that may have been a valid description of the data before the Second World War, it is now inaccurate. In the post-war era, protectionism has not actually moved counter-cyclically. Tariffs and non-tariff barriers simply do not rise systematically during cyclic downturns. I document this new stylized fact with a panel of data covering over 60 countries and 30 years, using eighteen measures of protectionism and seven of business cycles. I also provide some hints as to why protectionism is no longer counter-cyclic.

Andrew K. Rose
Haas School of Business Administration
University of California, Berkeley
Berkeley, CA 94720-1900
and NBER
arose@haas.berkeley.edu

1. In the Beginning

It is widely accepted that protectionism is counter-cyclic; tariffs, non-tariff barriers and the like are more numerous and/or intense during recessions. This modest paper has a single objective: refuting that hypothesis. I wish to establish a new stylized fact; during the post-war era, protectionism has not been counter-cyclic.

Conventional Wisdom

The entire political-economy literature without exception (to the best of my knowledge), agrees that protectionism is counter-cyclic. The abstract of Bagwell and Staiger (2003) begins "Empirical studies have repeatedly documented the countercyclical nature of trade barriers"; for support, they provide citations of eight papers which "all conclude that the average level of protection tends to rise in recessions and fall in booms." Rodrik (1995, p. 1486) states "That the average tariff level tends to rise in recessions is a robust finding in the literature…" Costinot (2009, p. 1011) states "One very robust finding of the empirical literature on trade protection is the positive impact of unemployment on the level of trade barriers. The same pattern can be observed across industries, among countries, and over time …" McKeown (1984, p. 215) states: "That tariff levels and economic growth rates tend to move in opposite directions is a venerable piece of conventional wisdom. As early as 1879, Gustav Schmoller, the famous economist of the German historical school, noted that, 'The times of boom, of increasing exports, of new openings of overseas markets, are the natural free trade epochs, while the reverse is true in times of foreign slumps, of depressions, of crisis.'"[1]

Most of the literature that studies the determinants and incidence of protectionism is *cross-sectional* in nature.[2] That is, it addresses questions like "Why do certain industries/areas/interest groups receive protectionism, while others do not?" Perhaps the most prominent recent example is Grossman and Helpman (1994), a seminal paper which has generated a number of empirical tests, including Goldberg and Maggi (1999) and Gawande and Bandyopadhyay (2000). By way of contrast, the focus of this paper is on the *time-series* variation of protectionism; I ask "How does protectionism respond to business cycle fluctuations?"

Received Wisdom

The literature provides evidence that protectionism was counter-cyclic before the Second World War. Hansen (1990) uses American pre-WWII data and shows that (p. 539) "During economic recessions, the federal government posted taxes [tariffs] 4.69 percentage points higher than it did during expansions." Gallarotti (1985) supports her theory of counter-cyclic protectionism using pre-WWI data from Germany, the UK and the USA; McKeown (1984) uses similar data to support his closely-related theory. Magee and Young (1987) find that tariffs rise with unemployment using standard regression techniques and data from twentieth-century American presidential administrations.

Bohara and Kaempfer (1991a) use American data from 1890 to 1970. They estimated a VAR that includes: a) the real trade balance; b) the log of unemployment; c) the growth of real GNP; d) inflation; and e) the growth rate of the average tariff on dutiable imports. They conclude that there is

significant Granger causality to tariff levels from all variables except the trade balance. Curiously, their impulse response functions have signs that are "sensible" in the very short run (meaning that higher unemployment and lower GDP are associated with higher tariffs), but are reversed within a few years. Bohara and Kaempfer (1991b) use comparable data but with a 3-variable VAR, excluding the trade balance and inflation. In this context they find no significant effect of unemployment on tariffs, and they also find that higher growth is associated with *higher* tariffs.

A handful of papers use post-war time-series data to link protectionism to the state of the macro-economy. Takacs (1981) uses annual American data between 1949-1979 on instances when the USITC is petitioned for a temporary tariff, quota or other kind of protection. She finds that the use of the "escape clause" is not correlated with cyclic (or trend) measures of economic activity. Feinberg (2005) finds weak evidence of cyclicality in American anti-dumping petitions, especially outside steel. Grilli (1988) uses 18 annual observations for both the EC and the USA between 1969 and 1986, and two measures of protectionism, the log of import penetration and petitions for anti-dumping, subsidy-countervailing and safeguard actions. He is able to link these to the log real exchange rate and the growth in industrial production (for the US) or the change in unemployment (for the EC). Grilli uses 2SLS with a Cochrane-Orcutt procedure, a time trend and dummy variables; he finds evidence of counter-cyclic movement in non-tariff barriers. This is a heavily parameterized approach, long on assumptions and short on sensitivity analysis and data. Knetter and Prusa (2003) find a linkage between antidumping filings and macroeconomic factors. They use multilateral and bilateral data for Australia, Canada, the EU and the USA between 1980 and 1998. Their particular focus is the real exchange rate; they find that appreciation increases filings significantly. They also find that the effect of the three-year growth in real GDP is insignificant in multilateral data, but significantly negative in bilateral data. Finally, Bown and Crowley (2012) use data for five major economies to estimate the effects of macroeconomic fluctuations on protectionism. They exploit a recent quarterly bilateral data set that is dis-aggregated by product. While their main focus is on the responsiveness of temporary trade barriers to foreign growth, they find evidence that protection is counter-cyclic, especially for the United States and Australia. I take the latter two findings seriously and consider anti-dumping and other temporary trade barriers further below. Still, the evidence of counter-cyclic postwar protectionism seems less than overwhelming.

2. The Story in Pictures

I start by exploiting the data set tabulated in the data appendix of Magee and Young (1987). This provides series for the natural logarithm of the American tariff and unemployment rates (among other variables), averaged over presidential administrations between 1904 and 1984. I provide time series plots of these series in the top-left graph of Figure 1. The graph immediately below is a scatter-plot of the tariff (on the ordinate) against unemployment (on the abscissa). This shows a positive relationship over the whole period; counter-cyclic protection. The sample is split into two in the scatter-plots to the right. Above, the data show a positive relationship between 1906 and 1942; high unemployment in the 1930s tends to coincide with high tariffs. This relationship is strikingly reversed in the graph below which scatters tariffs against unemployment for the period between 1946 and 1982.

Since World War Two, high American unemployment seems to coincide with low American tariffs; protectionism seems to be, if anything, cyclic.

This finding is not particularly sensitive. The census bureau provides annual data on American duties (measured as a percentage of dutiable imports) between 1869 and 1997, when the series was discontinued. This can be compared to (the natural logarithm of American) real GNP, taken from the BEA and extended back by Balke and Gordon.[3] The raw series on duties and GNP are plotted in the top-left graph of Figure 2; NBER recessions are also marked on the GNP plot.[4] Both duties and aggregate output trend strongly; accordingly, de-trended series for both duties and output (after plain-vanilla double exponential univariate de-trending) are plotted beneath.[5] The scatter-plots on the right show again that the relationship between the two series seems to be different before and after the end of the Second World War. Before WWII, de-trended GNP and protectionism are negatively correlated; business cycle upturns tend to coincide with lower protectionism.[6] However, as can be seen in the lower-right scatter-plot, this relationship is reversed after WWII when business cycle peaks and high duties appear together.[7]

Of course, the evidence in Figures 1 and 2 is by no means definitive. At least two issues spring immediately to mind. First, the figures only use American data. Second, the only measure of protectionism in the figures is the aggregate tariff rate (measured more or less directly), when non-tariff barriers (NTBs) are widely considered to be an important features of modern protectionism.[8] One plausible way to get around both of these problems is to use more global measures of both protectionism and the business cycle. Accordingly, Figure 3 provides a time series plots of annual global GDP growth and the number of commercial disputes initiated under the GATT/WTO dispute settlement system.[9] This is by no means a perfect measure of protectionism. Complaints are not formally initiated against all protectionism, are not equally important, and are not randomly initiated across countries. The inadequacies of the GATT system lead to considerable reform under the WTO in 1995. Still, this measure covers both the world and NTBs.[10] The message from Figure 3 is that, for the world as a whole, global growth is essentially uncorrelated with the initiation of disputes under the multilateral mechanism set up precisely to handle protectionism.[11]

One of the most striking features of Figure 3 is at its extreme right; the "Great Recession" of 2009 was a collapse of global growth without any corresponding uptick in trade disputes. This is a striking observation; the most serious recession in generations does not seem to have resulted in more protectionism, despite an unprecedented collapse in international trade.[12] The behavior of protectionism around the Great Recession is worthy of further investigation.

Figure 4 provides a series of scatter-plots of "Trade Freedom" against de-trended aggregate output. The former is one component of the Heritage Foundation's "Index of Economic Freedom." Like the overall index, the index of trade freedom is estimated annually and varies between 0 (North Korea) and 100 (Hong Kong, Macau, Singapore and Switzerland currently share the highest score of 90). It is "a composite measure of the absence of tariff and non-tariff barriers that affect imports and exports of goods and services" and is freely available recently for 155 countries.[13] I scatter trade freedom (on the ordinate) against de-trended real GDP (on the abscissa, using Penn World Table 7 data for the latter).

Since series can de-trended in many ways, I present results from four standard techniques: a) Hodrick-Prescott filtering; b) Christiano-Fitzgerald filtering; c) residuals from a linear time trend; and d) annual growth rates.[14]

The top-left graph of Figure 4 scatters trade freedom against (the natural logarithm of real PPP-adjusted) GDP, de-trended via the Hodrick-Prescott filter. The observations are averaged over 2004-06 to get an idea of what the relationship was like in the period before the Great Recession. The relationship between trade freedom and de-trended output is insignificantly negative. As the graph immediately below shows, this relationship becomes even more negative if one examines 2009 data; the few countries above trend tend to have *less* trade freedom. The change between the two periods of time is portrayed in the bottom-left graph; this scatters the difference between 2009 and 2004-06 trade freedom against the difference between 2009 and 2004-06 HP-filtered GDP. The relationship is negligible; the effect of the Great Recession on a country's output is uncorrelated with its change in trade freedom. This effect is not driven by the HP-filter; the other three sets of graphs (arranged in columns) use different de-trending techniques and show similar results. The most positive is that for the Christiano-Fitzgerald filter, which shows a slight positive relationship between the change in trade freedom and the change in de-trended output (the correlation coefficient is a modest .17).

The data I have examined thus far show no obvious strong relationship between protectionism and the business cycle, at least for the period since World War Two. It is especially striking that the Great Recession of 2009 does not coincide with any obvious increase in protectionism. Of course, there may be some more subtle relationship waiting to be uncovered. The figures are bivariate; no account is taken of other factors. Dynamics have been ignored, as have other measures of protectionism and the business cycle. Accordingly, I now turn to more comprehensive statistical analysis.

3. The Story in Tables

Output and WTO Dispute Initiation

I begin by tabulating results in Table 1 from the following regression:

$$NumDisp_{it} = \{\alpha_i\} + \{\beta_t\} + \gamma BC_{it} + \varepsilon_{it} \qquad (1)$$

where: $NumDisp_{it}$ is the number of WTO disputes initiated by country i in year t; $\{\alpha\}$ and $\{\beta\}$ are comprehensive sets of country- and time-specific fixed effects respectively; BC_{it} is the deviation of (the natural logarithm of) real GDP from its trend; and ε is a well-behaved residual that represents the host of other factors determining dispute initiation. Real GDP is extracted from the Penn World Table 7.0 (available through 2009); it is adjusted for PPP deviations. I estimate this equation between 1995 and 2009 using OLS, and present estimates of the coefficient of interest, γ, along with its standard error.

This set-up is reduced-form in nature, so structural claims are inappropriate; it is unclear whether γ reflects the demand for protectionism, its supply, or both.[15] I restrict myself to countries that have filed at least one WTO dispute during the sample period and drop individual EU member countries (EU member states do not file disputes individually).

The number of disputes initiated through the WTO's dispute settlement body is a natural measure of protectionism. The system is designed to be accessible to all WTO members and covers all manner of trade quarrels. However, I use other measures of protectionism below to check the sensitivity of my results. The WTO dispute settlement literature does not focus on business cycles.[16]

My results are presented in five columns, one for each de-trending technique: a) Baxter-King filtering; b) Christiano-Fitzgerald filtering; c) Hodrick-Prescott filtering; d) annual growth rates; and e) residuals from a linear time trend. Consider the top-left entry in Table 1. This indicates that the effect of an increase in output above the trend level of real GDP (de-trended with the Baxter-King filter) on WTO dispute initiation is negative but negligible, both economically and statistically. The cells immediately to the right show that this (non-)result does not depend on the precise de-trending method. Succinctly, there is no evidence here that protectionism is counter-cyclic.

The rows beneath indicate that this result is insensitive to a number of underlying assumptions. For instance, the results are robust to dropping time-specific fixed effects, country-specific effects, or both. Adding an interaction between de-trended output and a linear trend does not change the results, nor does including all countries (instead of just those which have filed at least one dispute with the WTO). Removing outliers from the data set – defined as those with a residual that is at least three standard errors from zero – does have a slight effect. For this perturbation, two coefficients are significantly different from zero at the 5% level and all the coefficients are consistently signed. These coefficients are positive, providing (weak) evidence that countries above trend initiate *more* disputes; again, pro-cyclic protectionism. Restricting the sample to countries without high (or non-high) income or large populations also does not alter the result.

Perhaps the relationship between protectionism and the business cycle is not contemporaneous? To investigate, I sequentially substitute in place of contemporaneous de-trended output: a) the first lag of de-trended output, b) the second lag, and then c) a moving average of these lags. These perturbations provide little evidence of counter-cyclic protectionism; the coefficients tend if anything to become more positive. Likewise, using Poisson estimators instead of least squares (to take account of the count nature of the regressand) or shifting to three-year averages (in place of annual data) does not strengthen the case for counter-cyclic protectionism. The bottom row shows that using historical evidence on disputes initiated under the GATT (as opposed to the WTO) also changes little.

Other Measures of Protectionism

Initiating a dispute with the WTO is one manifestation of protectionism, but by no means the only. In Table 2, I replace it with more than a dozen alternative measures. None of these is a perfect measure of protectionism; the hope is that they are collectively persuasive.

The results presented in Table 2 rely on the same estimation strategy as used in Table 1, and simply substitute alternative measures of protectionism for the dependent variable. For instance, the first row uses the number of anti-dumping cases initiated; these are insignificantly related (but positively) to business cycle fluctuations.[17] This lack of significant counter-cyclicality also characterizes other temporary trade barriers, such as countervailing duties and safeguards.[18] I also use a variety of protectionist measures available from the World Bank's *World Development Indicators* (WDI) including: the percentage of all products with protection at the bound tariff limit; the simple average of the bound rate (averaged across all products); customs duties measured as percentages of goods imports, tax revenue, and output; export taxes measured as a percentage of tax revenue; the share of tariff lines (across products) with international peaks; and tariffs measured four ways (both applied and most-favored nation rates, averaged both simply and with trade weights.) I also use the index of trade freedom (from Figure 4) and the number of regional trade agreements either initiated or completed (the latter is taken from Moser and Rose, 2011). At the bottom of the table, I employ the common factor extracted from seven different measures of protectionism using the method of principal factors.[19]

The results from Table 2 are weak. Of the eighty-five coefficients, only four are significantly different from zero at the 1% significance level, and an additional four at the 5% level. The few significant coefficients all rely on the most unreliable method of de-trending GDP (residuals after the effect of a linear trend has been removed). Different measures of protectionism also give inconsistent results (protectionism rises significantly during good times when measured by bound rate averages or export taxes). Succinctly, the message from Tables 1 and 2 seems to be that protectionism is essentially acyclic.[20] This is corroborated by the graphical analogue in Figure 5, which is a set of scatter-plots of five measures of protectionism (the [applied weighted] average tariff, duties measured as a fraction both of imports and of GDP, anti-dumping cases, and GATT/WTO disputes initiated) against real GDP de-trended in five different ways. The plots in Figure 5 provide no convincing evidence that protectionism is cyclic.[21]

Adding Controls

The results in Table 1 model WTO dispute initiation, taking out all country- and time-specific fixed effects. Perhaps the results are masked by other influences and become stronger once other controls are included? No. Table 3 includes eighteen other control variables, both individually and in groups. These are mostly taken from the WDI and represent a wide range of economic phenomena: income, population, labor's share of income, unemployment, trade, membership in the GATT/WTO, fiscal policy, and the real exchange rate. I also include value added in exports, measured as a percentage of exports; this is an (admittedly imperfect) proxy for production fragmentation.[22] At the bottom of the table, I include controls for the nominal exchange rate regime; I then estimate equation (1) only for countries with fixed nominal exchange rates.[23] However, none of these controls change the message from Table 1: this measure of protectionism simply does not seem to be cyclic.

Historical Data

The evidence presented above indicates that protectionism since the Second World War does not seem to be counter-cyclic. Nevertheless, the literature reviewed above, as well as the (admittedly

limited) evidence of Figures 1 and 2 indicate that protectionism was counter-cyclic before WWII. Before trying to understand why there might have been a switch, it seems appropriate to confirm the counter-cyclicality of protectionism before WWII.

It is difficult to find much reliable data that pre-dates WWII and is available for many countries on business cycles, and, especially, protectionism. From Brian Mitchell's *International Historical Statistics*, I take series on customs duties, imports, and national income. These series are available (with gaps) for eighteen countries back to 1850. I normalize duties by imports and use this as a crude measure of protectionism; I de-trend output using the same five techniques as employed above. These data are likely to be noisy, so I begin by using three year averages of the annual data, using the same estimation strategy as I employ in Tables 1-3.

When I restrict my attention to the gold-standard era before WWI, strong evidence of counter-cyclic protectionism emerges. All the coefficients in the first row of Table 4 are negative, consistent with counter-cyclic protectionism, and four of the five coefficients are significantly different from zero at the 1% significance level. The annual results are considerably weaker; only three coefficients are negative. Only one of these is significantly negative, while one of the other two is significantly positive. Similarly, the evidence that protectionism was counter-cyclic during the period between the two world wars is also weak; three of the coefficients are negative (none significantly so), while two are positive (one significantly different from zero at the 5% level).[24]

I tentatively conclude that while protectionism has not been counter-cyclic since WWII, it may have been counter-cyclic before WWI. There is only mixed evidence of a switch in the cyclicality of protectionism, primarily because the earlier evidence is cloudy. Further exploration of this seems mostly a question for economic historians, given the data issues.

4. Why?

It seems clear that protectionism is no longer counter-cyclic. Understanding why is difficult; it is easier to theorize about a finding than a non-finding. Still, the literature makes it seem likely that protectionism was counter-cyclic before WWI (though the evidence presented above, not so much). The question naturally occurs: is there systematic variation in the degree to which protectionism is cyclic? A number of factors have been proposed to explain the purported counter-cyclicality of protectionism, and some of these vary across countries and/or time. Unfortunately, the most obvious quantifiable hypotheses can all be rejected.

Why Should Protectionism Be Counter-Cyclic?

It is best to understand *why* protectionism might be (counter-) cyclic, before investigating *whether* the intensity of cyclicality of protectionism varies systematically. I thus begin with a brief review of theories that have been advanced to explain the alleged (counter-) cyclicality of protectionism, with an eye towards focusing on testable implications. To quote McKeown (1984, p 219), "For

protection to occur during the trough of the business cycle, there must be some relation between the benefits of protection and the time at which it is being given." At least five theories have been proposed; each explicitly links the net benefit from protectionism to the state of the business cycle.

1. To Counter Incentives to Manipulate the Terms of Trade

Bagwell and Staiger (2003) assume (realistically) that fluctuations in trade volume are cyclic and derive counter-cyclic protectionism from the incentives a country has to improve its terms of trade. They consider both business cycles that are perfectly correlated across countries and idiosyncratic national business cycles. It is possible to test this theory indirectly by comparing large and small countries, since the latter face exogenous terms of trade. It is also possible to control for (or interact the business cycle with) trade volume, to test for differences between open and closed countries, and to test for the relevance of formal GATT/WTO membership.

2. To Maintain Budget Balance

Hansen (1990, pp. 528-529) reminds readers that "For most of American history … tariffs were instruments of revenue … Through most of the history of the republic, tariffs and taxes were virtual equivalents… Until the Civil War … the U.S. treasury derived about 90 percent of its revenues from customs duties… the tariff was the leading source of government funds until World War I, when the newly approved federal income tax eclipsed it." To keep the budget balanced (p. 532), "the governing party will raise tariffs when the treasury is in deficit and will lower duties when it is in surplus. When the government depends substantially on a tax, in short, fiscal imperatives will dominate its revision." McKeown (1983) also uses this argument. Budgets can reasonably be assumed to be cyclic, so this seems to be a reasonable argument *prima facie*. However, it is difficult to understand the relevance of this argument in a world of substantive persistent budget imbalances, and/or where much protectionism takes the form of NTBs. It is possible to test the argument's relevance by controlling for fiscal factors such as the government's budget or revenue, or interacting these with the business cycle.

3. As Second-Best Strategy in a Fixed Exchange Rate Regime

Eichengreen and Irwin (2009, pp 1-2) argue that "the exchange rate regime and economic policies associated with it were key determinants of trade policies of the early 1930s. Countries that remained on the gold standard, keeping their currencies fixed against gold, were more likely to restrict foreign trade." A natural test of this sensible hypothesis is to see if the cyclicality of protectionism varies systematically with the exchange rate regime.

4. As a Response to Pressure from Import Competitors

It seems intuitive that rent-seeking pressures grow disproportionately during recessions, but this process has rarely been modeled rigorously. Cassing et al (1986) relies on regional differences in the composition of immobile production factors. The theory can be tested by comparing countries of differing size; it is more challenging for this theory to explain a switch in the cyclicality of protectionism.

5. As a Result of Search Frictions in the Labor Market

Costinot (2009) provides a theory in which jobs have rents which depend on the level of trade protection. A related but more informal theory is provided by Gallarotti (1985), who argues that the

reduced profits associated with business cycle downturns reduce entry and thus increase the incentives of incumbents to lobby for protectionism; McKeown (1984) provides a similar argument. Such theories should always be operative; evidence against the counter-cyclicality of protectionism seems inconsistent with them. Variation in the political importance of labor over time or country provides a way to test this theory, at least informally.

Differences between pre-WWI and post-WWII that Cannot be Tested

Some of the reasons why protectionism is no longer cyclic seem intrinsically impossible to test. The GATT/WTO has only existed since WWII. It seems natural to suspect that the existence of a multilateral institution dedicated to liberalizing trade and helping it flow as freely as possible, might also affect the cyclicality of protectionism.[25] Of course, the GATT/WTO may be a toothless organization; Bagwell and Staiger (2003) emphasize that the GATT/WTO has no external enforcement mechanism, so any agreement under the GATT/WTO must be self-enforcing. Consistent with this, the results presented below indicate that formal membership in the GATT/WTO has little demonstrable effect on the cyclicality of protectionism; see also Evenett (2011). But since we have no data on a postwar GATT/WTO-free post-war world, it is impossible to test the impact of the GATT/WTO directly. Similarly, postwar protectionism (and its cyclicality) may be affected by the fact that all the leading capitalist states are part of the same military coalition (McKeown, 1984, p. 232). Again though, it is hard to test this hypothesis. International supply chains are becoming increasingly complicated, and growing trade in intermediates may be responsible for declining protectionism and perhaps its cyclicality. Still, it is difficult to quantify the importance of this phenomenon, at least with existing data. A final and more pleasing idea is the fact that there are more economists (and free-trade advocates like *The Economist*) in circulation since WWII. A deeper understanding of the dangers of protectionism might be responsible for the fact that there is less or less-cyclic protectionism. Again, it is hard to test this idea directly.[26]

Variation across Time

There does not seem to be a clear post-war trend in the cyclicality of protectionism; Figure 6 presents some evidence. It contains slopes and confidence intervals from cross-country regressions of one measure of protectionism (trade freedom from the Heritage Foundation) on business cycles. Consider the top-left graph in Figure 6, which uses the Baxter-King bandpass filter to de-trend real GDP. Plotted at the extreme left of the graph is the cross-sectional estimate of the effect of Baxter-King de-trended business cycles on trade freedom, using 1970 data (the estimate is -.31 with a standard error of .72, derived from 65 countries). Estimates for later years are portrayed to the right; analogues for other de-trending techniques are presented in the other three graphs. There is no obvious trend over time in the cyclicality of trade freedom; the coefficients seem to fluctuate around zero.[27, 28]

Variation across Countries

Perhaps differences are more visible across countries than across time? Figure 7 provides scatter-plots of two different measures of protectionism (the applied weighted tariff rate above, and trade freedom below) against de-trended real GDP. There are two versions of each, one split by country size and the other by the exchange rate regime. Consider the top-left graph in Figure 7; this scatters

tariffs against the deviation of real GDP from its HP-filtered trend. Two types of countries are included: small countries with populations of less than a million (marked by x), and G-20 countries (marked by ◦).[29] The relationship between the tariff rate and the business cycle is similar for small and large countries, as shown by the fitted regressions lines for the two samples, which are essentially parallel. The effect of the business cycle on trade freedom is also similar for small and large countries, as shown in the graph immediately below. To the right, the sample is split using the Reinhart-Rogoff exchange rate regime classification; observations for floating exchange rates (marked by +) are spread similarly to those for fixers (marked by Δ).[30] That is, countries with radically different exchange rate regimes seem to have protectionism that responds similarly to business cycles. Figure 8 is an analogue to Figure 7, but splits the data differently. To the left, I compare low-income countries (annual real GDP per capita less than $1005) with high-income countries (those with annual real GDP per capita of greater than $12,275); to the right I compare non-members with members of the GATT/WTO.[31] Similarly, Figure 9 splits the data by years and the importance of duties in the tax base. None of these factors matters much in practice; the cyclicality of protectionism does not depend strongly on size, income, exchange rate regime, GATT/WTO membership, the fiscal importance of duties, or year.

A different take on the data is provided in Figure 10. For each country with at least twenty years of annual data on both the (weighted applied) tariff rate and real GDP (de-trended via the HP-filter), I run a country-specific time-series regression of tariffs on output.[32] Each of these regressions delivers a slope coefficient for the responsiveness of, e.g., the Austrian tariff rate to the Austrian business cycle. I then scatter these estimates (on the ordinate) against a variety of country characteristics (on the abscissa); the latter are averaged over the sample period. Thus the top left graph in Figure 10 graphs tariff cyclicality against country size, while the top middle graph graphs tariff cyclicality against country openness (as measured by the import/GDP ratio). The only country characteristics that can be linked to tariff cyclicality are the labor share of income and the real effective exchange rate. Both correlations are positively and (barely) significant; countries with more highly valued real exchange rates and great labor shares of income tend to have more pro-cyclic protectionism.

A more rigorous analogue to the evidence of Figure 10 is presented in Table 5. I estimate:

$$Protect_{it} = \{\alpha_i\} + \{\beta_t\} + \gamma BC_{it} + \delta DFund_{it}BC_{it} + \varepsilon_{it} \qquad (1')$$

where $DFund_{it} = 0$ for the lowest quartile of the univariate distribution of a fundamental variable $Fund_{it}$, is missing for the middle two quartiles, and =1 for the highest quartile. That is, it is a dummy variable that allows one to compare the idea that the effect of business cycles on protectionism is different for e.g., small (lowest quartile) and large (highest quartile) countries in the case of the fundamental being country size. Country size, as gauged by population, is only one way to split the data; I also consider openness (through the import/GDP share), the importance of labor (labor's share of national income), and fiscal dependency (duties as a share of total taxes). Splitting the data via quartiles is one way to split the data, but I also divide the data set into halves. At the bottom of the table, I also split the data

by the exchange rate regime, using both the Reinhart&Rogoff and Levy-Yeyati&Sturzenegger measures. Finally, I use four measures of protectionism; the (applied weighted) tariff rate, duties/imports, trade freedom, and the number of WTO trade disputes initiated. I use the HP-filter to de-trend output.

The results are reported in Table 5, which tabulate p-values for the null hypothesis $\delta=0$. A high value in Table 5 is consistent with the null, so that the cyclic nature of protectionism does not depend on e.g., country size. The results are consistent with the idea that the cyclic nature of protectionism does not depend on national fundamentals; of the forty coefficients, only one is significantly different from zero at the five percent significance level. These results reinforce those provided by Figures 7 and 8.[33, 34] I have been unable to find measurable dimensions upon which the cyclicality of protectionism depends.

5. Academic Scribbling

The goal of this short empirical paper is to show that protectionism has not been counter-cyclic since the Second World War. This result is robust; I use eighteen measures of protectionism, seven measures of the business cycle, and a variety of controls, in an annual postwar panel of data spanning more than sixty countries over thirty years. This result seems natural; it is exemplified by the absence of any dramatic outbreak of protection associated with the Great Recession of 2008-09. But this result is also striking; as a stylized fact, acyclic protectionism is grossly inconsistent with the literature. Any of the theoretical studies of the determinants of protectionism that relies on this false generalization (five are sketched above) may therefore be of limited interest. If the profession wants to understand the determinants of protectionism it should do so from a solid empirical footing.

I use a historical panel going back 140 years to show that protectionism was probably counter-cyclic earlier, though it is hard to be definitive because there is little quality data of relevance before WWII. I have been unsuccessful in explaining *why* protectionism is no longer counter-cyclic; there is little support for any hypothesis that can be quantified. In contrast to more recent times, before WWI tariffs contributed greatly to the national treasury, there was no GATT, and the gold standard ruled. Recent data indicate that protectionist policies of countries with differing fiscal situations react similarly to business cycles, as do those of countries inside/outside the GATT/WTO, those with fixed/floating exchange rates, small/large countries, and open/closed countries. If there has been a shift in the cyclicality of protectionism since WWII, it's hard to be sure why. This topic awaits further research.

Perhaps, just perhaps, the switch in the cyclicality of protectionism – if there has indeed been one – is a triumph of modern economics. After all, there is considerable and strong consensus among economists that protectionism is generally bad for welfare.[35] And there is no doubt that economists are aware and actively involved in combating counter-cyclic protectionism; this was especially visible during the Great Recession, which saw the successful launch of *Global Trade Alert* in June 2009.[36] If – and it's a big if – the efforts of the economic profession are part of the reason that protectionism is no longer counter-cyclic, then the profession deserves a collective pat on the back. But in that case the profession should also consider setting its sights higher. If economists have helped reduce the cyclicality of protectionism, then perhaps they should focus on simply reducing protectionism.

References

Bagwell, K. and R. W. Staiger (2002) *The Economics of the World Trading System* (MIT, Cambridge).

Bagwell, K. and R. W. Staiger (2003) "Protection and the Business Cycle" *Advances in Economic Analysis & Policy* 3-1, 3.

Bohara, Alok K. and William H. Kaempfer (1991a) "A Test of Tariff Endogeneity in the United States" *American Economic Review* 81-4, 952-960.

Bohara, Alok K. and William H. Kaempfer (1991b) "Testing the Endogeneity of Tariff Policy in the U.S." *Economics Letters* 35, 311-315.

Bown, Chad (2004a) "On the Economic Success of GATT/WTO Dispute Settlement" *Review of Economics and Statistics* 86-3, 811-823.

Bown, Chad (2004b) "Trade Disputes and the Implementation of Protection under the GATT: An empirical Assessment" *Journal of International Economics* 62, 263-294.

Bown, Chad (2005) "Participation in WTO Dispute Settlement: Complainants, Interested Parties, and Free Riders" *World Bank Economic Review* 19-2, 287-310.

Bown, Chad and Meredith Crowley (2012) "Import Protection, Business Cycles, and Exchange Rates: Evidence from the Great Recession" *World Bank Policy Research Working Paper 6038*.

Cassing, James, Timothy J. McKeown, Jack Ochs (1986) "The Political Economy of the Tariff Cycle" *American Political Science Review* 80-3, 843-862.

Copelovitch, Mark S. and Jon C. Pevehouse (2010) "'Currency Wars' by Other Means?" https://ncgg.princeton.edu/IPES/2010/papers/F220_paper3.pdf

Costinot, Arnaud (2009) "Jobs, Jobs, Jobs: A "New" Perspective on Protectionism" *Journal of the European Economic Association* 7-5, 1011-1041.

Dornbusch, Rudiger and Jeffrey A. Frankel (1987) "Macroeconomics and Protection" in *U.S. Trade Policies in a Changing World Economy* (Robert M. Stern, editor; MIT Press, Cambridge).

Eichengreen, Barry and Douglas A. Irwin (2009) "The Slide to Protectionism in the Great Depression: Who Succumbed and Why?" *NBER Working Paper No 15,142.*

Evenett, Simon J. (2009) "What Can Be Learned from Crisis-Era Protectionism? An Initial Assessment" *Business and Politics* 11-3, 4.

Evenett, Simon J. (2011) "Did WTO Rules Restrain Protectionism During the Recent Systemic Crisis" *CEPR Discussion Paper* No. 8687.

Evenett, Simon J., J. Fritz, D. Gerasimenko, M. Nowakowska, and M. Wermelinger (2010) "The Resort to Protectionism During the Great Recession" http://www.alexandria.unisg.ch/export/DL/89755.pdf

Feinberg, Robert M. (2005) "U.S. Antidumping Enforcement and Macroeconomic Indicators Revisited" *Review of World Economics* 141(4), 612-622.

Gallarotti, G. M. (1985) "Toward a Business-Cycle Model of Tariffs" *International Organization*, 155-187.

Gawande, Kishore and Usree Bandyopadhyay (2000) "Is Protection for Sale? Evidence on the Grossman-Helpman Theory of Endogenous Protection" *Review of Economics and Statistics* 82-1, 139-152.

Gawande, Kishore, Bernard Hoekman and Yue Cui (2011) "Determinants of Trade Policy Responses to the 2008 Financial Crisis" *World Bank Policy Research Working Paper 5862.*

Grilli, Enzo (1988) "Macro-Economic Determinants of Trade Protection" *World Economy* 11-3, 313-326.

Goldberg, Pinelopi Koujianou and Giovanni Maggi (1999) "Protection for Sale: An Empirical Investigation" *American Economic Review* 89-5, 1135-1155.

Grossman, Gene M. and Elhanan Helpman (1994) "Protection for Sale" *American Economic Review* 84-4, 833-850.

Hansen, M. (1990) "Taxation and the Political Economy of the Tariff" *International Organization* 44-4, 527-551.

Holmes, Peter, Jim Rollo, and Alasdair R. Young (2003) "Emerging Trends in WTO Dispute Settlement: Back to the GATT?" *World Bank Policy Research Working Paper 3133.*

Irwin, Douglas A. (2010) "Trade Restrictiveness and Deadweight Losses from US Tariffs" *American Economic Journal: Economic Policy* 2, 111-133.

Irwin, Douglas A. (2011) *Peddling Protectionism* (University Press, Princeton).

Kee, Hiau Looi, Cristina Neagu, and Alessandro Nicita (2011) "Is Protectionism on the Rise?" *Review of Economics and Statistics* forthcoming.

Knetter, Michael M. and Thomas J. Prusa (2003) "Macroeconomic Factors and Antidumping Filings: Evidence from Four Countries" *Journal of International Economics* 61, 1-17.

Larch, Mario and Wolfgang Lechthaler (2011) "Protectionism? Trade Policy and the Business Cycle" http://www.etsg.org/ETSG2011/Papers/Lechthaler.pdf

Magee, Stephen P., William A. Brock and Leslie Young (1989) *Black Hole Tariffs and Endogenous Policy Theory (*Cambridge University Press, New York).

Magee, Stephen P. and Leslie Young (1987) "Endogenous Protection in the United States, 1900-1984" in *U.S. Trade Policies in a Changing World Economy* (Robert M. Stern, editor; MIT Press, Cambridge).

McKeown, Timothy J. (1983) “Hegemonic Stability Theory and 19th Century Tariff Levels in Europe” *International Organization* 37-1, 73-91.

McKeown, Timothy J. (1984) “Firms and Tariff Regime Change: Explaining the Demand for Protection” *World Politics* 36-2, 215-233.

Mitchell, B.R. (1993) *International Historical Statistics: The Americas 1750-1988* (2nd ed; Macmillan, NY).

Mitchell, B.R. (2003a) *International Historical Statistics: Africa, Asia & Oceania 1750-2000* (4th ed; Palgrave Macmillan, NY).

Mitchell, B.R. (2003b) *International Historical Statistics: Europe 1750-2000* (5th; Palgrave Macmillan, NY).

Moser, Christoph and Andrew K. Rose (2011) “Why Benefits from Regional Trade Agreements? The View from the Stock Market” *NBER Working Paper* No. 17,415.

Ostry, Jonathan D. and Andrew K. Rose (1992) “An Empirical Evaluation of the Macroeconomic Effects of Tariffs” *Journal of International Money and Finance* 11, 63-79.

Ray, Edward John (1987) “Changing Patterns of Protectionism: The Fall in Tariffs and the Rise in Non-Tariff Barriers” *Northwestern Journal of International Law & Business* 8, 285-327.

Reinhardt, Eric (1999) “Aggressive Multilateralism: The Determinants of GATT/WTO Dispute Initiation, 1948-1998” http://userwww.service.emory.edu/~erein/research/initiation.pdf

Rodrik, Dani (1995) “Political Economy of Trade Policy” in *Handbook of International Economics* III (Grossman and Rogoff, eds; Elsevier Science, Amsterdam).

Takacs, Wendy E. (1981) “Pressures for Protectionism” An Empirical Analysis” *Economic Inquiry* XIX, 687-693.

Table 1: Responsiveness of WTO Disputes to Business Cycles

Business Cycle De-trending:	Baxter-King	Christiano-Fitzgerald	Hodrick-Prescott	First-Differencing	Linear in Time
Default	-.0 (2.5)	1.0 (2.3)	1.7 (2.2)	.01 (.01)	-.29 (.65)
Country FE only	.74 (2.3)	.56 (2.0)	1.7 (1.9)	.00 (.01)	.34 (.60)
Time FE only	3.0 (3.5)	-.40 (.28)	3.2 (3.0)	.01 (.02)	.11 (.66)
No FE	3.4 (3.2)	-.40 (.28)	2.8 (2.6)	.01 (.02)	.44 (.63)
Add Interaction with trend	-4.9 (5.3)	.07 (.05)	-1.0 (4.4)	-.03 (.03)	-1.1 (1.4)
All countries	-.02 (.36)	.01 (.34)	.10 (.32)	.001 (.002)	.10 (.10)
Without 3σ outliers	3.0* (1.5)	2.8* (1.3)	2.3 (1.3)	.01 (.01)	.30 (.38)
Non-High Income (Real GDP p/c <$12,275)	1.1 (1.8)	2.0 (1.6)	1.0 (1.6)	.01 (.01)	.5 (.5)
High Income (Real GDP p/c >$12,275)	-1. (6.1)	-1.3 (5.7)	2.8 (5.4)	-.02 (.03)	-4.7** (1.7)
Large Countries (Population>25mn)	-.3 (4.2)	.2 (3.8)	2.2 (3.7)	.01 (.02)	-.05 (1.1)
Substitute 1st Lag of BC	.2 (2.3)	1.5 (2.2)	1.9 (2.1)	.00 (.01)	-.38 (.64)
Substitute 2nd Lag of BC	2.9 (2.2)	3.4 (2.1)	2.9 (2.1)	.027* (.013)	-.46 (.65)
Substitute MA of 1st-2nd Lag of BC	2.8 (3.2)	4.8 (3.0)	4.3 (2.9)	.028 (.018)	-.44 (.67)
Poisson	1.6 (1.6)	1.9 (1.7)	2.4 (1.6)	.01 (.01)	.29 (.65)
Zero-Inflated Poisson	-.2 (2.2)	-.1 (.3)	1.6 (2.1)	.01 (.01)	.25 (.54)
3-year averages	4.6 (5.0)	10.3 (5.2)	7.4 (4.5)	.04 (.03)	-.24 (.92)
GATT Disputes (1950-1994)	1.0 (.6)	.6 (.6)	.8 (.5)	.005 (.004)	.14 (.15)

Each cell is a coefficient from a separate regression of number of WTO disputes filed on deviation of log real GDP from trend. Standard errors in parentheses; coefficients significantly different from zero at .05 (.01) marked by one (two) asterisk(s). OLS estimation with country- and time-specific fixed effects. Default sample: 42 countries that have ever filed a WTO dispute, 1995-2009. EU counted as single observation; most cells have 627 observations.

Table 2: Responsiveness of Other Measures of Protectionism to Business Cycles

Regressand:	Baxter-King	Christiano-Fitzgerald	Hodrick-Prescott	First-Differencing	Linear in Time
Anti-Dumping Cases Initiated	28.6 (30.1)	19.5 (27.2)	39.0 (27.8)	.14 (.18)	.6 (7.1)
Countervailing Duties Imposed	-8.9 (19.2)	-10.6 (21.6)	-16.8 (21.5)	-.08 (.08)	2.3 (3.9)
Safeguards	8.4 (10.7)	17.3 (9.9)	14.4 (10.1)	.11 (.06)	6.6* (3.1)
Binding Coverage %	-.44 (.23)	-.32 (.19)	-.32 (.19)	-.000 (.001)	-.13* (.05)
Bound Rate, simple average	.86 (.61)	2.3 (1.3)	1.86 (1.35)	.01 (.01)	2.0** (.4)
Customs Duties, % Goods Imports	-.02 (.04)	.03 (.04)	-.01 (.04)	-.00 (.00)	-.05** (.01)
Customs Duties, % taxes	2.4 (4.9)	6.3 (4.8)	.9 (4.7)	.04 (.03)	.8 (1.6)
Customs Duties, % GDP	1.4 (1.0)	1.5 (1.1)	.9 (1.0)	.01 (.01)	.06 (.36)
Exports Taxes, % Taxes	.3 (3.1)	-2.1 (4.0)	-1.2 (4.0)	.00 (.03)	2.9* (1.5)
% Tariffs with intern'l peaks	-3.7 (10.2)	2.5 (8.9)	-.0 (8.8)	-.02 (.05)	1.9 (2.3)
Applied Tariff Rate, simple	4.3 (5.5)	1.1 (4.4)	.8 (4.3)	-.03 (.03)	-3.4** (1.1)
Applied Tariff Rate, weighted	-3.5 (9.8)	-6.1 (7.6)	-7.1 (7.5)	-.03 (.04)	-2.6 (1.9)
MFN Tariff Rate, simple	6.9 (5.5)	3.1 (4.4)	3.1 (4.4)	-.02 (.03)	-2.8* (1.1)
MFN Tariff Rate, weighted	-4.1 (9.8)	-6.0 (7.6)	-6.7 (7.5)	-.02 (.04)	-2.1 (1.9)
Trade Freedom (Index of Economic Freedom)	-4.9 (6.5)	-2.5 (5.9)	-5.9 (5.9)	.03 (.04)	4.4** (1.7)
Number RTAs initiated/completed	.14 (.26)	.15 (.25)	.16 (.24)	.001 (.001)	-.02 (.07)
Principal Factor	-.15 (.80)	.09 (.66)	.26 (.64)	-.001 (.004)	-.22 (.19

Each cell is a coefficient from a separate regression of regressand (left column) on deviation of log real GDP from trend. Standard errors in parentheses; coefficients significantly different from zero at .05 (.01) marked by one (two) asterisk(s). OLS estimation with country- and time-specific fixed effects. Default Sample: annual observations from as far back as 1978 through 2009. EU counted as single observation. Principal factor is first factor (eigenvalue of 3.1, with 94% variation explained) extracted from: binding coverage %; customs duties % taxes; duties % merchandise imports; share of tariffs with international peaks; applied tariff rate weighted; trade freedom; and number RTAs initiated/signed.

Table 3: Responsiveness of WTO Disputes to Business Cycles: Extra Controls

Extra Controls	Baxter-King	Christiano-Fitzgerald	Hodrick-Prescott	First-Differencing	Linear in Time
None (Default)	-.0 (2.5)	1.0 (2.3)	1.7 (2.2)	.01 (.01)	-.29 (.65)
Log real GDP per capita	.7 (2.8)	1.0 (2.3)	1.9 (2.3)	.01 (.01)	-.5 (.8)
Log Population	-.0 (2.5)	1.0 (2.3)	1.8 (2.2)	.01 (.01)	-.20 (.65)
Labor Share of Income	2.9 (10.1)	4.3 (9.6)	4.5 (9.5)	.06 (.06)	-1.8 (2.6)
Unemployment Rate	-.2 (2.7)	2.0 (2.4)	.4 (2.4)	.03 (.01)	.2 (.7)
Trade (% GDP)	.4 (2.5)	2.3 (2.2)	1.1 (2.2)	.02 (.01)	.5 (.6)
Merchandise Trade (% GDP)	.3 (2.5)	2.1 (2.2)	1.0 (2.1)	.02 (.01)	.5 (.6)
Imports (% GDP)	.1 (2.5)	2.2 (2.2)	.9 (2.2)	.02 (.01)	.4 (.6)
Exports (% GDP)	.8 (2.5)	2.5 (2.2)	1.3 (2.2)	.02 (.01)	.6 (.6)
Value Added, (% Exports)	-1.1 (5.5)	3.2 (5.0)	.6 (4.9)	.05 (.03)	.0 (1.1)
Current Account (% GDP)	1.6 (2.7)	2.9 (2.3)	1.8 (2.3)	.03* (.01)	.6 (.6)
GATT/WTO Membership	-.1 (2.5)	.8 (2.2)	1.7 (2.2)	.01 (.01)	-.3 (.6)
Government Budget (% GDP)	1.8 (2.3)	1.6 (2.0)	1.4 (2.0)	.00 (.01)	-.1 (.6)
Government Revenue (% GDP)	1.4 (2.2)	1.2 (1.9)	.9 (1.8)	.00 (.01)	.1 (.5)
Taxes (% GDP)	1.6 (2.2)	1.3 (1.9)	1.1 (1.8)	.00 (.01)	.3 (.06)
Real Effective Exchange Rate	1.9 (3.7)	3.4 (3.3)	1.7 (3.2)	.04 (.02)	1.4 (1.0)
PPP-deviation	1.5 (2.6)	1.6 (2.3)	2.7 (2.2)	.01 (.01)	-.0 (.7)
Group #1	1.0 (3.3)	1.7 (2.6)	-.6 (2.8)	.02 (.02)	-1.2 (1.0)
Group #2	5.5 (3.3)	3.5 (2.5)	4.0 (2.8)	.02 (.02)	.9 (2.0)
Reinhart Rogoff Coarse regimes	.6 (2.7)	1.7 (2.5)	.8 (2.5)	.03 (.02)	.29 (.80)
LYS3 regimes	-.4 (2.7)	1.8 (2.8)	-.2 (2.7)	.02 (.02)	-1.38 (1.09)
Only RR fixers	1.35 (2.35)	.9 (2.4)	.26 (2.43)	.031* (.015)	1.22 (.67)
Only LYS3 fixers	-2.4 (3.7)	-.8 (3.7)	-2.3 (3.7)	-.00 (.02)	-1.7 (1.1)

Each cell is a coefficient from a separate regression of number of WTO disputes filed on deviation of log real GDP from trend. Standard errors in parentheses; coefficients significantly different from zero at .05 (.01) marked by one (two) asterisk(s). OLS estimation with country- and time-specific fixed effects; extra controls tabulated in left column. Default sample: 42 countries that have ever filed a WTO dispute, 1995-2009. EU counted as single observation; most cells have 627 observations. Group #1 contains: log population, unemployment rate, imports (% GDP), GATT/WTO membership, log PPP-deviation, and log real GDP per capita. Group #2 is group #1 plus government budget (% GDP), government revenue (% GDP), and real effective exchange rate.

Table 4: Pre-WWII Results: Responsiveness of Customs Duties/Imports to Business Cycles

Business Cycle De-trending:	Baxter-King	Christiano-Fitzgerald	Hodrick-Prescott	First-Differencing	Linear in Time
3-year averages	-.39**	-.31**	-.33**	-.001	-.35**
	(.12)	(.12)	(.12)	(.001)	(.04)
Annual data	-.06	.01	-.01	.0007*	-.22**
	(.07)	(.05)	(.05)	(.0003)	(.02)
3-year averages, interwar	-.23	-.28	-.17	.0015*	.05
	(.14)	(.16)	(.15)	(.0006)	(.07)

Default Sample: annual data 1850-1912 for 18 countries (Argentina, Australia, Brazil, Canada, Chile, Denmark, Spain, Finland, France, Great Britain, Germany, India, Italy, Japan, Netherlands, Norway, Sweden, and USA). OLS estimation with country- and time-specific fixed effects. Standard errors in parentheses; coefficients significantly different from zero at .05 (.01) marked by one (two) asterisk(s). Series on GDP, duties and imports taken from Mitchell (1993, 200sa, 2003b).

Table 5: Splitting the Sample: Effect of (HP-de-trended log real) GDP on Protectionism

Determinant of Split	Split Threshold	Tariff Rate	Duties, %Imports	Trade Freedom	WTO Disputes
Population	Quartiles	.25	.97	.74	.82
Imports/GDP	Quartiles	.64	.63	.09	.54
Labor Share	Quartiles	.29	.70	.94	.91
Duties/Taxes	Quartiles	.79	.72	.25	.68
Population	Halves	.30	.58	.31	.71
Imports/GDP	Halves	.14	.75	.11	.76
Labor Share	Halves	.09	.70	.92	.98
Duties/Taxes	Halves	.61	.46	.05*	.58
RR ER Regime	Fix/Float	.31	.84	.87	.81
LYS3 ER Regime	Fix/Float	.18	.45	.33	.58

Each cell stems from a separate OLS regression of a measure of protectionism (in columns) on: a) fixed time- and country-specific fixed effects; b) the deviation of log real GDP from HP-filtered trend; and c) a dummy variable which is 0 for the lowest quartile/half of the sample, and HP-de-trended real output for the highest quartile/half. The method of splitting the sample (tabulated in the left columns) differs by row. Each cell is a p-value of the null hypothesis that the coefficient on the dummy variable equals zero. Thus, a large p-value indicates that the effect of de-trended real output on protectionism does not depend on the value of the fundamental tabulated in the left column. P-values significantly different from zero at .05 (.01) marked by one (two) asterisk(s).

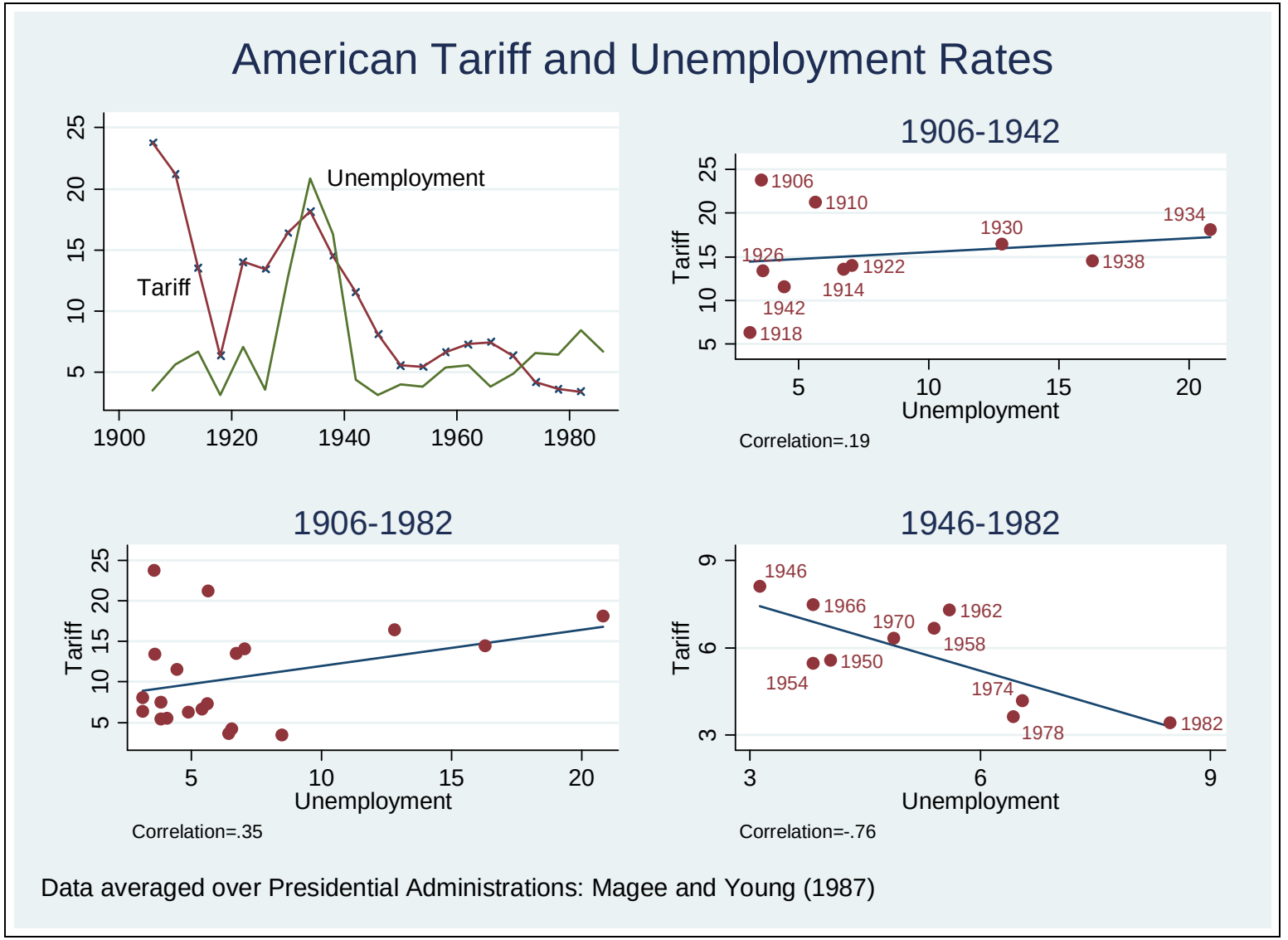

American Tariff and Unemployment Rates
Unemployment
Tariff
1900
1920
1940
1960
1980
1906-1942
1906
1910
1930
1934
1926
1922
1938
1914
1942
1918
Tariff
Unemployment
Correlation=.19
1906-1982
Tariff
Unemployment
Correlation=.35
1946-1982
1946
1966
1962
1970
1958
1950
1954
1974
1978
1982
Tariff
Unemployment
Correlation=-.76
Data averaged over Presidential Administrations: Magee and Young (1987)

Figure 1

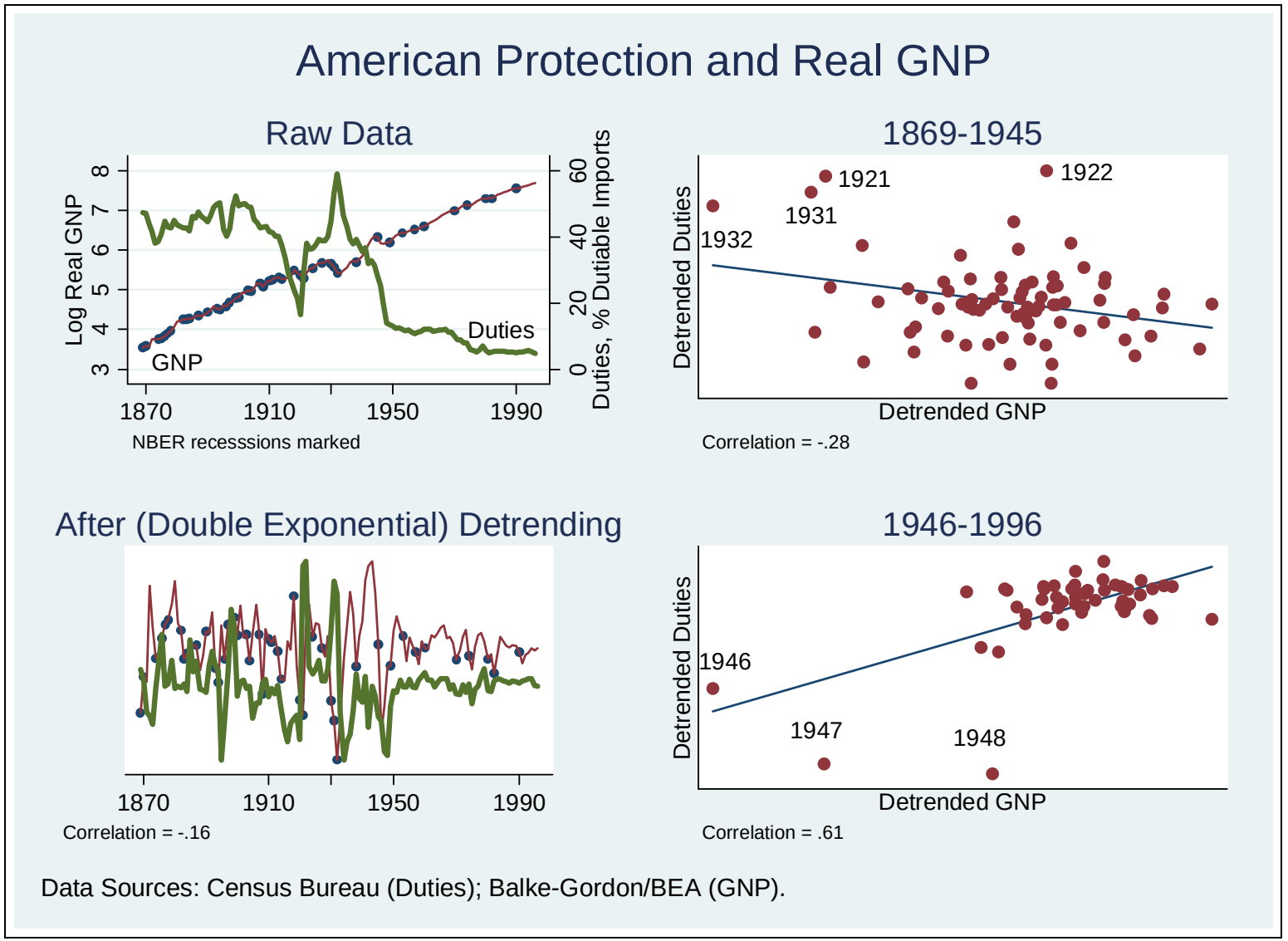

American Protection and Real GNP
Raw Data
Log Real GNP
Duties, % Dutiable Imports
GNP
Duties
1870
1910
1950
1990
NBER recesssions marked
1869-1945
Detrended Duties
Detrended GNP
1921
1922
1931
1932
Correlation = -.28
After (Double Exponential) Detrending
1870
1910
1950
1990
Correlation = -.16
1946-1996
Detrended Duties
Detrended GNP
1946
1947
1948
Correlation = .61
Data Sources: Census Bureau (Duties); Balke-Gordon/BEA (GNP).

Figure 2

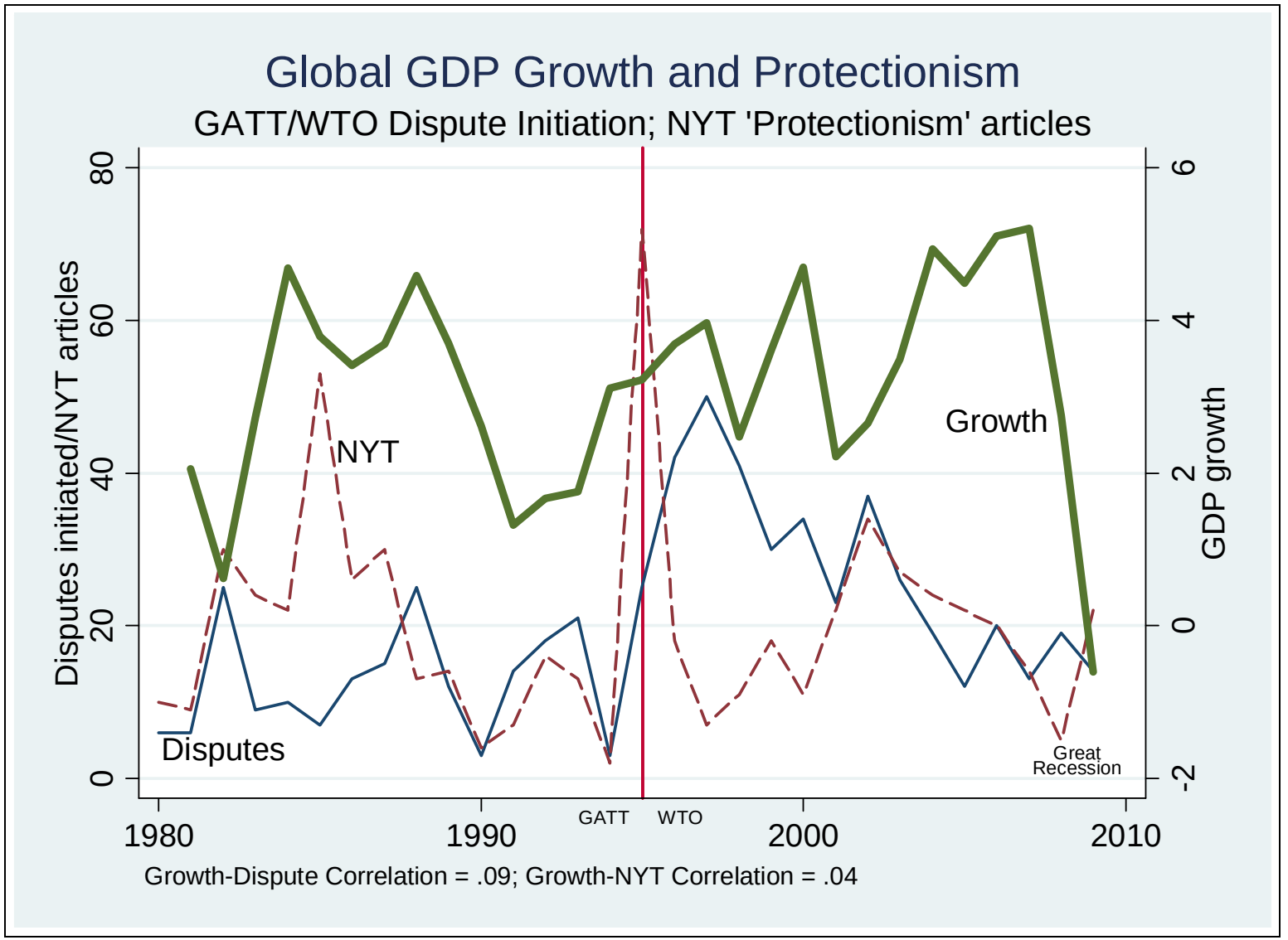

Global GDP Growth and Protectionism
GATT/WTO Dispute Initiation; NYT 'Protectionism' articles
Disputes initiated/NYT articles
0
20
40
60
80
GDP growth
-2
0
2
4
6
NYT
Growth
Disputes
Great Recession
GATT
WTO
1980
1990
2000
2010
Growth-Dispute Correlation = .09; Growth-NYT Correlation = .04

Figure 3

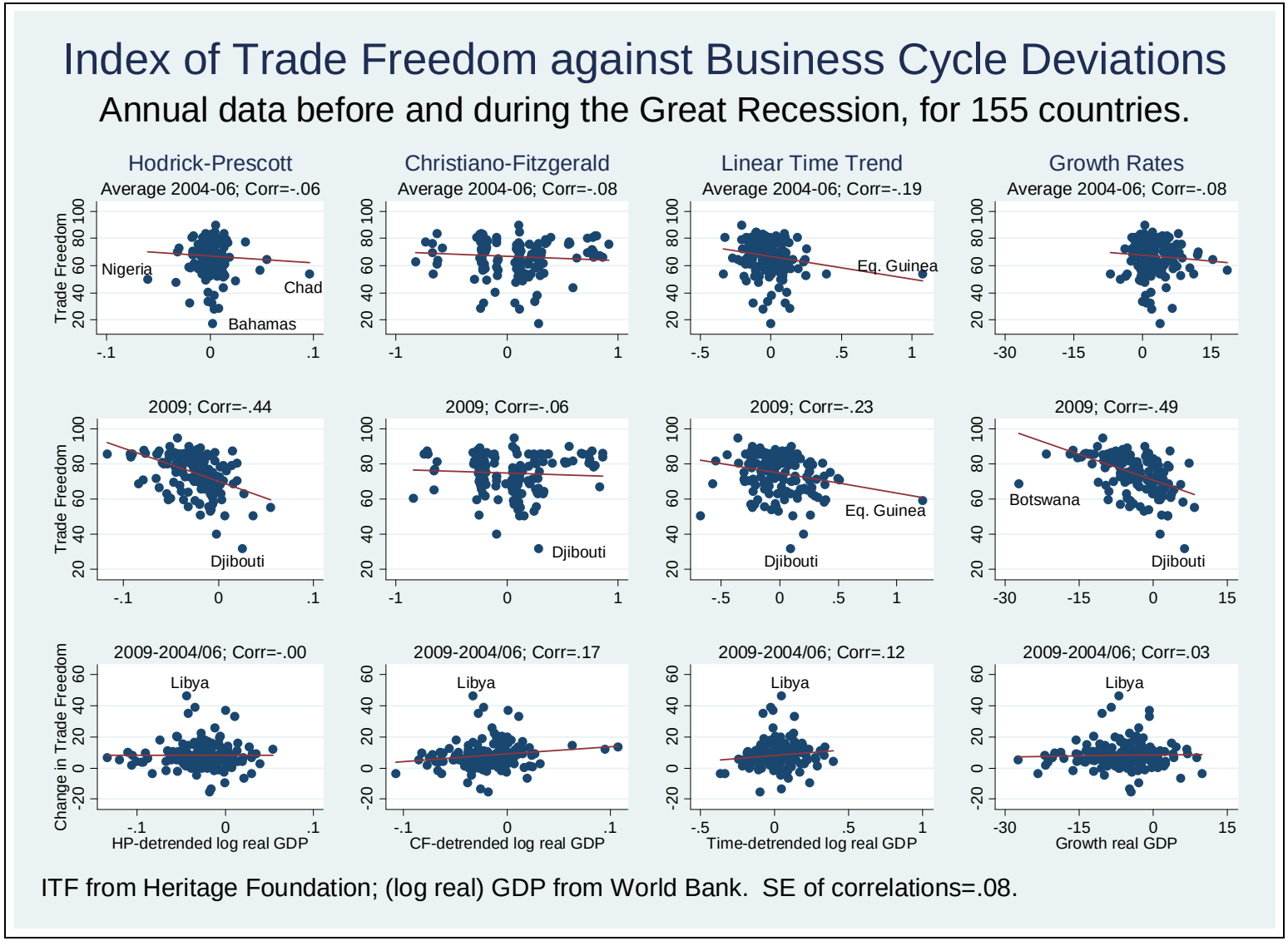

Index of Trade Freedom against Business Cycle Deviations
Annual data before and during the Great Recession, for 155 countries.
Hodrick-Prescott
Christiano-Fitzgerald
Linear Time Trend
Growth Rates
Average 2004-06; Corr=-.06
Average 2004-06; Corr=-.08
Average 2004-06; Corr=-.19
Average 2004-06; Corr=-.08
Trade Freedom
Nigeria
Chad
Bahamas
Eq. Guinea
2009; Corr=-.44
2009; Corr=-.06
2009; Corr=-.23
2009; Corr=-.49
Djibouti
Eq. Guinea
Botswana
2009-2004/06; Corr=-.00
2009-2004/06; Corr=.17
2009-2004/06; Corr=.12
2009-2004/06; Corr=.03
Change in Trade Freedom
Libya
HP-detrended log real GDP
CF-detrended log real GDP
Time-detrended log real GDP
Growth real GDP
ITF from Heritage Foundation; (log real) GDP from World Bank. SE of correlations=.08.

Figure 4

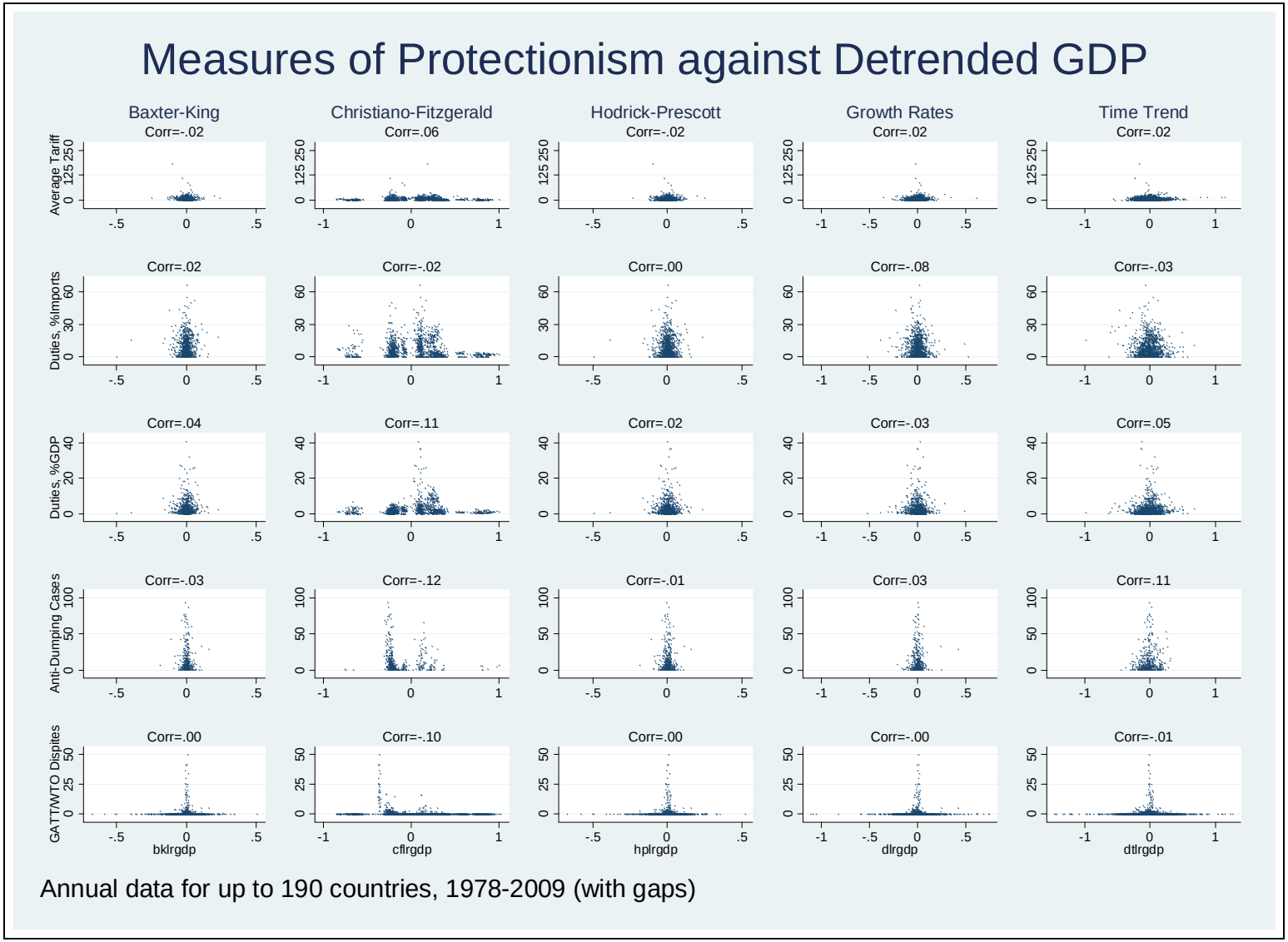

Measures of Protectionism against Detrended GDP
Baxter-King
Christiano-Fitzgerald
Hodrick-Prescott
Growth Rates
Time Trend
Average Tariff
Duties, %Imports
Duties, %GDP
Anti-Dumping Cases
GATT/WTO Dispites
Corr=-.02
Corr=.06
Corr=-.02
Corr=.02
Corr=.02
Corr=.02
Corr=-.02
Corr=.00
Corr=-.08
Corr=-.03
Corr=.04
Corr=.11
Corr=.02
Corr=-.03
Corr=.05
Corr=-.03
Corr=-.12
Corr=-.01
Corr=.03
Corr=.11
Corr=.00
Corr=-.10
Corr=.00
Corr=-.00
Corr=-.01
bklrgdp
cflrgdp
hplrgdp
dlrgdp
dtlrgdp
Annual data for up to 190 countries, 1978-2009 (with gaps)

Figure 5

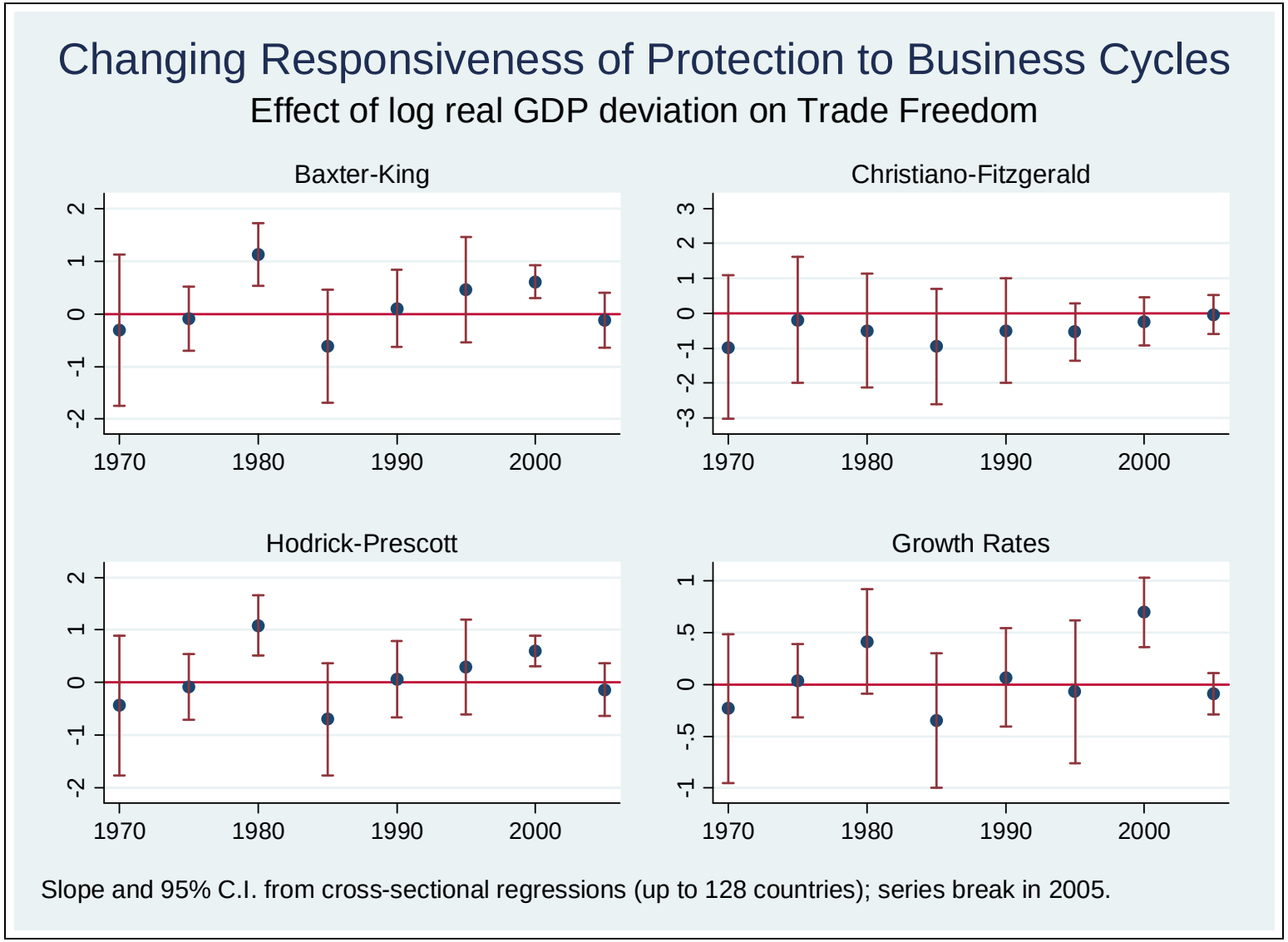

Changing Responsiveness of Protection to Business Cycles
Effect of log real GDP deviation on Trade Freedom
Baxter-King
Christiano-Fitzgerald
Hodrick-Prescott
Growth Rates
1970
1980
1990
2000
Slope and 95% C.I. from cross-sectional regressions (up to 128 countries); series break in 2005.

Figure 6

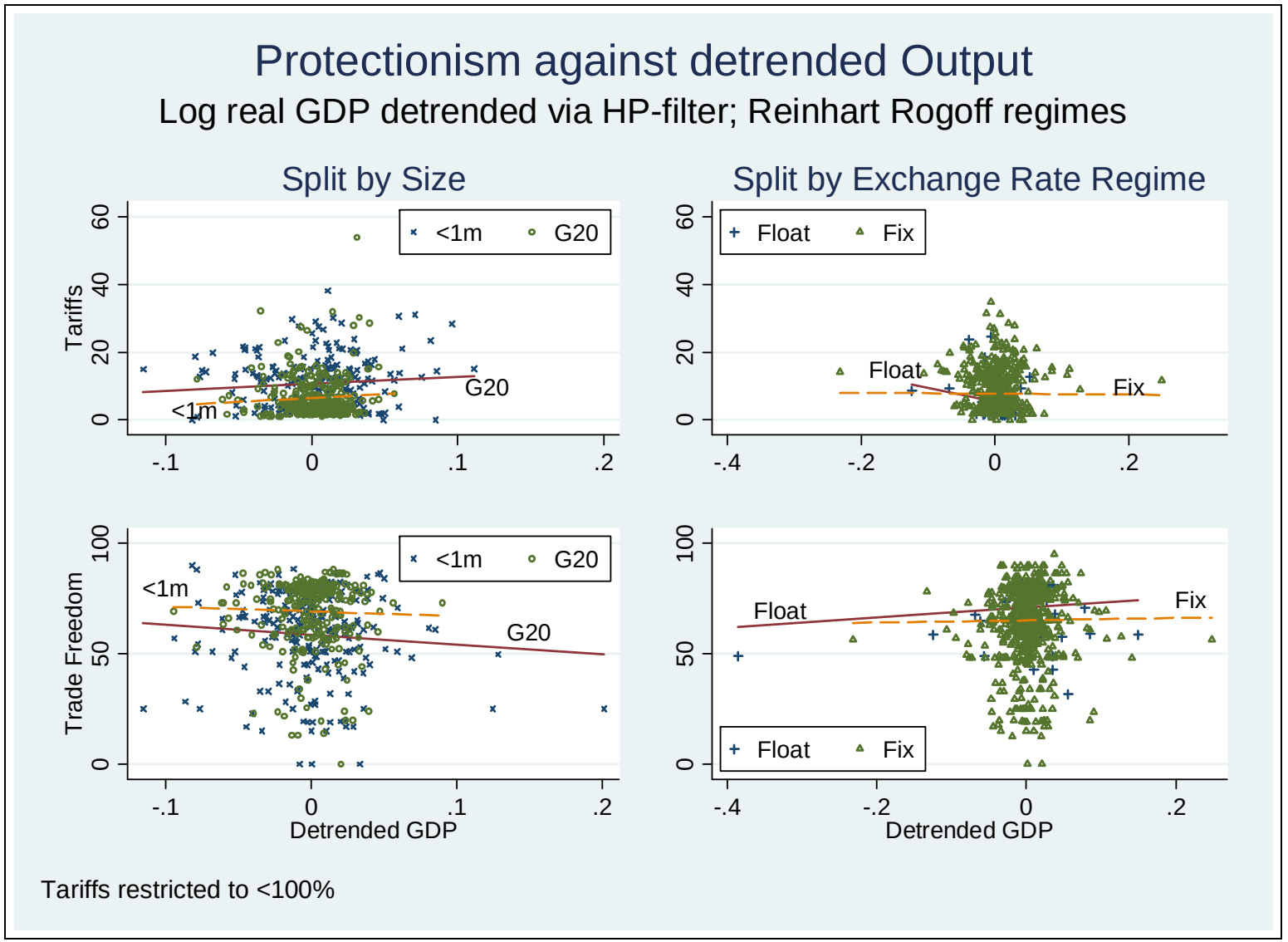

Protectionism against detrended Output
Log real GDP detrended via HP-filter; Reinhart Rogoff regimes
Split by Size
Split by Exchange Rate Regime
Tariffs
Trade Freedom
Detrended GDP
<1m
G20
Float
Fix
Tariffs restricted to <100%

Figure 7

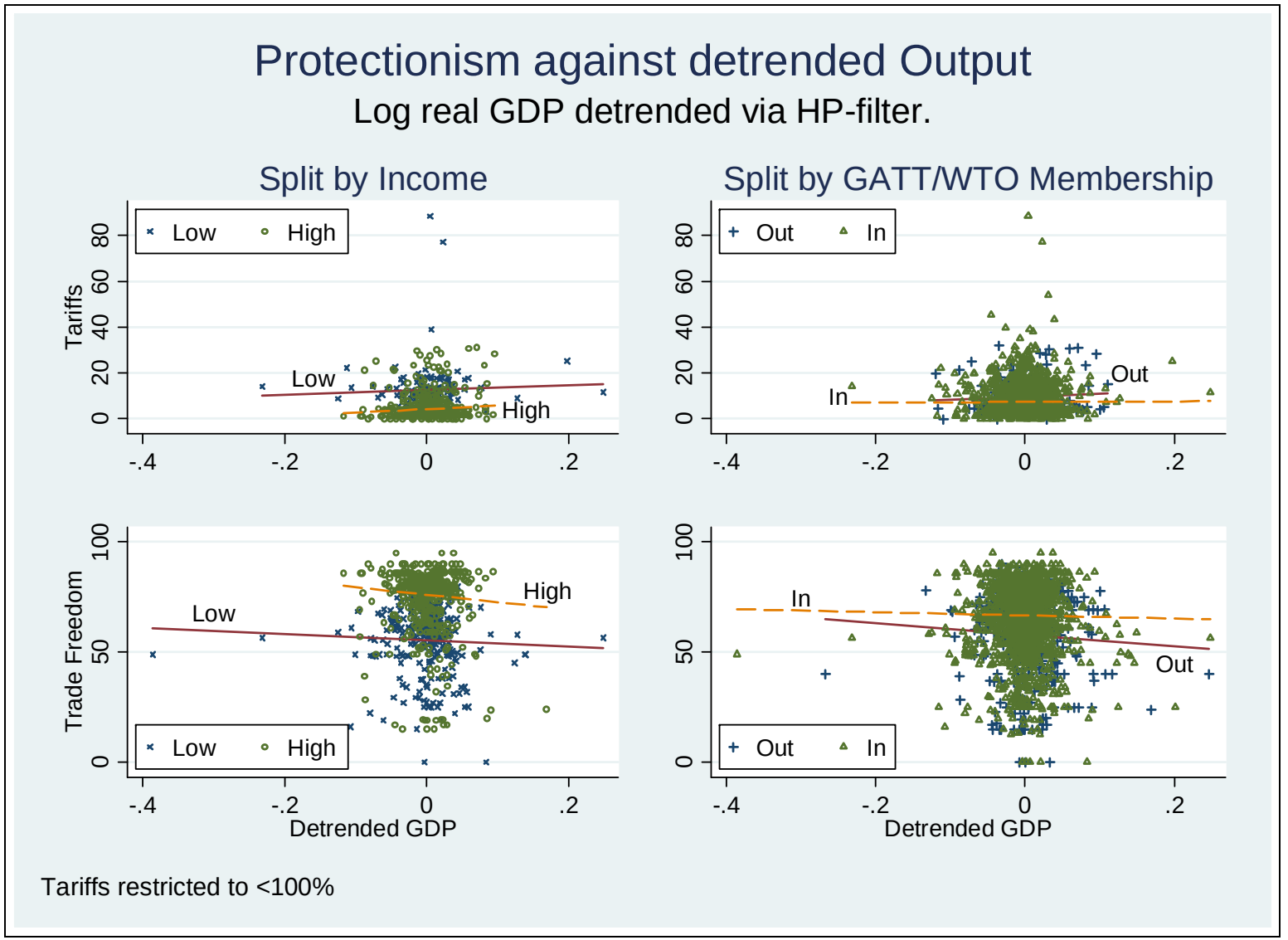

Protectionism against detrended Output
Log real GDP detrended via HP-filter.
Split by Income
Split by GATT/WTO Membership
Tariffs
Trade Freedom
Low
High
Out
In
Detrended GDP
Tariffs restricted to <100%

Figure 8

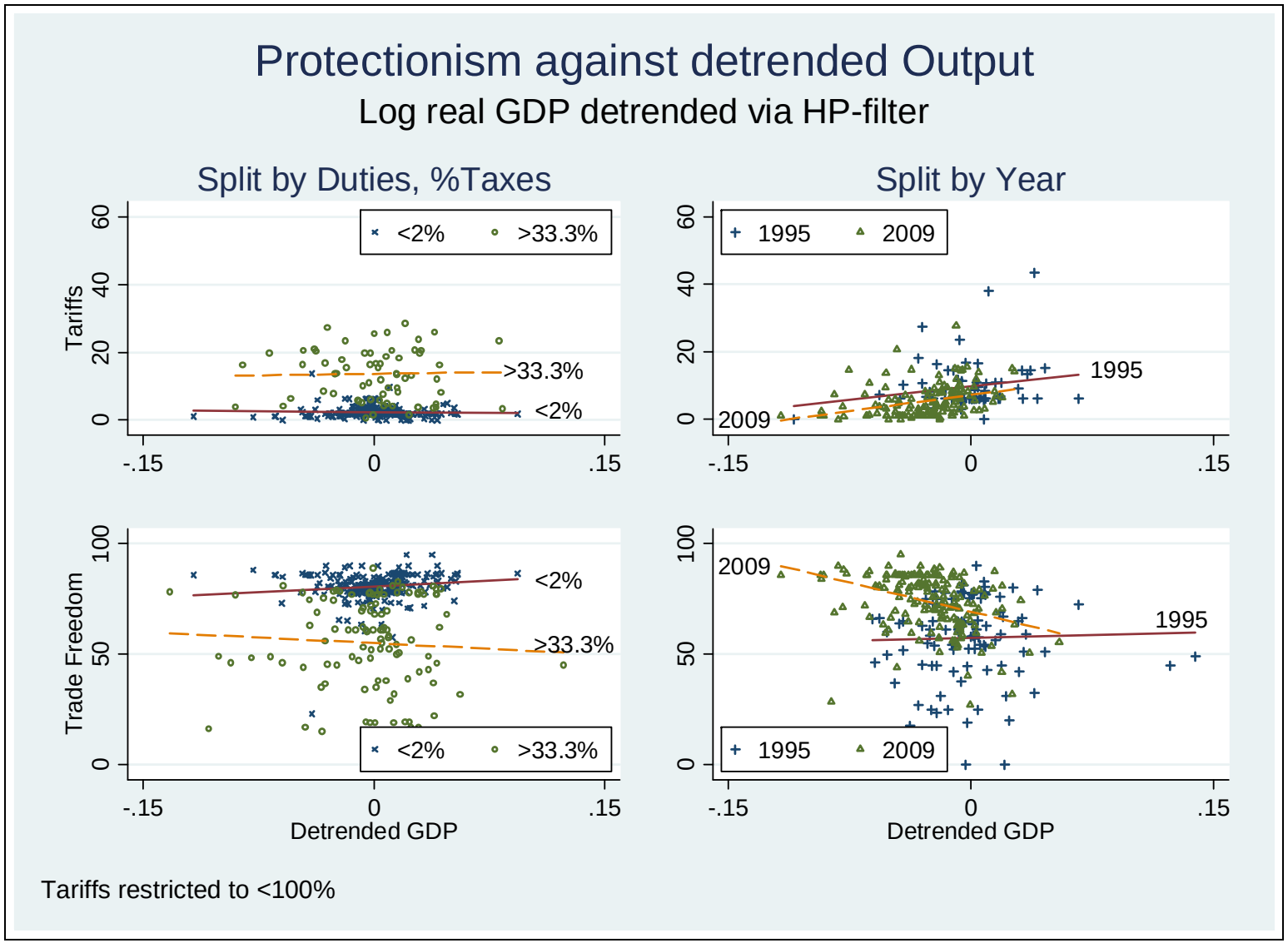

Protectionism against detrended Output
Log real GDP detrended via HP-filter
Split by Duties, %Taxes
Split by Year
Tariffs
Trade Freedom
<2%
>33.3%
1995
2009
Detrended GDP
Tariffs restricted to <100%

Figure 9

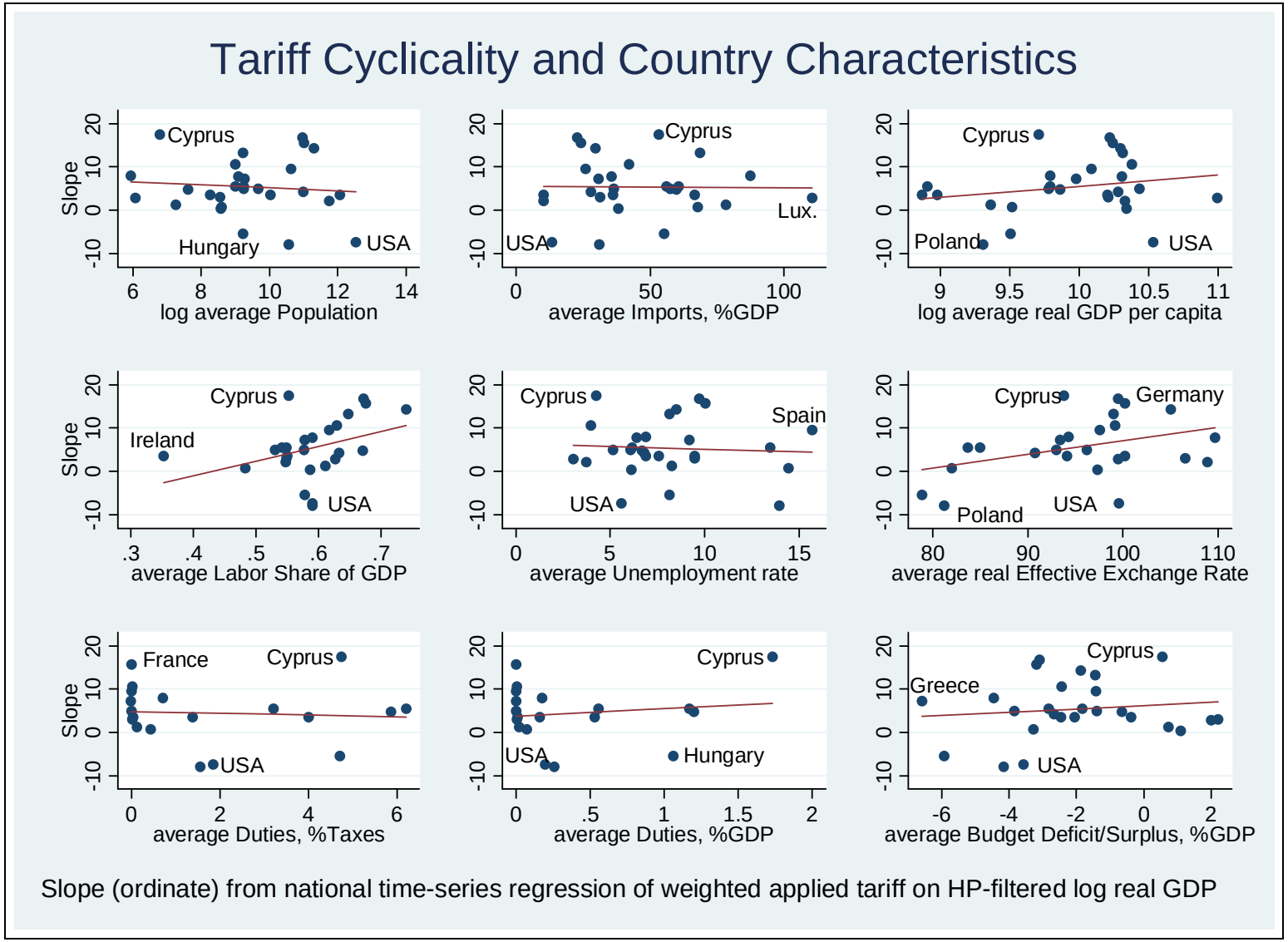

Tariff Cyclicality and Country Characteristics
Slope
log average Population
Cyprus
Hungary
USA
average Imports, %GDP
Lux.
log average real GDP per capita
Poland
average Labor Share of GDP
Ireland
average Unemployment rate
Spain
average real Effective Exchange Rate
Germany
average Duties, %Taxes
France
average Duties, %GDP
average Budget Deficit/Surplus, %GDP
Greece
Slope (ordinate) from national time-series regression of weighted applied tariff on HP-filtered log real GDP

Figure 10

Table A1: Responsiveness of Protectionism to Unemployment Rate

Regressand:	Contemporaneous Unemployment Rate	Lagged Unemployment Rate	Average of First, Second Lags of Unemployment
WTO Disputes	-.04 (.03)	.02 (.03)	.03 (.03)
Anti-Dumping Cases Initiated	.47 (.33)	.04 (.34)	.05 (.36)
Countervailing Duties Imposed	-.12 (.10)	-.12 (.11)	-.21 (.12)
Safeguards	-.03 (.10)	.09 (.11)	.06 (.11)
Binding Coverage %	.003 (.003)	-.002 (.002)	.001 (.003)
Bound Rate, simple average	-.02 (.02)	-.02 (.02)	-.01 (.02)
Customs Duties, % Goods Imports	.0006 (.0005)	.0009 (.0005)	.0007 (.0005)
Customs Duties, % Merchandise Imports	.0003 (.0005)	.0005 (.0005)	.0007 (.0005)
Customs Duties, % taxes	.24** (.06)	.23** (.06)	.37** (.07)
Customs Duties, % GDP	.05** (.01)	.05** (.01)	.08** (.01)
% Tariffs with international peaks	-.16 (.11)	-.26* (.11)	-.18 (.11)
Applied Tariff Rate, simple	-.04 (.05)	-.03 (.04)	-.02 (.04)
Applied Tariff Rate, weighted	-.09 (.10)	-.01 (.04)	.00 (.04)
MFN Tariff Rate, simple	-.03 (.05)	-.03 (.04)	-.01 (.04)
MFN Tariff Rate, weighted	-.08 (.10)	-.02 (.03)	-.01 (.03)
Trade Freedom (Index of Economic Freedom)	.01 (.09)	.04 (.08)	.12 (.08)
Number RTAs initiated/completed	-.00 (.01)	.01 (.01)	.01 (.01)
Principal Factor	-.00 (.01)	-.00 (.01)	-.00 (.01)

Default Sample: annual observations from as far back as 1980 through 2009; sample restricted to countries that had at least 25 unemployment observations. OLS estimation with country- and time-specific fixed effects. Standard errors in parentheses; coefficients significantly different from zero at .05 (.01) marked by one (two) asterisk(s). Principal factor is first factor (eigenvalue of 3.1, with 94% variation explained) extracted from: binding coverage %; customs duties % taxes; duties % merchandise imports; share of tariffs with international peaks; applied tariff rate weighted; trade freedom; and number RTAs initiated/signed.

Table A2: Responsiveness of Measures of Protectionism to Business Cycles, no Time Effects

Regressand:	Baxter-King	Christiano-Fitzgerald	Hodrick-Prescott	First-Differencing	Linear in Time
WTO Disputes	.7	.5	1.7	.00	.34
	(2.3)	(2.0)	(1.9)	(.01)	(.60)
Anti-Dumping Cases Initiated	-15.2	14.8	-9.9	-.0	6.3
	(29.3)	(26.1)	(25.6)	(.2)	(6.4)
Countervailing Duties Imposed	-6.4	5.6	-15.2	-.1	5.1
	(11.9)	(10.4)	(10.5)	(.1)	(2.6)
Safeguards	2.2	8.7	.4	.04	3.9
	(9.8)	(7.3)	(7.2)	(.04)	(2.7)
Binding Coverage %	-.5*	-.3	-.3	-.001	-.12*
	(.2)	(.2)	(.2)	(.001)	(.05)
Bound Rate, simple average	1.1	2.5	2.4*	.03**	1.8**
	(.6)	(1.3)	(1.2)	(01)	(.4)
Customs Duties, % Goods Imports	-.02	.03	-.03	-.0004	-.03*
	(.05)	(.04)	(.04)	(.0002)	(.01)
Customs Duties, % taxes	2.5	6.7	.0	.01	2.5
	(5.2)	(4.9)	(4.7)	(.03)	(1.7)
Customs Duties, % GDP	1.6	1.8	1.0	.004	.5
	(1.1)	(1.1)	(1.0)	(.007)	(.4)
Exports Taxes, % Taxes	1.0	-1.9	-.3	-.01	3.9
	(3.1)	(3.9)	(3.8)	(.03)	(1.4)
% Tariffs with intern'l peaks	-2.4	9.1	6.2	-.05	5.1*
	(10.5)	(8.9)	(8.3)	(.05)	(2.3)
Applied Tariff Rate, simple	4.7	1.9	.09	-.05	-1.7
	(5.8)	(4.6)	(4.3)	(.03)	(1.2)
Applied Tariff Rate, weighted	-3.8	-4.9	-7.7	-.04	-1.8
	(9.7)	(7.4)	(7.0)	(.04)	(1.9)
MFN Tariff Rate, simple	8.1	4.6	3.4	-.03	-.8
	(5.8)	(4.6)	(4.3)	(.03)	(1.2)
MFN Tariff Rate, weighted	-3.7	-4.3	-6.0	-.03	-.9
	(9.7)	(7.3)	(6.9)	(.04)	(1.9)
Trade Freedom (Index of Economic Freedom)	-7.6	-3.9	-9.6	-.01	11.4**
	(6.8)	(6.7)	(6.5)	(.04)	(1.9)
Number RTAs initiated/completed	-.1	.2	.2	.002	-.39**
	(.3)	(.3)	(.3)	(.002)	(.07)

Each cell is a coefficient from a separate regression of regressand (left column) on deviation of log real GDP from trend. Standard errors in parentheses; coefficients significantly different from zero at .05 (.01) marked by one (two) asterisk(s). OLS estimation with country- specific fixed effects. Default Sample: annual observations from as far back as 1978 through 2009. EU counted as single observation.

Table A3: Responsiveness of Protectionism to Financial Crises

Regressand:	Schularick Taylor	Banking	Currency	Domestic Sovereign Debt	External Sovereign Debt	Stock Market
WTO Disputes	-.86	-.36*	-.19	.22	.15	-.11
	(1.8)	(.16)	(.18)	(.31)	(.27)	(.19)
Anti-Dumping Cases Initiated	-1.6	-2.4	-1.9	-.6	-2.9	3.2
	(12.2)	(1.7)	(1.8)	(3.5)	(2.5)	(1.7)
Countervailing Duties Imposed	-2.5	-.1	1.2*	-2.0*	.8	.8
	(1.4)	(.6)	(.5)	(.9)	(.7)	(.6)
Safeguards	n/a	-.3	-.5	-.6	-.6	-.2
		(.7)	(.9)	(1.2)	(1.2)	(.8)
Binding Coverage %	.01	-.03	.04	.00	.04	.01
	(.01)	(.02)	(.02)	(.06)	(.04)	(.02)
Bound Rate, simple	.49	-.09	-.02	-.09	-.21	-.17
Average	(.67)	(.18)	(.18)	(.44)	(.32)	(.20)
Customs Duties	.009**	.007*	-.003	-.003	-.005	.002
% Goods Imports	(.002)	(.003)	(.003)	(.009)	(.005)	(.004)
Customs Duties	2.6**	2.1**	-.3	-.0	-.2	-.2
% taxes	(.7)	(.4)	(.4)	(1.3)	(.3)	(.2)
Customs Duties	.3	.4**	.03	.3	-.1	.1
% GDP	(.1)	(.1)	(.08)	(.2)	(.1)	(.1)
Exports Taxes, % Taxes	n/a	1.2*	.2	-.1	.2	1.3
		(.6)	(.6)	(1.4)	(.9)	(.9)
% Tariffs with	-.1	.8	.3	1.8	4.0**	-.2
intern'l peaks	(.7)	(.9)	(1.0)	(2.7)	(1.5)	(1.0)
Applied Tariff Rate	-.3	.6	-.0	.8	.2	-.4
Simple	(.4)	(.4)	(.5)	(1.3)	(.7)	(.5)
Applied Tariff Rate	-.2	2.2**	-.0	-.1	.5	1.1
weighted	(5.1)	(.8)	(.9)	(2.4)	(1.4)	(.9)
MFN Tariff Rate	-.6	.4	.2	1.2	.6	-.2
Simple	(.5)	(.4)	(.4)	(1.2)	(.6)	(.4)
MFN Tariff Rate	.0	2.1*	-.3	.3	-.0	1.1
Weighted	(5.1)	(.8)	(.9)	(2.4)	(1.4)	(.9)
Trade Freedom (Index	.2	-2.0**	-1.2	-3.8**	-.7	-.3
Of Economic Freedom)	(.8)	(.6)	(.7)	(1.4)	(1.0)	(.6)
Number RTAs	-.5	-.3**	-.0	-.1	.1	.0
initiated/completed	(.4)	(.1)	(.1)	(.2)	(.1)	(.1)

Default Sample: annual observations from as far back as 1978 through 2009 for up to 68 countries. EU counted as single observation. OLS estimation with country- and time-specific fixed effects. Standard errors in parentheses; coefficients significantly different from zero at .05 (.01) marked by one (two) asterisk(s). Dummy variables for Schularick-Taylor crisis dates taken from http://www.jfki.fu-berlin.de/faculty/economics/team/persons/schularick/index.html; all other crisis dates taken from Reinhart and Rogoff http://www.aeaweb.org/aer/data/aug2011/20080344_data.zip.

Table A4: Pre-WWI Results: Responsiveness of Customs Duties/Imports to Financial Crises

Crisis:	Schularick Taylor	Banking	Currency	Domestic Sovereign Debt	External Sovereign Debt	Stock Market
3-year averages	-.00 (.01)	.00 (.01)	-.02 (.02)	.04* (.02)	.01 (.01)	-.01 (.01)
Annual data	-.00 (.01)	-.001 (.005)	-.02** (.01)	.05** (.01)	.01 (.01)	-.00 (.01)
3-year averages, interwar	-.01 (.02)	.01 (.02)	-.03* (.02)	-.01 (.03)	.00 (.02)	-.00 (.01)

Default Sample: 28 countries, annual data 1850-1912. OLS estimation with country- and time-specific fixed effects. Standard errors in parentheses; coefficients significantly different from zero at .05 (.01) marked by one (two) asterisk(s).

Table A5: Splitting the Sample: Effect of (growth of log real) GDP on Protectionism

Determinant of Split	Split Threshold	Tariff Rate	Duties, %Imports	Trade Freedom	WTO Disputes
Population	Quartiles	.62	.66	.49	.81
Imports/GDP	Quartiles	.86	.22	.04*	.13
Labor Share	Quartiles	.88	.74	.70	.97
Duties/Taxes	Quartiles	.81	.82	.44	.85
Population	Halves	.49	.89	.94	.81
Imports/GDP	Halves	.68	.80	.33	.15
Labor Share	Halves	.84	.99	.54	.41
Duties/Taxes	Halves	.96	.38	.38	.84
RR ER Regime	Fix/Float	.32	.58	.84	.28
LYS3 ER Regime	Fix/Float	.40	.84	.36	.64

Each cell stems from a separate OLS regression of a measure of protectionism (in columns) on: a) fixed time- and country-specific fixed effects; b) the real GDP growth; and c) a dummy variable which is 0 for the lowest quartile/half of the sample, and real GDP growth for the highest quartile/half. The method of splitting the sample (tabulated in the left columns) differs by row. Each cell is a p-value of the null hypothesis that the coefficient on the dummy variable equals zero. Thus, a large p-value indicates that the effect of growth on protectionism does not depending on the value of the fundamental tabulated in the left column. P-values significantly different from zero at .05 (.01) marked by one (two) asterisk(s).

Table A6: Effect of Interactions with Business Cycle GDP Deviations

Geographic Dispersion

	Tariffs	Freedom	Disputes
BK	.72	.16	.46
CF	.76	.17	.59
HP	.63	.27	.60
Growth	.26	.33	.77
Linear	.89	.72	.75

Log Population

	Tariffs	Freedom	Disputes
BK	.04	.38	.80
CF	.00**	.13	.29
HP	.01**	.13	.16
Growth	.55	.13	.30
Linear	.32	.00**	.14

Labor Share of GDP

	Tariffs	Freedom	Disputes
BK	.83	.27	.61
CF	.76	.02*	.30
HP	.75	.02*	.76
Growth	.82	.01**	.24
Linear	.85	.01**	.15

Unemployment Rate

	Tariffs	Freedom	Disputes
BK	.84	.06	.82
CF	.84	.37	.56
HP	.82	.02	.50
Growth	.84	.96	.46
Linear	.99	.00**	.63

Imports (%GDP)

	Tariffs	Freedom	Disputes
BK	.83	.07	.55
CF	.55	.08	.67
HP	.85	.10	.76
Growth	.87	.55	.73
Linear	.77	.56	.67

GATT/WTO Membership

	Tariffs	Freedom	Disputes
BK	.87	.76	.46
CF	.82	.92	.17
HP	.87	.88	.09
Growth	.62	.74	.04
Linear	.47	.13	.14

Government Budget (%GDP)

	Tariffs	Freedom	Disputes
BK	.78	.77	.74
CF	.19	.32	.80
HP	.91	.34	.82
Growth	.68	.28	.86
Linear	.54	.05	.27

Government Revenue (%GDP)

	Tariffs	Freedom	Disputes
BK	.89	.97	.16
CF	.36	.29	.55
HP	.71	.76	.67
Growth	.56	.46	.37
Linear	.06	.37	.33

Levy-Yeyati & Sturzenegger Floating Exchange Rate

	Tariffs	Freedom	Disputes
BK	.15	.80	.81
CF	.95	.63	.27
HP	.12	.76	.55
Growth	.77	.62	.40
Linear	.56	.50	.22

Reinhart & Rogoff Floating Exchange Rate

	Tariffs	Freedom	Disputes
BK	.19	.50	.91
CF	.81	.95	.01**
HP	.28	.96	.10
Growth	.92	.68	.00**
Linear	.29	.94	.02*

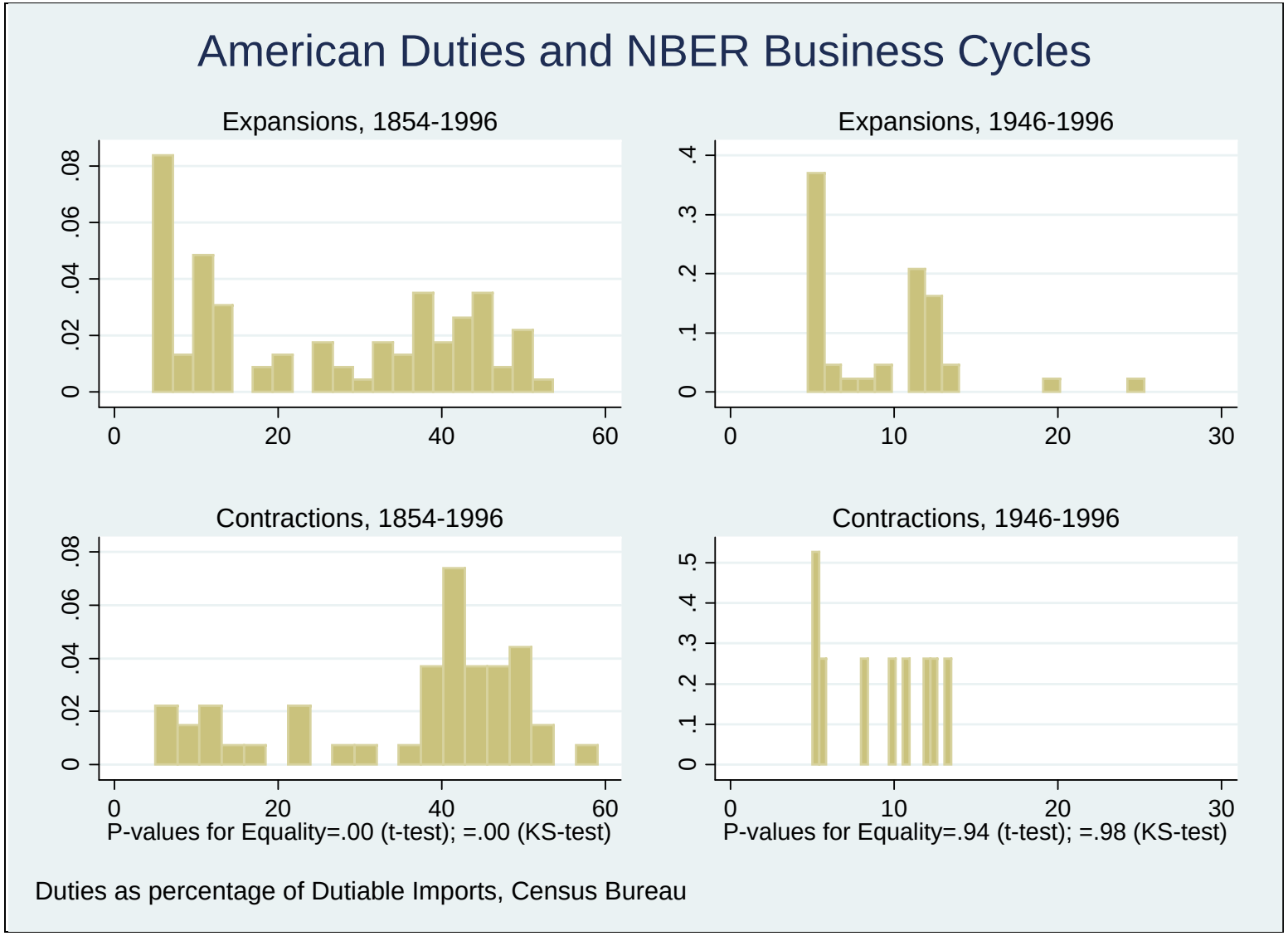
Levy-Yeyati & Sturzenegger Fixed Exchange Rate

	Tariffs	Freedom	Disputes
BK	.99	.10	.55
CF	.78	.66	.12
HP	.81	.23	.13
Growth	.79	.01**	.21
Linear	.52	.01**	.06

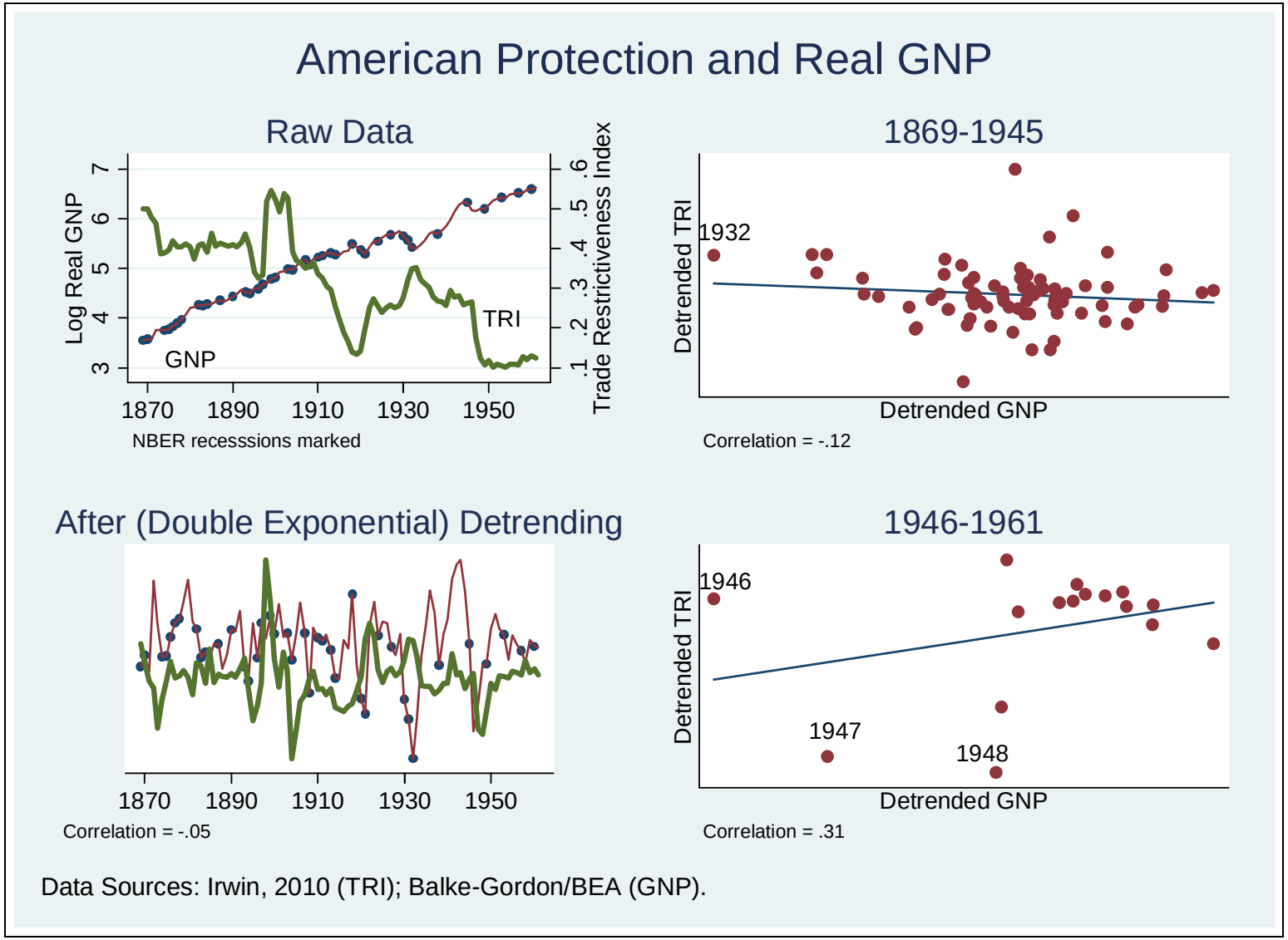
Reinhart & Rogoff Fixed Exchange Rate

	Tariffs	Freedom	Disputes
BK	.53	.53	.75
CF	.89	.20	.31
HP	.65	.30	.40
Growth	.89	.31	.18
Linear	.72	.02	.42

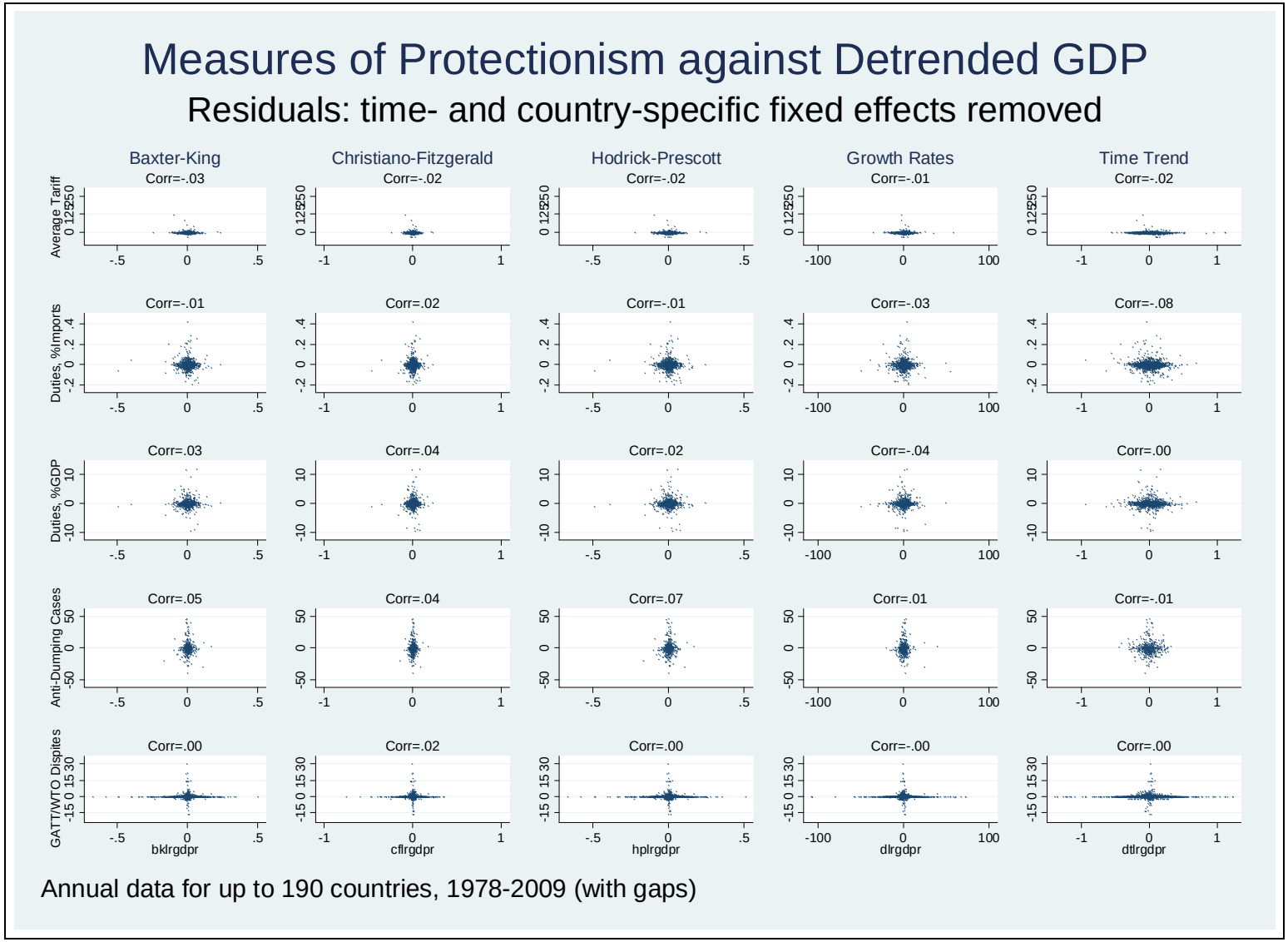
P-values for F-tests of Ho: level and interaction (with BC deviation of log real GDP)=0; a large p-value indicates that the effect of business cycle on protectionism does not depend on interactions. P-values significantly different from zero at .05 (.01) marked by one (two) asterisk(s). EEC/EC/EU countries combined for tariffs and GATT/WTO Cases. Business Cycle deviation and comprehensive time- and country-specific fixed effects included in all regressions. "Tariffs" is weighted mean applied tariff rate, all products; "Freedom" is the trade freedom measure of the index of economic freedom; "disputes" is the number of GATT/WTO disputes. De-trending: "BK" denotes Baxter-King; "CF" denotes Christiano-Fitzgerald; "HP" denotes Hodrick-Prescott; "Growth" denotes growth rates; "Linear" denotes linear time trend.



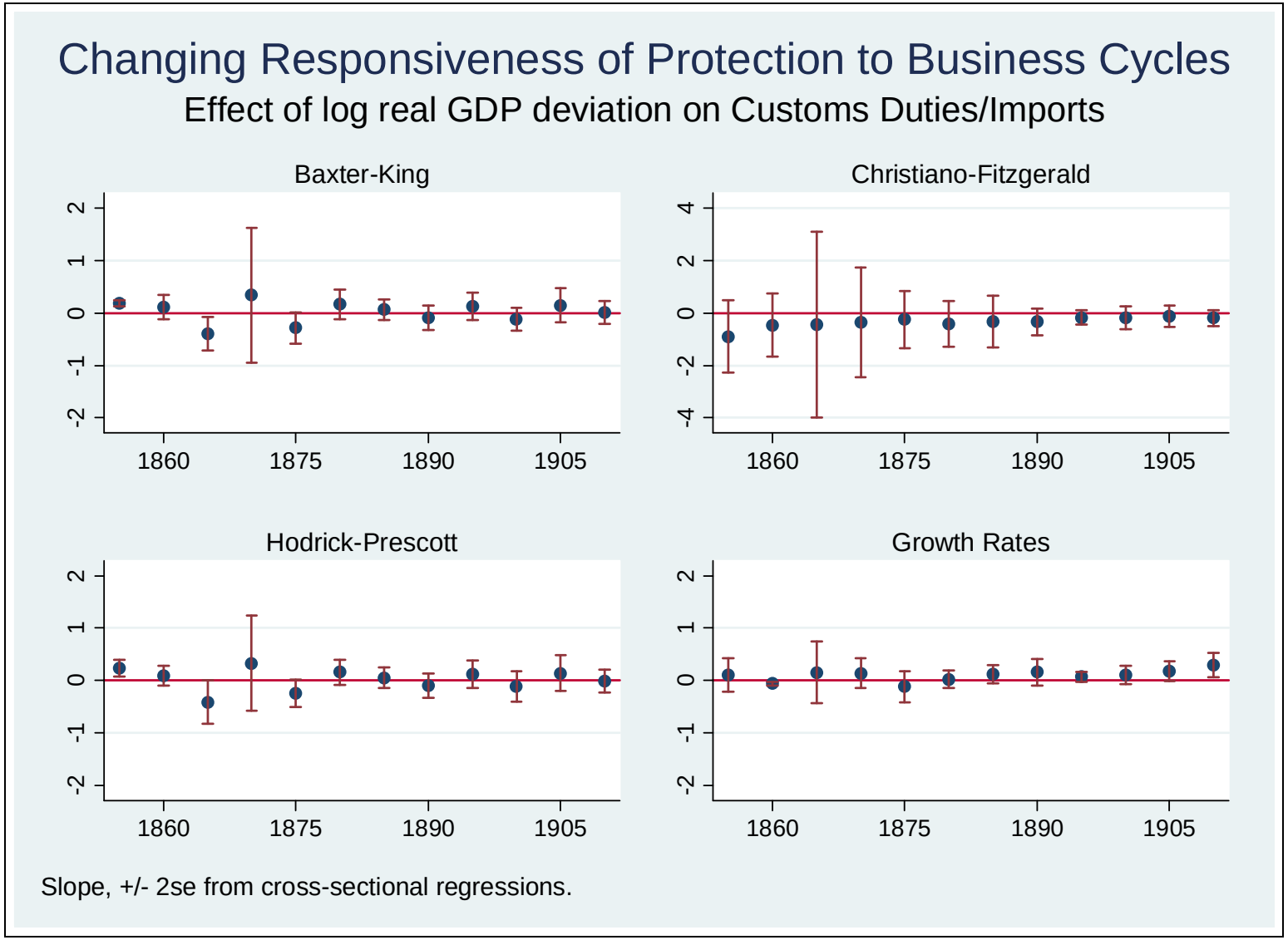
Appendix Figure A1



Appendix Figure A2



Appendix Figure A3



Appendix Figure A4

Endnotes

[1] These quotations represent the iceberg's tip. Cassing, McKeown and Ochs (1986, p. 843) state "One feature of tariff policy is that tariff levels tend to move in a cycle coupled with the business cycle. Tariff barriers are lowered during periods of relative prosperity, only to be raised again during world recessions." Gallarotti (1985, p. 157) writes: "The idea that there exists some relationship between patterns of tariff legislation and a nation's economic health is by no means new… Empirically, the hypothesis has been strengthened by the identification of an inverse correlation between levels of economic activity and protection. Historically, prosperous periods have been accompanied by free trade, and periods of depression by closure." Takacs (1981, p. 1987) states "It is generally agreed that in a modern industrial economy the cyclical state of the economy and the country's competitive position internationally are the principal determinants of the degree of protectionist pressure. Low levels of economic activity, high unemployment, unused capacity, … all operate to increase the temptation to protect domestic industries from import competition." Bown and Crowley (2012, p. 2) state "… as Bagwell and Staiger (2003) and others have established, … there is an empirical presumption that import protection rises during recessions … "

[2] Hansen (1990, p 537) writes "Among quantitative studies, most model the rates of duty in the cross-section, across industries, usually in recent periods … Only a handful of quantitative studies examine policy variations over time."

[3] The Balke-Gordon data is available at http://www.nber.org/chapters/c10036.pdf.

[4] Available at http://www.nber.org/cycles.html. Histograms of the customs series, and tests for equality between NBER recessions and expansions are presented in Appendix Figure A1.

[5] The trend in real GNP is widely recognized, but the trend in duties is almost as strong. The latter has been discussed by Ray (1987, p. 295) who states "Except for the brief interval of time associated with the Smoot-Hawley tariff of 1930 … tariffs have declined steadily in the United States from 1914 to 1986 (when the General Agreement on Tariffs and Trade ("GATT") Tokyo Round tariff cuts were scheduled to be fully implemented)."

[6] The United States raised tariffs in the early 1920 (through the Emergency Tariff of 1921 and the Fordney-McCumber Tariff of 1922) and again in 1930 (the Smoot-Hawley Tariff). The associated outliers are marked in the upper-right scatter-plot of Figure 2, and are also visible in the two left scatter-plots.

[7] The correlation is .25 for the 1949-1996 period.

[8] NTB data at an aggregate level is notoriously difficult to find, especially over time (e.g., from the TRAINS data set). Of course, the aggregate tariff rate changes with the composition of trade, and an effective rate would account for tariffs on intermediate inputs. Figure A2 is analogous to Figure 2, but replaces duties with the trade restrictiveness index from Irwin (2010); it delivers the same message.

[9] Background on the dispute settlement system is provided at http://www.wto.org/english/tratop_e/dispu_e/disp_settlement_cbt_e/c2s1p1_e.htm; Copelovitch and Pevehouse (2010) provide analysis and references. Data on world GDP is available from http://pwt.econ.upenn.edu/ while WTO disputes are available at http://www.wto.org/.

[10] As a crude measure of public interest on the topic, I also add in a plot for the number of articles in *The New York* Times that use the term 'protectionism'. I note in passing that American (as opposed to global) growth is poorly correlated with both *NYT* citations (.04) and American initiations of GATT/WTO disputes (.20).

[11] I also note in passing that mentions of "protectionism" in publications like the *New York Times* is essentially uncorrelated with growth (the correlation coefficient is -.11 since 1995).

[12] For analysis of trade policy during the "Great Recession" and its aftermath, see Evenett (2009), Evenett et al (2010), Gawande et al (2011), Kee et al (2011), and the analysis at http://www.voxeu.org/index.php?q=node/4297. Bown and Crowley (2012) find and analyze a switch in protectionist behavior during the great recession.

[13] http://www.heritage.org/index/open-markets

[14] I use standard parameter values for my filtering techniques: a smoothing parameter of 6.25 for Hodrick-Prescott (as suggested by e.g., Ravn and Uhlig); and for Christiano-Fitzgerald and (later) Baxter-King bandpass filtering, minimal/maximal periodicities of two/eight years respectively, with a lead-lag length of three years (as suggested by e.g., Baxter and King).

[15] I take no account of potential simultaneity bias; it strikes one as implausible that protectionism causes business cycles for this sample of data. Larch and Lechthaler (2011) show theoretically that various types of protectionism have small effects on output that are often negative (usually because of real exchange rate appreciation resulting from protectionism). They write (p2) write "While tariffs and non-tariff trade barriers increase domestic production, they decrease exports through their effects on the real exchange rate. The latter effect dominates the former and, thus, GDP goes down." Ostry and Rose (1992) use a variety of models to show that the theoretical effects of tariffs on output are ambiguous theoretically and empirically negligible. Irwin (2011, pp 118-120) states "Throughout history, the business cycle has had a greater impact on tariff policy than tariffs have had on the business cycle. When the economy goes into a recession, politicians often respond by raising tariffs… In sum, there are no strong theoretical or empirical grounds for believing that higher average tariffs are the principal cause of business cycle downturns or expansions."

[16] Bown (2005) models a country's decision to initiate a dispute through the WTO system using data from the first six years of the WTO. Holmes et al (2003) study the use of the dispute settlement system; their goal is to search for indications of bias against small or poor countries; like Bown, it ignores cyclic considerations. Reinhardt (1999) provides more analysis in the same vein. Related work by Bown (2004a) studies the reasons that the dispute settlement system has the effects that it does by inducing fear of retaliation, using a panel of data on import growth and its determinants, treating dispute initiation as exogenous. Bown (2004b) empirically analyzes why countries choose to violate or adhere to GATT rules, using a panel of disaggregated data; protection is determined endogenously, but using microeconomic phenomena.

[17] This is an important finding, in light of Knetter and Prusa (2003); I thank Chad Bown for access to this data set. The estimation is restricted to the observations for which anti-dumping observations are available.

[18] I use the World Bank's *Temporary Trade Barriers Database* (http://econ.worldbank.org/ttbd/) and, as with anti-dumping cases initiated, restrict the sample to those for which observations are available.

[19] The principal factor is the first factor (eigenvalue of 3.1, 94% variation explained) extracted from: binding coverage %; customs duties, % taxes; duties, % merchandise imports; share of tariffs with international peaks; applied tariff rate weighted; trade freedom; and number RTAs initiated/signed.

[20] Appendix Table A1 gives analogous results when the unemployment rate (alternatively contemporaneous, lagged a year, and a moving average of the first and second lags) is used instead of de-trended real GDP (I restrict the sample to countries that had at least 25 unemployment observations). The unemployment rate has the advantage over output of being largely trendless; it delivers the message that protectionism is essentially acyclic. The presence of global business cycles (which are taken out by time effects) may also be relevant; accordingly, Table A2 excludes time effects from the analysis of Table 2. It too delivers comparable results. Finally, the analogy to Table 2, but for the effects of financial crises on protectionism (instead of business cycles), is in Table A3. Protectionism rises significantly with banking crises for eight of the fifteen measures; it declines for one.

[21] Figure A3 is the analogue to Figure 5, but I replace raw protectionism data (on the ordinate) with the residuals of protectionism after country- and time-specific fixed effects have taken out via least squares.

[22] I thank Rob Johnson for allowing me access to the data set from his work with Guillermo Noguera; https://sites.google.com/site/robjohnson41/research.

[23] I use two popular measures of exchange rate regimes. Description and data for the measure of Reinhart and Rogoff is available at http://www.carmenreinhart.com/research/publications-by-topic/exchange-rates-and-dollarization/. Similarly, materials for the Levy-Yeyati and Sturznegger measure is available at https://sites.google.com/site/md4stata/linked/exchange-rate-classification .

[24] Table A4 is the analogue to Table 4 but provides estimates of the effect of financial crises; historical crisis dates are taken from the same sources as Table A3. There does not seem to be any strong consistent effect of financial crises on protectionism before WWII.

[25] I note in passing that the 1947 Havana Charter for the International Trade Organization states in Article 2 of Chapter II (italics added): "1. The Members recognize that *the avoidance of unemployment or underemployment* … is not of domestic concern alone, but *is also a necessary condition for … the expansion of international trade*, and thus for the well-being of all other countries." http://www.wto.org/english/docs_e/legal_e/havana_e.pdf. In the conclusion to the *General Theory,* Keynes states (pp 382-3): "… if nations can learn to provide themselves with full employment … there need be no important economic forces calculated to set the interest of one country against that of its neighbours … International trade would cease to be what it is, namely, a desperate expedient to maintain employment at home by forcing sales on foreign markets and restricting purchase …"

[26] I have been unable to obtain circulation or sales data on *The Economist* by country and time.

[27] Most of the point estimates are insignificantly different from zero; two of the 1980 and three of the 2000 estimates are significantly positive. The latter estimates indicate that countries harder hit during two recent global recessions tended to have less trade freedom.

[28] The historical analogue to Figure 6 is in Appendix Figure A4; like Figure 6, there are few signs of any trend in the (repeated cross-sectional) historical impact of business cycles on duties collected.

[29] I use population data taken from the Penn World Table 7.

[30] I use the coarse annual classification for the Reinhart-Rogoff data, and equate floating with "freely floating," fixing with "no separate legal tender, pre-announced peg or currency board arrangement, pre-announced horizontal band that is narrower than or equal to +/-2%, or de facto peg."

[31] I choose my income cut-offs from the World Bank (http://data.worldbank.org/about/country-classifications), and I use an updated version of Mike Tomz's data set on GATT/WTO membership (http://www.stanford.edu/~tomz/pubs/TGR_AER2007_merged.zip).

[32] There are 28 such countries.

[33] Table A5 is the analogue to Table 5, but uses the growth rate of real GDP rather than HP-filtered real GDP. As with Table 5, there is no evidence in Table A5 that the cyclicality of protectionism depends on fundamentals.

[34] Tables 5 and A5 split the sample by fundamentals and test the hypothesis that the cyclicality of protectionism is similar across samples. An alternative approach is to interact fundamentals with the regressors in (1) and test for the significance of the interaction terms. I pursue that approach in Table A6; there is no consistent or strong evidence that any of the (dozen) fundamentals I consider can be consistent and significantly linked to the cyclicality of protectionism.

[35] See e.g., Robert Whaples' (2006) "Do Economists Agree on Anything? Yes!" http://ew-econ.typepad.fr/articleAEAsurvey.pdf.

[36] http://www.globaltradealert.org/. Global Trade Alert implicitly assumes protectionism is counter-cyclic; for instance, the 10th GTA Report "Trade Tensions Mount" begins "The threats to an open trading system mounted in the second half of 2011 for several reasons. First, macroeconomic conditions deteriorated in Europe and China and doubts about the strength of any US economic recovery could not be shaken off. Government policy is likely to move further into a defensive posture." http://www.globaltradealert.org/gta-analysis/trade-tensions-mount-10th-gta-report