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Economic Freedom and Economic Crisis

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Economic Freedom and Economic Crisis

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Abstract: In this paper, I explore the politically contested association between the degree of capitalism, captured by measures of economic freedom, and the risk and characteristics of economic crisis. After offering some brief theoretical considerations, I estimate the effects of economic freedom on crisis risk in the post-Cold War period 1993-2010. I further estimate the effects on the duration, peak-to-trough GDP ratios and recovery times of 212 crises across 175 countries within this period. Estimates suggest that economic freedom is robustly associated with smaller peak-to-trough ratios and shorter recovery time. These effects are driven by regulatory components of the economic freedom index.

Keywords: crisis, economic freedom, institutions

JEL Codes: O11, O43, P16

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1. Introduction

In the aftermath of the financial crisis of 2008 and the subsequent Great Recession, the media have been filled with claims about who and what is to blame for economic crises. Some commentators, economists and political scientists claim that unrestrained capitalism creates economic crises and markets need to be regulated and subjected to political control. This predominantly left-wing claim originally derives from the first volume of *Das Kapital*, in which Marx predicted that capitalism would produce crises that would lead to its demise. Recent thinking on the left-wing continues to reflect this claim, as Chomsky (2009) for example argues that deregulation since the 1970s has produced more frequent crises and increasing inequality. While these commentators praise political freedom in the guise of democracy, their argument is that substantial economic freedom is related to more frequent and deeper crises. Krugman (2008, 189) for example argues that the 2008 crisis was created by deregulation of the financial sector and that many future crisis can only be prevented through regulation because "anything that . . . plays an essential role in the financial mechanism should be regulated when there isn't a crisis so that it doesn't take excessive risks." Stiglitz (2009) makes a very similar point in arguing that deregulation and liberalization triggered the 2008 crisis by creating excessive risk-taking behaviour and outright fraud.

Classical liberal and right-wing commentators and social scientists conversely argue that the Great Recession, and most crises in general, are created and prolonged by government regulations, poor institutions and activist policy failures. Most famously, Friedman and Schwartz (1963) documented how the Great Depression of 1929 and the subsequent crisis were partially created and prolonged by repeated monetary policy failures. Higgs (1997) additionally argued that the Great Depression of the 1930s was deepened and prolonged by Hoover's interventions and Roosevelt's New Deal policies, both of which included tight and direct market regulations and control of individual firms. Baker et al. (2012) document similar effects of policy uncertainty deriving from erratic, discretionary policy interventions during the recent crisis in the US while Zingales (2012) employs the concept of crony capitalism to

diagnose the causes of the world-wide crisis. Krugman's (1999) explanation for the Asian crisis of 1997-98 also rests on what has become known as crony capitalism. As public bail-out guarantees fuelled an unsustainable credit expansion and thus an economic bubble that resulted in a severe crisis, the Asian crisis was in large part created by policy failures.

These claims are therefore exactly opposite with one side arguing that economic freedom is harmful to human well-being by creating frequent economic disruptions and the other arguing that substantial economic freedom protects societies from such damaging disruptions. The international debate is fierce and politically influential in several countries, yet remains oddly uninformed since very little is actually known about the relation between economic freedom and crisis risk and characteristics.

The questions addressed in this paper therefore are if more capitalist economies – societies that are economically relatively free – are more or less prone to experience economic crises and if crises hitting such economies are different. I answer these questions by estimating the effects of economic freedom, measured by the Index of Economic Freedom (IEF) from the Heritage Foundation, on subsequent crisis risk, and on the duration, depth and recovery time of crises, when they occur. The full dataset includes 212 economic crises across 175 countries, of which 122 experienced at least one crisis or longer recession during the post-Cold War period between 1993 and 2010.

The results suggest that increased economic freedom is only weakly associated with the probability of observing a crisis, and not at all with the duration of economic crises. However, countries that are more economically free when entering a crisis are clearly likely to experience substantially smaller crises, measured by the peak-to-trough GDP ratio, and have shorter recoveries to pre-crisis real GDP. These differences are driven by elements of the IEF related to regulatory activity while government spending, rule of law and market openness in general are not robustly related to crisis characteristics.

The rest of the paper is organized as follows. Section 2 outlines some simple theoretical considerations of how economic freedom might affect economic crisis. Section 3 describes the data

used in section 4, which reports estimates of crisis risk, and section 5 that reports estimates of crisis characteristics. Section 6 concludes.

2. Theoretical considerations and literature

Policies and institutions can, in principle, be associated with crises in three ways. First, they can affect the volatility of domestic economic development and the way international business cycles are propagated to the economy, i.e. the sensitivity of domestic demand to international shocks. Second, economic policies can affect the aggregate demand reaction to crises, such as is the traditional role of Keynesian stabilization policy. Third, economic policies and institutions can affect the supply response to crisis, and in particular the flexibility of the economy when resources are to be reallocated from uses made either redundant or unprofitable by the crisis shock.

2.1. Arguments against economic freedom

In the context of crisis risk, Baier et al. (2012) note that a perfectly communist society with no economic freedom does not suffer economic crisis due to international shocks or domestic demand collapses. It does, however, also not develop in any way comparable to non-communist societies, and many communist societies were in reality in continual crisis from the 1970s. To many economists since Lange (1936) and Lerner (1938) in the 1930s, the question has therefore been to identify what would be 'good' regulations and centralized planning, not least those elements stabilizing the economy and alleviating crises once they occur. Keynesian economics, arising out of such discussions, provided a middle-way between the outright socialist view and classical and neo-classical economics.

First, traditional Keynesian logic holds that the main problem during crises is the demand loss incurred on private agents. Societies with higher taxes, larger government spending and more generous welfare states ought, all other things being equal, to be characterized by relatively small fiscal multipliers. Generous unemployment insurance and other transfers also provide automatic stabilizers

that would tend to limit the demand loss during the beginning of a crisis. In all cases, these characteristics would mean that an exogenous economic shock would have smaller demand consequences in large welfare states, i.e. societies characterized by less economic freedom in the form of large government and high taxes. The same argument dating back to Keynes (1936) holds that governments ought to stabilize the economy by the use of strongly expansionary fiscal policy during recessions and crises.

Second, another problem is that both demand and supply shocks reduce the profitability of most ordinary firms and investments. This situation can lead to a credit crunch when banks rationally limit credit for given interest rates. Such crunches appear both when financial institutions rationally limit the risk they can take on, and when falling asset prices reduces the value of collateral that firms and private individuals can offer (Feldman, 2011). During a credit crunch following a crisis, government policies can in principle prop up companies that may be illiquid but no insolvent, but might go out of business without access to credit. Without substantial regulation of financial markets, temporarily illiquid firms may instead go bankrupt with the loss of jobs and additional demand. Similarly, it is sometimes argued that labour market regulations that make it substantially more difficult to fire people limit demand losses during recessions by limiting job losses.

Third, many commentators claim that crises are released and prolonged by a lack of regulations. A key claim in Stiglitz (2009) is that financial markets took too large risks and may have suffered from 'irrational exuberance', i.e. an irrational misperception of underlying risks and cycles of excessive optimism and pessimism (Hill, 2006; Akerlof and Shiller, 2009). The OECD also blames deficient regulations prior to the crisis for creating systemic risk and unconventional business and financial practices (Slovik, 2012). In particular, this strand of literature argues that unless properly and effectively regulated, systemic banks may perish and create domino effects through the financial system, which would exacerbate any negative effects of the original crisis impetus.

Finally, Manzetti (2010, 23) defends a thesis in which "if market reforms are carried out within a *democratic polity* where accountability institutions are weak (or deliberately emasculated to accelerate policy implementation), then corruption, collusion, and patronage will be strongly associated with severe economic crisis in the medium term." His argument is that the quality of bureaucratic and judicial institutions, which are central to combating corruption and patronage, will effectively protect countries against economic crisis. Part of the mechanism is that high-quality bureaucratic institutions allow the effective implementation of "good regulation" and other government policies, such as those argued for by Stiglitz (2009) and others.

2.2. Arguments in favour of economic freedom

However, while there is no doubt that market failures do exist, and that at least some crisis may be due to market failures, the real question is if governments in reality are willing and able to design and implement corrective measures or if trying to do so merely creates additional government failures (e.g. Munger, 2008). In other words, even if one could theoretically design market regulations and stabilization policy that would prevent crises or speed up recovery, two questions remain: 1) do politicians have incentives to introduce such policies; and 2) do they have sufficient information to design and implement such policies, if they should they to do so? The first question is central to public choice and political economy while the second defines both certain strands of modern macroeconomic thinking as well as what is known as robust political economy.

Pennington (2011, 17) summarizes part of the problem associated with the traditional Keynesian and neoclassical treatment of the problem as one in which government actors ought to react to market failures but "no explanation is given of how government actors can bring about the necessary equilibrium in place of markets – it is simply assumed that they can." Yet, as Hayek (1948) argued, the information needed to enable governments to design proper regulations does not exist without the market – a dilemma that Munger (2010) terms 'Hayek's Design Problem'. In addition, as shown in the

seminal work by Laffont and Tirole (1988), even with benevolent government, regulations are difficult to design as governments and regulators may suffer from time inconsistency problems. These occur as even well-designed regulations reveal information that changes the optimal design of the same regulations. Regulators thus come to suffer from Hayek's Design Problem that regulations under fairly general conditions remove market information necessary to design optimal regulations.

Government failures are therefore likely to occur, and in particular in the build-up to economic crises in which information must, by logical necessity, be less precise than in more normal times. In addition, Stigler (1971) and Olson (1965, 1982) note that government actors and regulators often receive their information from special interests and companies that they are meant to regulate. By providing biased and incomplete information, special interests can effectively affect regulations to their immediate benefit. Along similar lines, Holcombe and Ryvkin (2010) also argue that due to the availability of more diverse and complete information, policy errors tend to be smaller among legislative than executive decision-makers. They thus make an argument for less political regulation of legislative decision. Actual regulations therefore tend to differ rather substantially from those derived from purely economic considerations and create government failures instead of solving market failures.

Another reason than incomplete information is the resistance of special interest groups, as originally outlined by Tullock (1975). Even though regulations turn out to produce poor or directly counterproductive outcomes, reforms become very difficult due to the transitional gains trap: that the existence of regulations benefitting narrow groups of firms or agents actively create special interests with a short-run interest in perpetuating deficient regulations. Olson (1982) applied this type of analysis when he diagnosed "the British Disease" as one in which labour unions and industrial special interests effectively stifled any attempts at reforms and therefore contributed to making crises in the 1970s much deeper. Similar problems may prevent politicians and governments from taking either their preferred or objectively correct steps towards solving specific problems if the electorate has diverging beliefs or preferences (cf. Downs, 1957; Potrafke, 2013).

This problem is particularly pertinent in regulated labour markets, where labour unions characterised by insider-outsider behaviour (cf. Lindbeck and Snower, 1988) will be interested in keeping the minimum wage unchanged, just as a median voter might in the short run. Economic crises tend to create substantial unemployment, which can become permanent if long-term unemployed union members effectively drop out of labour unions' objective functions. They will therefore negotiate wages that are too high to clear the labour market, thus prolonging the crisis. In addition, high nominal minimum wages may also tend to prolong crises as the real minimum wage only decreases with inflation, which prevents entrepreneurs and other firms from hiring low-skilled labour.

Second, not only ordinary firms but entrepreneurs in particular may suffer from low economic freedom during crises. Entrepreneurs are arguably specifically important during the recovery period of a crisis, as firms and jobs have been destroyed and both new and existing firms have incentives to soak up unemployed resources. The ability to form reasonably accurate expectations of future relative prices are in general important for economic decision-making while Knight (1921) argued that since entrepreneurs are essentially recipients of a residual income, price expectations are particularly important for them. Friedman (1962) emphasized this mechanism in the context of long-run development and economic freedom, and in particular the rate and variability of inflation that affects firms' ability to form longer-run production and investment plans.

Following a crisis, entrepreneurial opportunities are likely to increase as some firms perish through crises (cf. Schumpeter, 1939). However, as realized by Baumol (1990), the institutional framework decides the mix of productive and unproductive entrepreneurial effort. In these situations, Kirzner (1997) notes that public regulations such as licensing requirements and other entry barriers can prevent entrepreneurs from realizing the new profit opportunities created by firm exit during the crisis. In general, elements of institutions and economic freedom are strongly associated with entrepreneurial activity (Kreft and Sobel, 2005; Bjørnskov and Foss, 2008; Nyström, 2008). In crises, in particular, resources are left unemployed and therefore available at lower cost, creating profit opportunities to

grab. However, labour market regulations making it difficult to fire people and licensing requirements barring entry may arguably prevent entrepreneurs from picking up these opportunities.

Lastly, Akerlof and Shiller (2008), Stiglitz (2009) and others question if market participants and private interests behave in a rational manner. With basis in recent research in behavioural economics, they are sceptical if market participants can be trusted to act rationally, and argue that relatively tight market regulations are necessary to prevent crisis arising from irrational behaviour. Yet, Berggren (2012) notes that exactly similar cognitive limitations and irrational responses must be attributed to political actors if one is to avoid assuming a "bifurcated" view of human action in which individuals suddenly become characterized by fully informed, perfectly rational and other-regarding behaviour when they move from the private to the public sector (cf. Buchanan and Tullock, 1962). In other words, if irrational behaviour and systematic mistakes in the market contributes to crises, then similar behaviour must logically contribute to crises by substantially increasing the risk of government failures. The latter risk is nevertheless larger, as government failures are not likely to be limited by competitive market forces and as regulations and policies affect the entire society and not only specific markets.

2.3. Related literature

As such, one can theoretically argue for almost any association between economic crisis and economic freedom that one prefers. The empirical literature on the topic is still quite scant, but does include some findings. In the following, I briefly outline these findings before turning to the empirics.

In Reinhart and Rogoff's (2009b) treatment of centuries of financial crises, they define debt-intolerant regimes as societies with either incomplete checks and balances on political power or unstable political institutions. In their view, it is therefore deficient political institutions that in the long run create debt problems that cause financial disruptions. Reinhart and Rogoff's explanation of crisis risk thus revolves around other types of institutions than those typically covered within the umbrella concept of economic freedom.

Focusing on banking crises, Baier et al. (2012) nevertheless find that higher economic freedom makes banking crises less likely. Shehzad and de Haan (2009) also find that financial liberalization, i.e. increasing economic freedom in financial markets, is associated with reduced a risk of getting a systemic crisis. Bordo and Haubrich (2010) instead focus on contractionary monetary policy surprises as the main precursors to financial crises, and thus to deficiencies in monetary institutions.

However, a main reason for this paper is that banking crises and financial crises are not as clearly associated with recessions and economic crises as one might expect. Dwyer et al. (2013) for example show that about a fourth of countries experiencing a banking crisis do not experience a decline in GDP per capita. Rancière et al. (2008) even show that the frequency of systemic crisis is positively associated with log-run economic growth. It is therefore, from a theoretical as well as an empirical angle, important to separate economic and financial crises. In the following, I therefore outline the identification of economic crises in the post-Cold War data.

3. Data

First, I define the onset of a crisis as an event in which annual growth drops to below -.2 percent from a period of at least two years above zero. I apply this rather strict definition, as a number of apparent crises in developing countries may simply be due to the imprecision of national accounts in poor countries. Applying this strict definition also to some extent makes the main findings more robust to revisions of national accounts that tend to smooth out GDO volatility (cf. Brümmerhoff and Grömling, 2012). Simply counting crises as events in which growth turns negative yields 28 additional crises that typically only last one year and appear inconsistent with other information.

Crisis duration is defined from this event as the number of consecutive years that growth remains negative and recovery time is defined as the number of years it takes before real GDP per capita returns to (at least) its immediate pre-crisis level. The final crisis characteristic is the peak-to-trough GDP ratio, which is defined as the percent drop of real GDP per capita from its pre-crisis level to the last year of

the crisis *per se*, i.e. the year in which GDP per capita is at its lowest point. All of these variables are defined on the basis of the national accounts data in the Penn World Tables, mark 7.1 (Heston et al., 2012). From these data, I also add the logarithm to the count of economic crises in the preceding 20 years.

The main independent variable is the Index of Economic Freedom, created and published by the Heritage Foundation (2014). The index consists of nine primary indices, sorted into four 'pillars' of economic freedom: 1) Rule of law; 2) Government size; 3) Regulatory efficiency; and 4) Market openness. All primary indices as well as the overall IEF are distributed on a scale from 0 (lowest possible level) to 100 (the highest possible level). The choice of the IEF over alternative indices from, e.g., the Fraser Institute is a matter of practical problems, as the IEF is the only index covering a large sample of countries and available on an annual basis sufficiently far back in time.

The overall index is formed as the simple average of all nine components. First, rule of law is formed as the average of the protection of property rights and the freedom from corruption. Although based on subjective assessments, it is valid as it correlates very highly with other measures of the rule of law from, e.g., the Gwartney et al. (2014) and Kaufmann et al. (2010). Second, government size consists of fiscal freedom, measured as the overall burden of all taxation as a percent of GDP, and government spending, capturing the size of the public sector. Third, regulatory efficiency consists of business freedom, labour freedom and monetary freedom, measuring the absence of licensing and other directly limiting policies, hiring and firing regulations, and the existence of stable, predictable and non-inflationary monetary policy.[1] Finally, market openness is formed from indices of trade openness – tariffs, trade taxes, quotas and regulatory barriers to trade – investment freedom, which capture transparent and equitable rules and the absence of restrictions on the movement of capital, and financial freedom, capturing transparent rules and the absence of government intervention in financial markets.

[11] In the following, I do not include labor freedom as it is only available from 2005.

In the following, I first use the overall measure to establish if an association between crisis and economic freedom exists. Subsequently, I follow the approach of the Heritage Foundation in separating the IEF into the four pillars: Government spending, capturing a spending component, and Rule of law, Regulatory efficiency and Market openness, capturing non-spending policy and institutional components of economic freedom. The main reason is that the former component in particular is only weakly correlated with the remaining. As noted in previous studies on economic freedom, spending and revenue components tend to be only weakly associated with other elements and are therefore a separable dimension (e.g., Heckelman and Stroup, 2005; Justesen, 2008; Rode and Coll, 2012). The three non-spending components have correlations between .5 and .6, and thus also do not measure the exact same concepts.

In all cases, economic freedom is observed prior to the crisis to avoid endogeneity. Several studies for example document that economic freedom in general suffers during economic and financial crises, as governments react by increasing spending and introducing additional market regulations (e.g. de Haan et al., 2009). Conversely, Pitlik and Wirth (2003) find evidence that major crises in the longer run lead to higher chances of observing liberalizing reforms. Similarly, all control variables outlined in the following are also lagged one period so as not to have been affected by the crisis.

The control variables in all cases include the log to population size, the log to real GDP per capita, trade volume (as percent of GDP), the share of geographical neighbour countries that are in an economic crisis, and a dummy for post-communist countries. These variables are a priori relevant for the following reasons. While small countries may be better able to cope with crises by adapting faster to international trade circumstances, larger countries are more structurally diverse and thus arguably less likely to experience industry- or market specific crises. Post-communist countries have, at least for a time, been economically vulnerable due to their institutional transition while trade may both make countries more susceptible to international shocks but also allow them to diversify more.

I also add the updated official classification of exchange rate regimes of the IMF from Ilzetzki et al. (2014). The IMF classification places countries in one of six categories of increasingly fixed exchange rates with 1 denotes either having no currency or a currency peg, 2 a narrow crawling peg regime, 3 crawling peg with a broad intervention band, 4 a free float, 5 freely falling exchange rate (i.e. no management at all), and 6 a situation with dual markets.

With the exception of the last variable, these all derive from the Penn World Tables, mark 7.1. I also add a set of regime type controls. Based on the regime dataset in Cheibub et al. (2008), I control for three different types of autocracies, keeping democracy as the comparison type: civil autocracy, military dictatorship and royal dictatorship.[2] Military dictatorship is defined as an autocracy in which the head of state has a military background and military rank; royal dictatorship consists of absolutist monarchies. From this dataset, I also define a variable capturing whether a country has gone through a regime change, i.e. either a change to or from democracy or between types of dictatorship.[3] From a related dataset, I capture political stability no related to de facto regime changes by adding dummies for whether the country experienced a failed coup in a given year, separating military and civil coup attempts.[4]

All variables used in estimating crisis risk are summarized in Table 1a; this dataset includes 2195 observations from 177 countries with full data. The much smaller dataset used to estimate the influence

[2] The Cheibub et al. dataset covers the period between 1950 and 2008. In joint work with Martin Rode, I have updated the dataset to 2010 and ensured that all regime changes pertain to the correct year such that regime changes in the latter half of year t are coded as taking effect in year t+1.

[3] While one might in principle also distinguish between different types of democracy, a set of preliminary analyses suggested that there are no differences between parliamentary, mixed and presidential democracies in the present sample. I therefore exclude this distinction in order to keep the baseline specification parsimonious.

[4] The coup data is connected to the update of Cheibub et al. (2010). It is based on all available news reports and historical accounts of confirmed coups and coup attempts. A first version of the data is presented in Bjørnskov (2014b).

on crisis duration, peak-to-trough ratios and recovery times is summarized in Table 1b; this dataset covers 212 crisis episodes from 122 countries with full data.

Insert Table 1a about here

Insert Table 1b about here

In the case of crisis risk, the dependent variable is a dummy and I therefore employ a standard panel logit estimator. With duration, peak-to-trough ratios and recovery times, I apply a generalized least squares estimator. While both duration and recovery time are categorical variables, they cover sufficient categories that a linear estimator yields virtually similar results as a categorical estimator. As linear estimators allow direct interpretation of the coefficients, I opt for reporting those results. As the average number of crises per country observed in the full dataset is only 1.2 and only 25 countries have more than two crises in the data, employing country fixed effects is not practically feasible. In all cases in the next section, I therefore estimate effects with random effects estimators.

4. Results

Before turning to the formal estimates, a first look at the raw data suggests that there may be marked differences across levels of economic freedom. Figure 1 plots the averages of the four main crisis variables, sorted into three groups of equal size according to the level of economic freedom: low, medium and high freedom.[5]

Insert Figure 1 about here

In the low third of the observations, the simple probability of observing a crisis is 14 percent while it is 10 percent in the medium category and eight percent in the high category. Although indicative, these differences are insignificant. Crisis duration, conversely, seems approximately two years across all three categories while the peak-to-trough ratio varies substantially. In the low freedom

[5] Although the differences in the figure may appear non-linear, this cannot be inferred from the simple data. The variation within the low-freedom category in particular is substantially larger than in the middle category.

category, the average peak-to-trough ratio is 8.8 percent, the ratio in the medium category is 5.4 percent (difference significant at p<.00) while the average in the high freedom category is 4.6 percent (p<.19). On average, both duration and peak-to-trough ratios are therefore remarkably consistent with Reinhart and Rogoff's (2009a) historical estimates Finally, the recovery time does not differ between low and medium freedom (4.1 versus 3.7 year; p<.65) while it is 3.1 years in the high freedom group (p<.06). As such, while the average crisis is quite similar to economic crises explored in previous papers (e.g. Dwyer et al., 2013), they appear systematically heterogeneous.

A similar picture emerges when plotting the average 'shape' of the typical economic crises in countries with low versus high economic freedom. Figure 2 exhibits the development in real GDP per capita (indexed to 1 in the year prior to crisis onset) across the 80 crises lasting less than five years and with recovery periods not overlapping with subsequent episodes. Across these crisis episodes, it is evident that crises tend to be substantially deeper in countries with relatively little economic freedom than in countries with high freedom: the peak-to-trough ratio in the former is 10.3 percent while it is only 3.4 percent in the latter. These differences are not driven by a predominance of one-year crises in relatively free economies (55 % versus 47%; p<.20) or very long crises being more likely in one group (4.6 versus 6.4 %; p<.57). Yet, the figure also indicates that growth during recovery is approximately similar in the two groups at roughly 3.5 percent in the first two years, implying that it is the increased depth of the crisis in countries with low economic freedom that accounts for their longer recovery. As such, the data do not follow what is known as Zarnowitz's Law that a larger income drop is followed by a faster recovery (Dwyer et al., 2013).

4.1. Overall economic freedom

However, while these differences are illustrative, they could be spurious for a number of reasons. Economic freedom is, for example, associated with substantially higher income, trade volumes and

democracy, all of which might affect crisis characteristics. I report the results of controlling for these and other factors in Table 2.

Insert Table 2 about here

The results first of all suggest that neither larger nor richer or more open countries have been more prone to experience crisis in the period after the end of the Cold War. There is nevertheless evidence that both successful regime transitions as well as failed military coups on average are associated with a higher crisis risk. The results exhibit strong evidence that countries with a history of crises are more likely to develop a new crisis (cf. Reinhart and Rogoff, 2009). The results also show that countries with relatively more floating exchange rate regimes are significantly more likely to experience a crisis. Most pertinently, though, when controlling for past crises, economic freedom appears unrelated to crisis risk.

Focusing on the characteristics of the 212 crises in the dataset, crisis duration is not significantly associated with anything but the regional dummies, failed military coups and a joint international business cycle. The peak-to-trough ratio, on the other hand, is increasing in economic development and somewhat deeper in floating exchange rate regimes and following failed military coups. Yet it is also strongly and negatively associated with economic freedom, as already suggested by the illustration in Figure 2. Similarly, economic freedom is significantly associated with shorter recoveries.

The effects on the peak-to-trough ratio and recovery time are not only robust to excluding the tails of the IEF, but are also economically meaningful.[6] An increase in economic freedom of ten points, or slightly less than a standard deviation, is associated with a decline in the peak-to-trough ratio of four percentage points, or half a standard deviation. This is associated with a reduced recovery time of approximately ten months.

[6] The robustness tests consist of excluding the ten percent observations with the lowest and highest economic freedom index to ensure that the findings are not driven by extreme observations. Likewise, a full country jackknife also supports the two findings.

A potential problem nevertheless is that economic freedom is associated with long-run development. The findings could therefore in principle mainly apply to richer societies while being largely irrelevant for low and middle-income countries. The lower panel of Table 2 addresses this problem by excluding all observations with a GDP per capita above 20,000 USD. Effectively, this excludes almost all OECD countries.

The estimates reported in the table nonetheless suggest that the potential problem does not affect the findings. While the significant association between economic freedom and crisis risk again turns out insignificant, the effect on peak-to-trough ratios remains strongly significant while the estimate on recovery times just misses significance at $p<.05$. The size of the estimates also varies by less than ten percent and thus remains very stable.

4.2. Components of economic freedom

The estimates therefore suggest that economic freedom is significantly and robustly associated with two specific characteristics of economic crises: the depth, measured by the peak-to-trough ratio, and the recovery time following a crisis. As an additional test, I report the results of using the four official pillars of the IEF. Tables 3 and 4 report these estimates; note that all estimates are obtained using the full specifications and the richest countries are excluded in Table 4.

Insert Table 3 about here

Insert Table 4 about here

Doing so replicates the fragile association between economic freedom and crisis in the full sample, as only market openness is weakly significant Tables 3 and 4. Likewise, no components of economic freedom are close to being significantly associated with the duration of crises. Turning to the peak-to-trough ratio, the results conversely suggest that the elements of the IEF capturing regulatory efficiency are strongly significantly associated with smaller ratios. The estimates of the remaining elements are individually and jointly and rather small and indicate that the results in Table 2 are entirely

driven by regulatory efficiency.[7] This also holds for the subsample in Table 4 where the estimate of the effects of regulatory efficiency is only slightly smaller.

As such, although some associations eventually turn out to be spurious, key components of economic freedom emerge as statistically significant and economically important determinants of the depth of economic crises. These main findings appear remarkably robust to additional standard test. In jackknife tests (not shown), the estimated effect of regulatory efficiency on peak-to-trough ratios only varies by 15 percent.[8]

In summary, the simple picture in Figure 2 is supported by the more formal results and the main effects are economically and socially relevant. These results suggest that in the typical crisis in countries below average economic freedom, the cumulative income loss through a typical crisis is larger than 20 percent. The cumulative income loss through the shorter crisis in countries with above-average freedom remains below ten percent of pre-crisis per capita income. The final section therefore discusses their potential implications.

5. Discussion and conclusions

[7] The remaining three components are jointly insignificant throughout. With peak-to-trough ratios, the F-tests reject significant at $p<.45$ in the full sample and $p<.66$ in the reduced sample. With recovery time, the statistics are $p<.52$ and $p<.28$, respectively.

[8] The smallest point estimate is obtained when excluding Azerbaijan while the largest occurs when excluding Laos. In general, the jackknife exercise suggests that there is no clear structure to the distribution of estimates. Other robustness tests include estimating the effects with country fixed effects and adding extra control variables. Despite the limited within-country variation, the effects on peak-to-trough ratios remain significant when adding fixed effects. Effects on both peak-to-trough ratios and recovery times also remain unchanged when, for example, adding a variable measuring the number of crises experience by a country in the preceding 20 years. Adding this variable nonetheless reduces the estimates of economic freedom on crisis risk to well beyond significance. I refrain from reporting these estimates since limited data availability before 1990 reduces the sample significantly.

After the financial crisis starting at the end of 2007 and the subsequent Great Recession, the international debate about the causes of economic crises has raged. Some commentators and politicians claim that unregulated markets caused the crisis and therefore argue for limiting economic freedom. Others argue that economic freedom protects countries against crises and allows them to recover faster than more regulated economies. The debate cannot be easily settled as economic theory provides no unequivocal insight and offers a priori valid arguments for both points of view.

Comparing countries over the period from 1993 to 2010, in which 212 crises occurred, this paper provides empirical evidence on the effects of economic freedom. The results show that neither overall economic freedom nor any of the four pillars constituting the overall index are robustly associated with crisis risk. Crisis duration, defined as the number of consecutive years in which growth remains negative, also turns out to be unrelated to economic freedom.

Conversely, the size of the economic contraction during the crisis, measured by the peak-to-trough ratio of real GDP per capita, is strongly negatively associated with initial economic freedom. The recovery time to pre-crisis GDP is likewise negatively associated with economic freedom since the speed of recovery from the peak of the crisis does not differ across levels of economic freedom. Both of these robust effects are due to differences in regulatory efficiency and freedom. As such, the systematic effects arise from differences in business and monetary freedom, and not from differences in government spending, rule of law or product market regulations. The question is how one can interpret these findings, and in particular which mechanisms are likely to be important during crises.

A politically popular Keynesian way of interpreting the findings is to argue that in countries with substantial initial economic freedom, there is more room for additional regulation or spending to counter the effects of the crisis (cf. Corsetti et al., 2010). Yet, the present evidence is inconsistent with this view. When for example comparing the *change* in economic freedom in the two first years of the crisis, it is evident that countries with higher initial levels actually increased economic freedom during the crisis. Splitting the crisis, observations with above-median initial regulatory efficiency on average

increased freedom by two points while those below the median decreased freedom by one point ($p<.02$). Had the Keynesian interpretation reflected processes likely to drive the findings, one would have expected to see the opposite pattern and a stronger association with spending components of economic freedom.

An indication of more reasonable interpretations derives from the components constituting the regulatory efficiency sub-index. These are business, monetary and labour freedom, although the latter for practical reasons is excluded in the present data. According to the Heritage Foundation (2014), business freedom is primarily identified through the existence of licensing regulations and similar policies; monetary freedom refers to the existence of stable, predictable and non-inflationary monetary policy directed by independent central banks; and labour freedom to liberalist hiring and firing rules and the absence of other restrictions on labour contracts.

An interpretation that therefore offers itself is one of reallocation costs during crisis. As a crisis hits an economy, a substantial share of resources become unemployed, which creates profit opportunities for entrepreneurs to the extent that these resources become cheaper. Yet, whether or not this happens and at which speed existing firms and new entrants can reallocate resources depends on the regulatory framework. Licensing requirements and similar business regulations constitute entry barriers that prevent entrepreneurs from seizing legal opportunities and thereby limiting the economic and social losses during crises. Unstable monetary policies and inflationary interventions prevent the formation of precise price expectations, thereby increasing uncertainty, which would also hold back new investments (Friedman, 1962). Finally, labour market regulations can make it both more expensive and risky to hire new employees, providing a third channel through which deficient or inefficient regulations significantly increase the transaction costs of reallocation. Consistent with the evidence, this does not prevent a crisis from occurring, but limits its extent as more firms in a flexible economy can react faster and in a more economical way to the challenges and opportunities created by the crisis.

As a final concern, a long string of studies in recent years has documented the substantial long-run growth effects of rule of law components of indices such as the IEF (e.g. Acemoglu et al., 2005; Kurrild-Klitgaard and Justesen, 2014). However, the evidence in this paper suggests that in short to medium run processes, other aspects of economic freedom and the institutional framework may be more relevant. In more normal times with no or only slow reallocation needs, regulations and restrictive legislation may not have clearly visible consequences for the economy or individual well-being. When substantial restructuring and reallocation is forced by a crisis, the value of regulatory freedom nevertheless becomes noticeable (cf. Bjørnskov, 2014a). This value seems to be ignored in current policy discussions with potential consequences for the next crisis.

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Table 1a. Descriptive statistics, full panel

	Mean	Std. dev.	Min	Max	Obs
Crisis risk	.132	.339	0	1	2919
Log population	8.669	2.062	2.272	14.096	2792
Log GDP per capita	8.691	1.291	5.178	11.685	2744
Post-communist	.150	.357	0	1	2792
Trade volume	89.436	51.349	9.464	440.432	2744
Regime transition	.024	.152	0	1	2919
Civil dictatorship	.213	.409	0	1	2792
Military dictatorship	.103	.304	0	1	2792
Royal dictatorship	.059	.235	0	1	2792
Failed military coup	.009	.097	0	1	2919
Failed civil coup	.003	.055	0	1	2919
Log crises, 20 yrs prior	1.109	.449	0	2.079	2576
Exchange rate regime	2.073	1.192	1	6	2698
Neighbour crisis	.195	.263	0	1	2791
Economic freedom	60.456	10.976	15.60	90.50	2198
Rule of law	48.004	23.024	9.50	95.00	2198
Government size	68.109	17.206	10.10	95.95	2198
Regulatory efficiency	68.603	13.381	10.00	97.45	2198
Market openness	60.215	12.859	10.00	91.20	2198

Table 1b. Descriptive statistics, crisis panel

	Mean	Std. dev.	Min	Max	Obs
Duration	2.282	2.051	1	24	387
Peak-to-trough ratio	.089	.104	.005	.608	387
Recovery time	4.829	4.864	1	21	387
Log population	8.067	2.032	2.272	13.639	358
Log GDP per capita	8.359	1.293	5.307	11.071	358
Post-communist	.089	.286	0	1	387
Trade volume	87.604	48.669	15.039	376.283	358
Regime transition	.049	.216	0	1	387
Civil dictatorship	.240	.428	0	1	358
Military dictatorship	.170	.377	0	1	358
Royal dictatorship	.112	.315	0	1	358
Failed military coup	.028	.166	0	1	387
Failed civil coup	.005	.072	0	1	387
Log crises, 20 yrs prior	1.464	.314	.693	2.078	305
Exchange rate regime	2.264	.1476	1	6	336
Neighbour crisis	.319	.298	0	1	358
Economic freedom	57.196	11.956	15.60	89.80	219
Rule of law	41.500	20.157	10.0	92.00	219
Government size	69.970	15.753	10.1	92.65	219
Regulatory efficiency	65.903	14.485	20.0	95.45	219
Market openness	56.250	14.067	10.0	91.20	219

Table 2. Overall estimates

	Crisis risk	Duration	Peak-to-trough ratio	Recovery time
Log population	-.017	.022	.002	-.153
	(.068)	(.116)	(.005)	(.239)
Log GDP per capita	.067	.223	.024***	.336
	(.125)	(.184)	(.008)	(.388)
Post-communist	-.327	.507	-.001	-.093
	(.339)	(.539)	(.023)	(1.195)
Trade volume	.002	.001	.000	.005
	(.002)	(.003)	(.000)	(.007)
Regime transition	1.077**	.817	.001	1.539
	(.512)	(.603)	(.021)	(1.315)
Failed military coup	1.125*	2.478***	.068***	1.234
	(.611)	(.618)	(.022)	(1.353)
Failed civil coup	1.414	-.136	.074	-1.721
	(1.434)	(1.597)	(.053)	(3.455)
Neighbour crisis	.389	.384	.024	.087
	(.354)	(.493)	(.018)	(1.082)
Crises, 20 yrs prior	2.819***	.054	.005	-.024
	(.360)	(.446)	(.019)	(.992)
Exchange rate regime	.231**	.001	.008**	.058
	(.072)	(.099)	(.004)	(.218)
Economic freedom	.005	-.013	-.004***	-.072**
	(.011)	(.017)	(.001)	(.035)
Regime effects	Yes	Yes	Yes	Yes
Regional effects	Yes	Yes	Yes	Yes
Observations	2155	212	212	212
Countries	175	121	121	121
R squared		.253	.433	.271
Chi squared	160.28	60.62	142.27	58.30
Log likelihood	-507.412			
No rich countries				
Economic freedom	.009	-.009	-.004***	-.075*
	(.013)	(.019)	(.001)	(.042)

Note: * (**) [***] denote significance at p<.01 (p<.05) [p<.10].

Table 3. Specific results, components of economic freedom

	Crisis risk	Duration	Peak-to-trough ratio	Recovery time
		Full baseline included		
Rule of law	.006	-.008	-.001	-.025
	(.00)	(.013)	(.001)	(.029)
Government size	.001	-.009	-.001	.019
	(.008)	(.012)	(.001)	(.026)
Regulatory efficiency	.016	-.010	-.002***	-.080**
	(.009)	(.015	(.001)	(.033)
Market openness	-.020*	.012	-.000	.020
	(.011)	(.016)	(.001)	(.034)
Observations	2155	212	212	212
Countries	175	121	121	121
R squared		.248	.429	.289
Chi squared	198.33	61.14	154.41	64.48
Log likelihood	-504.594			

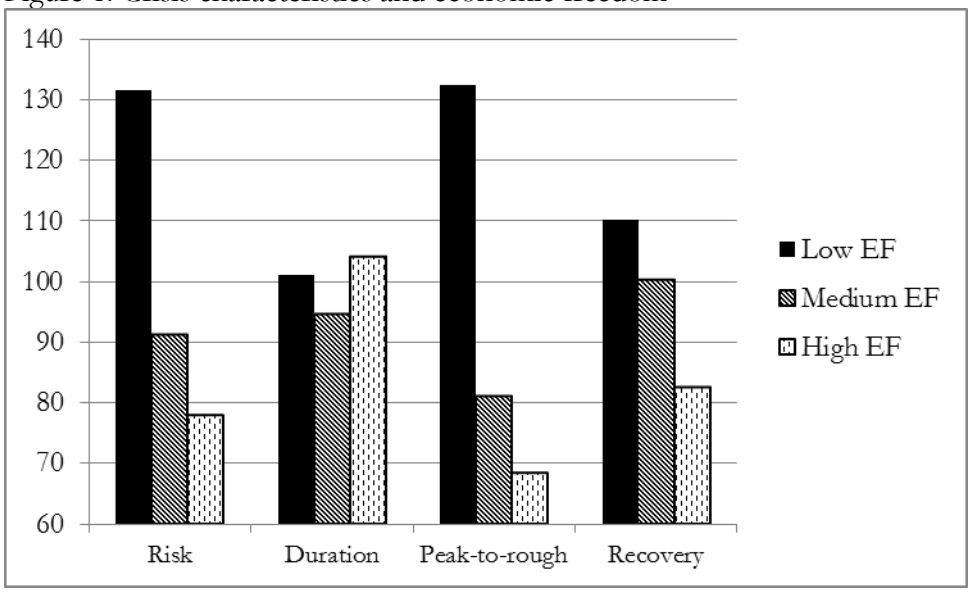
Note: * (**) [***] denote significance at p<.01 (p<.05) [p<.10].

Table 4. Specific results, components of economic freedom, no rich countries

	Crisis risk	Duration	Peak-to-trough ratio	Recovery time
		Full baseline included		
Rule of law	.011	-.011	-.001	-.029
	(.009)	(.016)	(.001)	(.035)
Government size	-.001	-.009	-.001	.031
	(.009)	(.013)	(.001)	(.029)
Regulatory efficiency	.013	-.013	-.003***	-.104***
	(.010)	(.017)	(.001)	(.036)
Market openness	-.019*	.018	-.000	.032
	(.012)	(.017)	(.001)	(.038)
Observations	1623	189	189	189
Countries	146	104	104	104
R squared		.246	.415	.299
Chi squared	175.62	56.55	139.06	59.43
Log likelihood	-426.041			

Note: * (**) [***] denote significance at p<.01 (p<.05) [p<.10].

Figure 1. Crisis characteristics and economic freedom



Figur 2. Average crisis, low and high economic freedom