Aggregate Demand Shortfalls and Economic Institutions

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ABSTRACT: Political instability is often exacerbated in periods of aggregate demand shortfall, with both short and long-term implications for economic institutions. It has been conjectured that inadequate policy responses to recessions may be inimical to free economic institutions. This paper uses the *Economic Freedom of the World* index as its measure of economic institutions, and finds that the change in economic freedom in the following five, ten, and fifteen years is negatively impacted by an aggregate demand shortfall as measured by negative NGDP growth. The result is (largely) robust upon the exclusion of the monetary policy variables from *Economic Freedom of the World*, but is not robust if economic institutions are measured as trade openness.

Keywords: Economic Institutions; Voting Behavior; Economic Freedom; Macroeconomic Political Economy

JEL Codes: D72, E39, P16

I. Introduction

Typically, advocates of free markets see inflation as a threat to economic freedom (Hayek 1973; Sennholz 1979). More recently, the reaction following the Great Recession has been a concern about hyperinflation, not insufficient aggregate demand (Laffer 2009; Meltzer 2014). However, informally, it has since been proposed that periods of insufficient aggregate demand may be detrimental to economic freedom (Christensen 2013; Sumner 2013, 2015; c.f. O'Brien 2013). In this paper, we operationalize this hypothesis and test it empirically.

The narrative attached to this hypothesis is that governments with market-oriented politicians err on the side of too little aggregate demand. When this becomes severe, voters react by punishing them and electing populist parties instead. Contrary to many narratives, the election of the Nazi party occurred in conjunction with a deflation, as the Weimar hyperinflation happened years prior. The Smoot-Hawley Tariff and the National Recovery Administration in the United States came about following deflation, not hyperinflation. Syriza seized power in Greece from the center-right party following failed aggregate demand policy under the European Central Bank. Initially, Sweden weathered the Great Recession well. However, after its central bank began to pursue "macroprudential" monetary policy, voters responded by putting the Social Democrats in power. Each of these are anecdotes; we supplement the narrative with data.

Higgs (1987) proposed that crises serve as opportunities for governments to grow above trend (with economic freedom receding), with it never returning to its trajectory before the crises. A recent literature has appeared exploring the empirical causes of changes in economic freedom, as opposed to using economic freedom as an explanatory variable. Among these are certain crises, including financial crises (de Haan, Sturm, and Zandberg 2009; Bologna and Young 2015) and war (O'Reilly and Powell 2015). De Haan, Sturm, and Zandberg (2009) is the closest

to our analysis, as they find that output gaps have a negative impact on economic freedom. Additionally, Caplan (2003) has noted the connection between bad policies, bad growth, and bad ideas, including in the context of the aggregate demand failures of the Great Depression (196-197).

We differ in that we explicitly look at a nominal variable, Nominal Gross Domestic Product, as our indicator for the stance of monetary policy and aggregate demand. For our purposes, we assume that the central bank has complete control over all nominal variables, an assumption which holds so long as the liquidity trap either is not binding or is untrue empirically. We then interpret our results as indications of the effects of central bank policy. Should this assumption not hold, our results may instead be interpreted as the effects of aggregate demand more broadly.

To examine this empirically, we employ the *Economic Freedom of the World* index by the Fraser Institute (Gwartney, Lawson, and Hall 2015). In our baseline results, an event of negative NGDP growth has a negative effect on economic freedom five years, ten years, and fifteen years following the crisis period. In the specifications where we employ our control variables, year fixed effects, and country fixed effects, it reduces economic freedom by 0.11-0.19 standard deviations with the effect increasing in time. In these specifications, the effect is statistically significant at the 99% level.

The structure of this paper follows. In Section II, we discuss our method in greater detail and provide the sources of our data. Section III provides the baseline results. In Section IV, we perform two robustness checks, once by removing the monetary component from our economic freedom measure and secondly by substituting trade openness for economic freedom. Section V concludes.

II. Data and method

Our measure of economic institutions is the *Economic Freedom of the World* (EFW)

report published by the Fraser Institution (Gwartney, Lawson, and Hall 2015). It has been used

extensively elsewhere (Hall and Lawson 2014) and is comprised of five components, Size of

Government, Legal System and Property Rights, Sound Money, Freedom to Trade, and

Regulation. Our controls are the Polity IV dataset, which measures the quality of democracy

(Marshall and Cole 2011), logged real GDP per capita, PPP adjusted from Penn World Tables

(Heston, Summers, and Aten 2012), and human capital from the Barro-Lee dataset (2013).

There are numerous ways of operationalizing the hypothesis that NGDP shortfalls harm

institutions. We focus on one, given the nature of the EFW dataset. From 1970-2000, the data is

in five year increments. Following 2000, it is yearly. To make all comparisons truly apples-to-

apples, we start with any year we have data available for EFW in the given year *t*. We then look

back to years *t* to *t-4*. If, for any year in that interval, NGDP growth was negative, we assign the

year *t* a score of one. Otherwise, it gets a zero. This also captures the spirit of the hypothesis, that

an aggregate demand shortfall triggers an expulsion of political incumbents down the line.

Subsequently, we look at the *change* in EFW over the following five, ten, and fifteen

years. Again, this was done in part due to data constraints, but it also fits with the hypothesis, as

the NGDP shortfall triggers political changes that take time. There is also another

methodological benefit to looking at these long run changes. The most recent data point we have

is NGDP shortfalls in 2008 impacting economic freedom in 2013, the latter being the most recent

data. In other words, our test implicitly excludes our two primary motivating examples, the Great

Recession and Nazi Germany, from the sample. If the most extreme historical occurrences of the phenomenon are not included and we still achieve results, it adds to the power of the result.

While we may refer to instances of deflation and inflation in passing as shorthand for failures of aggregate demand management, we do not intend, for instance, to argue that every episode of price level deflation would have negative consequences (c.f. Bordo et al. 2009). As operationalized here, in fact, only rather drastic shortfalls in aggregate demand are marked as failures in our dataset.[1] The intention is to test the hypothesis that aggregate demand shortfalls impair economic institutions, not that deflation itself does so. For shorthand, at times we will use "AD shortfall" and "NGDP shortfall" synonymously throughout the paper.

One objection to our method is that one fifth of EFW is "Sound Money." While one could argue that long differences reduces this concern, Section IV excludes Sound Money to measure to what it extent it drives the results. Also in Section IV, we will use Trade Openness, which we calculated by adding Imports and Exports as percentages of GDP from World Development Indicators.

Descriptive statistics for all variables are provided in Table 1. Equations 1 through 3 provide our baseline models. γ_i denotes country fixed effects and δ_t denotes year fixed effects. *ADShortfall* denotes the aforementioned dummy variable for negative NGDP growth between years *t-4* and *t*. $\varphi_{i,t}$ is the vector of control variables. For each of these models, this is a final specification; in providing the results, we provide both these and specifications with and without the controls variables and separately with and without fixed effects.

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[1] Events of negative NGDP growth are typically considered to be examples of "bad" deflation, even among rather fervent inflation hawks, such as F.A. Hayek (see White 1999)

$$Eq. 1 \quad EFW_{i,t+5} - EFW_{i,t} = \beta_0 + \beta_1 EFW_{i,t} + \beta_2 ADShortfall_{i,t} + \beta_3 \varphi_{i,t} + \beta_4 \gamma_i + \beta_5 \delta_t + \varepsilon$$

$$Eq. 2 \quad EFW_{i,t+10} - EFW_{i,t} = \beta_0 + \beta_1 EFW_{i,t} + \beta_2 ADShortfall_{i,t} + \beta_3 \varphi_{i,t} + \beta_4 \gamma_i + \beta_5 \delta_t + \varepsilon$$

$$Eq. 3. \quad EFW_{i,t+15} - EFW_{i,t} = \beta_0 + \beta_1 EFW_{i,t} + \beta_2 ADShortfall_{i,t} + \beta_3 \varphi_{i,t} + \beta_4 \gamma_i + \beta_5 \delta_t + \varepsilon$$

These three models are the backbone of our methodology. When we later perform robustness checks, we difference and control at the beginning of the period analogously.

III. Results

Tables 2-4 provides are baseline results. The tables are sorted by LHS variable, with Table 2 providing results for the five year difference, followed by the ten and fifteen year differences. Regressions 1, 5, and 9 give a simple specification, with only the initial level of EFW controlled for. Regressions 2, 6, and 10 introduce year and country fixed effects. Regressions 3, 7, and 11 include the controls but no fixed effects. Regressions 4, 8, and 12, which are our headline results, include both the controls and the fixed effects.

The results are not always statistically significant without fixed effects. However, upon their inclusion and the inclusion of our control variables, *AdShortfall* achieves statistical significance at the 99% level. The individual point estimates are small but not economically insignificant. In the five year difference, an NGDP shortfall reduces EFW by 0.11 standard deviations. This increases up to 0.19 standard deviations in the fifteen year difference. The five year difference is statistically distinguishable from the from the fifteen year difference, but the latter estimate is not precise enough to distinguish the fifteen year difference from the five year difference.

IV. Robustness Checks

For our robustness checks, we change our economic freedom variable. First, to answer the question as to whether the measure of economic freedom is simply a function of monetary policy, we remove the "Sound Money" area and recalculate the index. Secondly, we use trade openness as an imprecise proxy for economic freedom. These regressions all employ our control variables, year fixed effects, and country fixed effects. We replicate the previous models closely, replacing the control for economic freedom at the beginning period with economic freedom less sound money and trade openness at the beginning period, respectively.

Table 5 provides these results. Regressions 13-15 correspond to removing Sound Money from economic freedom. The result hold strongly for changes in economic freedom over five years and ten years. It loses significance ($t = -1.29$) but maintains sign and magnitude over fifteen years. This check may be interpreted as providing evidence in favor of the interpretation of we are measuring distantly lagged effects on monetary policy, though this would still be negative for economic freedom. Regardless, this issue only arises at the most distant of the time horizons.

Regressions 16-18 correspond to trade openness and do not support the hypothesis. Coefficients are imprecisely estimated, statistically insignificant, and in any case their point estimates correspond to less than 5% of a standard deviation in trade openness. Charitably, this suggests that the manner in which an aggregate demand shortfall harms economic freedom does not do so in a way that fundamentally harms its level of trade. But this too may cut against the narrative discussed earlier in the paper. If populist politicians are to blame, they do not have an economically significant impact on the globalized structure of their nation's economy.

V. Conclusion

As a first approximation, serious shortfalls in aggregate demand harm free economic institutions. In our complete specifications with controls, year fixed effects, and country fixed effects, the effect of shortfalls varies from 0.11 standard deviations over five years to 0.19 standard deviations over fifteen years as measured by the *Economic Freedom of the World* index. We find this despite our estimation technique necessarily excluding the historical episodes motivating our research. The effect is fairly robust upon exclusion of monetary variables from the index (with caveats), but is not robust if economic institutions are thought of in terms of trade openness.

Alternative hypotheses may be raised to explain these findings. Our econometric results only operationalize and test the implications of one particular narrative about the interplay between economic liberalization, monetary policy, voters, and practical politics. We did not test the precise narrative and mechanism, only their implications. These implications hold under the baseline approximations. However, the narrative itself sits less well with the uneven results found in the robustness checks. If poor monetary decisions lead to populism and inwardness, it does not show up in the trade data. Perhaps this is merely because levels of trade are dominated by variables besides marginal changes in economic policy, but perhaps not. In any case, the predicted empirical regularity is present in the data, which calls out for explanation even if our underlying narrative is flawed or incomplete.

Works Cited

Barro, Robert and Jong-Wha Lee. 2013. "A new data set of educational attainment in the world, 1950–2010." *Journal of Development Economics* 104: 184–198.

Bologna, Jamie and Andrew Young. 2015. "Crises and Government: Some Empirical Evidence." *Contemporary Economic Policy*, forthcoming.

Bordo, Michael D., John Landon-Lane, and Angela Redish. 2009. "Good versus Bad Deflation: Lessons from the Gold Standard Era." In *Monetary Policy in Low Inflation Economies*, David E. Altig and Ed Nosal, eds. Cambridge: Cambridge University Press, pp. 127-174.

Caplan, Bryan. 2003. "The Idea Trap: the Political Economy of Growth Divergence." *European Journal of Political Economy* 19: 183-203.

Christensen, Lars. 2013. "Deflation – Not Hyperinflation – Brought Hitler to Power." *The Market Monetarist*, http://marketmonetarist.com/2013/11/17/deflation-not-hyperinflation-brought-hitler-to-power/

de Haan, Jakob, Jan-Egbert Sturm, and Eelco Zandberg. 2009. "The Impact of Financial and Economic Crises on Economic Freedom." In *Economic Freedom of the World 2009 Annual Report*, James Gwartney and Robert Lawson. Vancouver, BC, Canada: Fraser Institute.

Hall, Joshua C. and Robert A. Lawson. 2014. "Economic Freedom of the World: An Accounting of the Literature." *Contemporary Economic Policy* 32, no. 1: 1-19.

Hayek, F.A. 1973. "Economic Freedom and Representative Government." *Institute for Economic Affairs Occasional Paper* no. 39.

Heston, Alan, Robert Summers, and Bettina Atan. 2012. *Penn World Table Version 7.1*. Center for International Comparisons of Production, Income and Prices at the University of Pennsylvania. http://www.rug.nl/research/ggdc/data/pwt/

Higgs, Robert. 1987. *Crisis and Leviathan: Critical Episodes in the Growth of American Government*. Oxford, UK: Oxford University Press.

Laffer, Art. 2009. "Get Ready for Inflation and Higher Interest Rates." *The Wall Street Journal*, http://www.wsj.com/articles/SB124458888993599879

Meltzer, Allen. 2014. "How the Fed Fuels the Coming Inflation." *The Wall Street Journal*, http://www.wsj.com/articles/SB10001424052702303939404579527750249153032

O'Brien, Matthew. 2013. "Unveiled! Lenin's Brilliant Plot to Destroy Capitalism." *The Atlantic,* http://www.theatlantic.com/business/archive/2013/09/unveiled-lenins-brilliant-plot-to-destroy-capitalism/280006/

O'Reilly, Colin and Benjamin Powell. 2015. "War and the Growth of Government." http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2480063

Sennholz, Hans. 1979. *Age of Inflation*. Belmont, MA: Western Islands.

Sumner, Scott. 2013. "Conservatives Are Their Own Worst Enemy." *The Money Illusion*, http://www.themoneyillusion.com/?p=23578

---. 2015. "Are German Schoolchildren Taught About the 1929-32 Deflation?" *Econlog*, http://econlog.econlib.org/archives/2015/01/are_german_scho.html

White, Lawrence. 1999. "Hayek's Monetary Theory and Policy: A Critical Reconstruction." *Journal of Money, Credit, and Banking* 31: 109-120.

TABLE 1: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
5 Yr. Δ EF	1662	0.168	0.53	-2.3	3.0
10 Yr. Δ EF	1052	0.430	0.80	-2.9	4.0
15 Yr. Δ EF	564	0.896	1.05	-2.3	5.0
AD Shortfall	2594	0.207	0.41	0.0	1.0
Initial EF	1662	6.339	1.26	1.8	9.2
EF_3	1655	6.075	1.22	2.1	9.1
Polity IV	2024	2.474	7.05	-10.0	10.0
Human Capital	1488	6.703	2.98	0.3	12.7
Ln Real GDP per capita	2681	8.479	1.33	5.1	11.6
Trade Openness	2508	85.223	51.56	0.3	439.7

TABLE 2: 5 Year Regressions

Regression	1	2	3	4
LHS	5 Yr. Δ EF	5 Yr. Δ EF	5 Yr. Δ EF	5 Yr. Δ EF
AD Shortfall	-0.031	-0.115***	-0.008	-0.141***
	(0.032)	(0.037)	(0.044)	(0.049)
EF	-0.144***	-0.401***	-2.135***	-0.405***
	(0.010)	(0.020)	(0.176)	(0.025)
Polity IV			0.145***	0.021***
			(0.003)	(0.004)
Human Capital			0.045***	0.069**
			(0.010)	(0.032)
Ln Real GDP per capita			-0.557***	-0.549***
			(0.020)	(0.084)
Constant	1.083***	2.134***	1.658***	5.882***
	(0.064)	(0.175)	(0.134)	(0.662)
Year Fixed Effects	N	Y	N	Y
Country Fixed Effects	N	Y	N	Y
Adjusted R-Squared	0.12	0.38	0.17	0.49
n	1617	1617	985	985

TABLE 3: 10 Year Regressions

Regression	5	6	7	8
LHS	10 Yr. Δ EF	10 Yr. Δ EF	10 Yr. Δ EF	10 Yr. Δ EF
AD Shortfall	-0.117**	-0.139**	-0.052	-0.213***
	(0.056)	(0.056)	(0.063)	(0.059)
EF	-0.280***	-0.736***	-0.465***	-0.784***
	(0.017)	(0.030)	(0.024)	(0.030)
Polity IV			0.020***	0.023***
			(0.005)	(0.005)
Human Capital			0.078***	0.109***
			(0.014)	(0.039)
Ln Real GDP per capita			-0.0192	-0.807***
			(0.029)	(0.101)
Constant	2.144***	4.386***	2.870***	10.003***
	(0.104)	(0.267)	(0.195)	(0.797)
Year Fixed Effects	N	Y	N	Y
Country Fixed Effects	N	Y	N	Y
Adjusted R-Squared	0.22	0.58	0.35	0.68
n	1010	1010	793	793

TABLE 4: 15 Year Regressions

Regression	9	10	11	12
LHS	15 Yr. Δ EF	15 Yr. Δ EF	15 Yr. Δ EF	15 Yr. Δ EF
AD Shortfall	-0.388***	-0.284***	-0.131	-0.245***
	(0.106)	(0.082)	(0.111)	(0.088)
EF	-0.402***	-1.091***	-0.705***	-1.106***
	(0.029)	(0.045)	(0.038)	(0.048)
Polity IV			0.018**	0.018**
			(0.007)	(0.007)
Human Capital			0.144***	0.0794
			(0.024)	(0.066)
Ln Real GDP per capita			0.0518	-0.934***
			(0.054)	(0.161)
Constant	6.499***	6.499***	3.584***	13.069***
	(0.428)	(0.428)	(0.352)	(1.301)
Year Fixed Effects	N	Y	N	Y
Country Fixed Effects	N	Y	N	Y
Adjusted R-Squared	0.27	0.75	0.48	0.81
n	525	525	412	412

TABLE 5: Robustness Checks						
Regression	13	14	15	16	17	18
LHS	5 Yr. Δ less Area 3	10 Yr. Δ less area 3	15 Yr. Δ less area 3	5 Yr. Δ Trade Openness	10 Yr. Δ Trade Openness	15 Yr. Δ Trade Openness
AD Shortfall	-0.164***	-0.239***	-0.119	2.482	-2.420	2.010
	(0.047)	(0.054)	(0.081)	(1.684)	(2.407)	(2.695)
EFW less area 3	-0.526***	-0.861***	-0.995***			
	(0.026)	(0.029)	(0.041)			
Trade Openness				-0.593***	-0.897***	-0.874***
				(0.034)	(0.059)	(0.073)
Polity IV	0.019***	0.023***	0.013**	-0.220	-0.178	-0.358
	(0.004)	(0.005)	(0.006)	(0.153)	(0.208)	(0.243)
Human Capital	0.060**	0.076**	0.0307259	1.597757	1.310	1.059
	(0.030)	(0.035)	(0.060)	(1.090)	(1.899)	(2.527)
Ln Real GDP per capita	-0.429***	-0.404***	-0.427***	7.361***	10.912**	10.608**
	(0.080)	(0.093)	(0.150)	(2.677)	(4.270)	(5.309)
Constant	5.531***	7.253***	8.547***	-38.177*	-42.339	-44.822
	(0.639)	(0.746)	(1.241)	(23.194)	(34.807)	(44.782)
Year Fixed Effects	Y	Y	Y	Y	Y	Y
Country Fixed Effects	Y	Y	Y	Y	Y	Y
Adjusted R-Squared	0.51	0.71	0.81	0.42	0.50	0.58
n	982	790	409	930	499	401