Are firms' expectations on the availability of external finance Rational, Adaptive or Regressive?

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Abstract

This study contributes to the literature of expectation formation mechanisms by bringing new evidence on how non-financial corporations shape their expectations on the availability of external finance. We link consecutive surveys from the Survey on the Access to Finance of Enterprises to investigate which expectation formation mechanism governs Eurozone firms regarding their expectations on the availability of external finance. In line with the past literature, we demonstrate that the Rational Expectations hypothesis is rejected by the data and we find evidence in favor of the Adaptive Expectation mechanism.

Keywords: non-financial corporations; survey-based expectations; expectation formation mechanisms; bank finance.

JEL Classification: C23, C83, D22, D84.

Disclaimer: The views and opinions expressed in this paper are those of the authors and do not reflect those of their respective institutions.

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1. Introduction

Firms' expectations are an essential factor determining the phases of the business cycle, therefore making them important for economic activity (Gennaioli and Schleifer, 2018). Especially, studying firms' expectations on the availability of external (bank) finance is crucial given the significant impact they have on firms' future investment and hiring decisions (Ferrando et al., 2019). Given the importance of firms' expectations, a natural research question that arises is, *how do firms shape their expectations on the availability of external finance?* The answer to this question is vital in directing policymakers in designing proper monetary policies, as both the employment and inflation targets of central banks around the world are highly dependent on the firm-level decision process.

In this study, we employ new survey data from the Survey on the Access to Finance of Enterprises (SAFE) to explore under which mechanism non-financial corporations shape their expectations on the availability of external (bank) finance. In particular, we examine the three main expectations' generating mechanisms: Rational Expectations, Adaptive Expectations, and Regressive Expectations.

The notion of Rational Expectations was a paradigm shift in economics. Muth (1961) was the first who introduced the Rational Expectation Hypothesis (REH), according to which Rational Expectations are defined as "*the true mathematical expectation of the variable of interest conditional on information on all other related variables known"*. After Muth (1961), Lucas (1972), Frenkel (1975) and Sargent and Wallace (1976) have further developed the notion of REH. These studies in Rational

Expectations have produced a revolution in economics[1]. A significant amount of literature has also been spawned regarding the efficiency and the formation of the expectations' hypothesis (Goodwin and Sheffrin, 1982; Moosa and Shamsuddin, 2004; Jongen and Verschoor, 2007).

On the other hand, there is also a significant amount of literature supporting that the REH does not provide the best description of the real world due to its limitations. According to Chow (1989, 2011) and Drakos (2008), the first limitation of the REH is that it does not premise any special expectation formation mechanism. Second, according to the REH, the rationality of economic agents, along with the market discipline, will eliminate all the insistent errors, which in turn will lead economic agents to make effective use of all the current information, regardless of how expectations are produced. An additional and significant drawback that exists when we test the REH empirically is that expectation errors are usually shaped through ex-post observed data. Chow (1989, 2011) argued that Adaptive Expectations are better than Rational Expectations by providing strong econometric evidence. The author also stated that REH was empirically insufficiently supported by the researchers who first embraced it in the late 1970s.

Expectations have been modeled in an *ad hoc* way by many researchers so far. However, there is a rapidly increasing literature on the mechanisms that form expectations, by employing survey data[2] (Fraser and MacDonald, 1993; Dominitz and Manski, 1997; Dutt and Ghosh 1997; Pesaran and Weale, 2006; Drakos, 2008; Dave

[1] Pesaran (1987), Goodwin and Sheffrin (1982) and Dominitz and Manski (1997) have mentioned that the notion of the REH has impressively revised the way that the economic policy is conducted as well as economic modeling is done.

[2] A significant number of studies have also shown that macroeconomic models have a better performance when survey-based expectations are employed rather than model-constructed expectations (see for example Batchelor, 1986; Madsen, 1996 and Lee and Shields, 2000).

2011; Miah *et. al.,* 2016; Anastasiou and Drakos, 2019; Anastasiou, 2020). The main merit of employing survey data is that they correspond to the expectations of the respondents. As Manski (2004) stated, one of the best ways to assess both the accuracy and correctness of expectations is to follow the respondents as the time passes and then contrast their expectations with the real events they experienced.

Following the fundamental tenets of the literature just outlined, our analysis aims to exploit survey responses from successive surveys to explore how firms' expectations of future availability for bank finance perform when confronted with realized outcomes. This is the first study studying firms' expectations on the availability of external finance implementing survey data of firms' expectations from the SAFE database on a country level. Principally, in any given SAFE issue, senior executives of both Small-Medium size Enterprises (SMEs) and large enterprises are inquired to respond to the previous period's availability for bank finance (actual), as well as the future (expected) one. Hence, by linking successive survey responses, we investigate whether senior executives' expectations are formed rationally. If there is evidence that rationality does not exist, we examine whether the expectations comply with well-known expectations' formation mechanisms.

This study contributes to the literature of expectations in two distinct ways. First, we provide new evidence regarding the expectation formation mechanisms that govern non-financial corporations in the Eurozone regarding the availability of external (bank) finance. Second, we find that non-financial corporations do not form their expectations for the availability of bank finance rationally. Instead, they seem to update their expectations based on the latest information in their information set, implying that the Adaptive Expectations mechanism best describes our data. These results remain robust

when we break our sample to Small-Medium sized enterprises (SMEs) and Large enterprises and they also apply to both core and peripheral Eurozone countries.

The rest of the paper is organized as follows. Section 2 describes the data used. Section 3 presents the empirical methodology we follow, while Section 4 includes the estimation results. Finally, Section 5 concludes.

2. Data Description

To quantify the availability of bank finance (AF) we utilize data from the SAFE, which is conducted on a semi-annual basis by the European Central Bank (ECB hereafter). SAFE contains very useful information about the financing conditions faced by non-financial corporations in the Euro-area. ECB dispatches a questionnaire to top-level executives of a representative sample of Euro-area enterprises (more than 10,000 firms) asking them to provide information for their past and expected conditions concerning their financial situation and their financing conditions. These top-level executives are usually either a CFO or a CEO for large firms and the owner for the smaller ones.

Below we provide the relevant questions from SAFE:

Question Q9*: Would you say that the availability of bank finance has improved, remained unchanged or deteriorated <u>for your enterprise</u> over the past six months?*

Answer:

- *Improved*
- *Remained unchanged*
- *Deteriorated*
- *Not applicable to my enterprise*

Source: Survey on the Access to Finance of Enterprises Questionnaire, Section 4: Availability of finance and market conditions, question Q9.

Question Q23*: Looking ahead, please indicate whether you think the availability of bank finance will improve, deteriorate or remain unchanged over the next six months*

Answer:

- *Will improve*
- *Will remain unchanged*
- *Will deteriorate*
- *Not applicable to my enterprise*

Source: Survey on the Access to Finance of Enterprises Questionnaire, Section 4: Availability of finance and market conditions, question Q23.

We exclude corporations that answered that bank finance is "Not applicable to my enterprise" since materially they have not responded to the relevant questions.

Our sample covers the period 2009H1-2018H2 for 14 Euro-area countries, where AF is broken down to Small and Medium Enterprises (SME hereafter) and Large enterprises. This produces a panel dataset of 294 observations, consisting of half-yearly country-firm size dimensions.

The data for AF are expressed as a *diffusion index*[3] and not as the raw responses of senior executives. The *diffusion index* signifies an increase (decrease) of AF when it is increased (decreased). In Table 1 we report the sample averages of both actual and expected AF by country.

*******Insert Table 1 here*******

[3] For a detailed definition of Diffusion Index see the Glossary of the Bank Lending Survey of ECB.

3. Empirical Methodology and Testable Hypotheses

We start our analysis by testing the REH[4], according to which agents are trying to use the past period's information set in an optimal way to forecast the future. The definition of the REH is not such an easy task. An attempt to define REH could be that REH is the expectation formation process/mechanism according to which agents use all the relevant and available optimal (i.e., rational and efficient) information, which sooner or later will expunge systematic forecasting errors. In other words, under REH, agents do not make any systematic errors in forecasting, considering the whole set of available information.

The scatterplot of Figure 1 provides a pictorial representation of the expected vs actual *diffusion index*. As we observe, it is not clear whether firms' expectations for AF are formed rationally.

*******Insert Figure 1 here*******

Following Drakos (2008), Anastasiou and Drakos (2019) and Anastasiou (2020), we examine the REH by employing the following model:

$$AF_{i,t}^{A} = \gamma_0 + \gamma_1 AF_{i,t-1}^{E} + \varepsilon_{i,t} \quad (1)$$

where *i, t, A,* and *E,* denote country-firm size, time, actual AF, and expected AF, respectively. AF at the right-hand side of the equation is expressed in one period lag signifying that the expectation has been formed prior to the actual outcome. The associated joint hypotheses test for the above model is:

Ho: $\gamma_0 = 0, \gamma_1 = 1$

[4] REH has not always been met with empirical success. An important disadvantage of testing the REH empirically is the fact that the expectation errors are usually formed through ex-post observed data. A way to bypass this disadvantage is to measure expectations by relying on survey data (Pesaran and Weale, 2006; Drakos, 2008 and Miah *et. al.,* 2016).

If these hypotheses are not rejected, this would suggest that the REH is consistent with the data, and therefore we could conclude that firms form their expectations for the availability of finance in a rational manner.

In simple terms, we can define the Adaptive Expectations model as an expectation formation mechanism according to which the future value of the variable under scrutiny depends solely on its historical values. That is to say, economic agents (that is, firms' top-level executives or owners) make forecasts for the future AF based on actual historical values adjusted for their past expectations. Conforming to the Adaptive Expectation formation mechanism, economic agents adjust their forecasts in each period contingent upon the previous period's expectation/forecasting error. According to Lovell (1986), if the forecasting error was zero (that is, we had a perfect forecast in the previous period), then this would entail that the last expectation would be preserved continuously.

Following Lovell (1986), Moosa and Shamsuddin (2004), Drakos (2008), Anastasiou and Drakos (2019) and Anastasiou (2020) the Adaptive Expectations model can be written as:

$$\Delta AF^{E}_{i,t-1} = \theta\left(AF^{E}_{i,t-2} - AF^{A}_{i,t-1}\right) + \varepsilon_{i,t} \quad (2)$$

where θ is the coefficient of adaptation showing the pace of adjustment to the previous period's expectation error. In other words, the adaptation rate shows the rate by which economic agents adapt their expectations. According to Lovell (1986), Moosa and Shamsuddin (2004), and Drakos (2008) and Anastasiou and Drakos (2019) to accept the Adaptive Expectations hypothesis, the coefficient of adaptations has to be negative and lie in the open interval (-1,0).

We also test whether the parameter θ (a) is different from zero and (b) is different from its maximum theoretical value (i.e. -1 for Adaptive Expectations):

(a) $H_0: \theta = 0$

(b) $H_0: \theta = -1$

The Regressive Expectations model suggests that economic agents adapt their expectations in relation to the deviation of the last period from the average value of the variable under scrutiny (AF in our case). That is, owners and top executive managers believe that the AF displays an inclination to move towards its mean (Drakos, 2008 and Anastasiou and Drakos, 2019). In line with Pesaran and Weale (2006), Drakos (2008), Dave (2011), Anastasiou and Drakos (2019) and Anastasiou (2020), we express the Regressive Expectations mechanism as follows:

$$\Delta AF_{i,t-1}^{E} = \beta\left(\tilde{\mu} - AF_{i,t}^{A}\right) + \varepsilon_{i,t} \quad (3)$$

where, Δ, $\tilde{\mu}$ and β signify first differences, the sample mean of actual AF and the adjustment parameter, respectively.

So as to accept the Regressive Expectations Hypothesis, parameter β must be positive and lie in the open interval (0, 1). Additionally, we tested if the parameter β (i.e. the speed of adjustment) is (a) statistically significant, and (b) different from its maximum theoretical value (i.e. +1 for Regressive Expectations):

(a) $H_0: \beta = 0$

(b) $H_0: \beta = 1$

In order to estimate all the models as mentioned above, we employ both fixed and random effects methodologies with cluster robust standard errors (Wooldridge, 2010). Performing the Hausman specification test (1978), we find that the fixed effects

estimator is the appropriate methodology in the Adaptive Expectations model, and the random effects estimator is the most suitable methodology for both the Regressive and the Rational Expectations models.

4. Results

In Table 2 we report all the estimation results for every expectation formation mechanism with the corresponding hypotheses tests for both random effects and fixed effects estimation methods. We start with the estimation results of the REH. Although we find that the coefficient γ_1 is significant at the 1% level, turning to the joint hypothesis test of the REH we find that the probability value is equal to 0.000. This finding signifies that the null hypothesis is emphatically rejected at any conventional level of significance. This finding provides evidence against rationality, and therefore we infer that the REH is not consistent with the data.

Next, we turn our attention to the estimation results of the Adaptive Expectations mechanism. We document that the speed of adjustment θ is statistically significant at the 1% level (i.e., non-trivial) and different from its maximum theoretical value of -1. If we take the point estimate of the coefficient of adaptions θ in absolute terms, this gives us the so-called adaptation rate, which is equal to 56.8% and 42.8% for the fixed and random effects methodologies, respectively. Accordingly, we need, on average, 1.8 and 2.3 time periods to cover the distance between the forecasted and actual AF for both fixed and random effects approaches, correspondingly.

The estimated coefficient of adaptions θ carries a negative sign, signifying that if firm top-level executives/owners had overestimated (underestimated) the actual AF in the current period, they would then adjust downwards (upwards) their expectations for the next period (Anastasiou and Drakos, 2019; Anastasiou, 2020). Furthermore, the

parameter θ lies in the open (0, 1) interval for both estimation methodologies, and hence we infer that the Adaptive Expectations mechanism is consistent with our data. Our results are consistent with the findings of Chow (1989), Chow (2011) and Anastasiou and Drakos (2019), who also supported that the Adaptive Expectations are the dominant expectation formation mechanism.

Finally, we move on to the results of the regressive expectation hypothesis. We document that the point estimates of the adjustment parameter β are negative in both estimation methods. Hence, we conclude that the Regressive Expectations mechanism is not consistent with our data.

*******Insert Table 2 here*******

In order to ensure that our findings are not sensitive (that is, they retain their significance), we perform a sensitivity analysis based on two variants of the previous analysis. First, we split our sample to SMEs and large enterprises, and then we re-estimate our models. Second, we break our sample into 'core' and 'peripheral' euro area countries. Following Anastasiou *et. al.,* (2019), we define as 'peripheral' countries Portugal, Ireland, Italy, Greece, and Spain, while as 'core' the rest countries of our sample.

Tables 3 and 4 present the estimation results from the first sensitivity analysis, while Tables 5 and 6 report the estimation results from the second sensitivity analysis, respectively. We find that even when we break our sample into multiple sub-groups, our baseline results remain robust. Therefore, we infer that the Adaptive Expectations hypothesis is the dominant expectation formation mechanism for firms' expectations on the availability of finance.

*******Insert Tables 3, 4, 5 and 6 here*******

5. Conclusions

Employing European survey data from the SAFE database, we explored the performance of the main competing expectation formation models regarding firms' expectations for the availability of external finance. Our sample spans the period 2009H1-2018H2, and we examine 14 Euro-area countries. Our findings suggest that the hypothesis that expectations fulfill the (orthogonality) conditions of the Rational Expectations hypothesis is rejected by the data. Instead, the adaptive expectation formation mechanism is the best description of the data. These findings remain robust when we break our sample into multiple sub-groups.

Although our results do contribute to the growing literature of expectation formation mechanisms, this study could be further enhanced in the future. Specifically, further research could be conducted using a micro-level analysis. Such an investigation would foster the elucidation of the dynamic nature of firms' expectations formation at the firm level.

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Tables

Table 1: Mean values of AF by Country		
Diffusion Indices		
Countries	$\mathbf{AF^{A}_{i,t}}$	$\mathbf{AF^{E}_{i,t-1}}$
Austria	-4.314	-6.763
Belgium	0.797	4.739
Cyprus	-1.122	5.700
Estonia	1.228	-2.152
Germany	11.807	4.725
Greece	-33.453	-22.486
Ireland	-5.512	7.194
Italy	6.816	11.617
Latvia	-6.168	5.770
Lithuania	-0.465	0.157
Luxembourg	16.651	18.305
Portugal	12.835	11.087
Slovenia	-4.314	-6.763
Spain	0.797	4.739
Total (average for the Euro-area)	1.538	3.485

Notes: (a) This table reports the mean diffusion indices of both actual and expected availability of bank finance (AF) from enterprises by country along with the corresponding mean diffusion indices for the whole sample (average for the Euro-area), (b) $AF^{A}_{i,t}$ and $AF^{E}_{i,t-1}$ denote actual and expected AF respectively.

Table 2: Estimation results for each Expectation Formation mechanism						
	Rational		**Adaptive**		**Regressive**	
	Fixed Effects	**Random Effects**	**Fixed Effects**	**Random Effects**	**Fixed Effects**	**Random Effects**
γ_1	0.001*** (0.000)	0.001*** (0.000)	-	-	-	-
θ	-	-	-0.568*** (0.062)	-0.428*** (0.052)	-	-
β	-	-	-	-	-0.031 (0.026)	-0.025* (0.015)
Constant	-1.520*** (0.207)	-1.539 (1.772)	1.386*** (0.113)	1.128 (0.755)	0.285*** (0.046)	0.296* (0.155)
Diagnostics						
Observations	294					
R^2	0.632	0.632	0.345	0.345	0.002	0.002
F-test (p-value)	0.000	0.000	0.000	0.000	0.247	0.088
Hausman-test (p-value)	0.293		0.000		0.799	
Hypothesis Testing (probability values)						
H_0: $\gamma_0 = 0$ and $\gamma_1 = 1$	0.000	0.000	-	-	-	-
H_0: $\beta = 0$	-	-	-	-	0.247	0.088
H_0: $\theta = 0$	-	-	0.000	0.000	-	-
H_0: $\beta = +1$	-	-	-	-	0.000	0.000
H_0: $\theta = -1$	-	-	0.000	0.000	-	-

Notes: (a) This table reports estimation results for each expectation formation mechanism for the full sample, (b) *, **, *** denote statistical significance at the 10, 5, and 1 percent level respectively, (c) numbers in parentheses denote cluster robust standard errors, (d) β_1, δ and λ are the estimated parameters for Rational, Adaptive and Regressive Expectations respectively, (e) Hausman-test denotes the Hausman (1978) test and its p-values suggest the fixed effects estimator as the appropriate methodology in the Adaptive Expectations model, while the corresponding p-value in the Regressive and the Rational Expectations model suggest the random effects estimator as the appropriate methodology.

Table 3: Estimation results for each Expectation Formation mechanism: Small and Medium-sized Firms						
	Rational		**Adaptive**		**Regressive**	
	Fixed Effects	**Random Effects**	**Fixed Effects**	**Random Effects**	**Fixed Effects**	**Random Effects**
γ_1	0.001*** (0.000)	0.001*** (0.000)	-	-	-	-
θ	-	-	-0.648*** (0.052)	-0.489*** (0.058)	-	-
β	-	-	-	-	-0.0370 (0.022)	-0.030** (0.014)
Constant	-4.047*** (0.060)	-3.928** (1.697)	2.985*** (0.214)	2.327*** (0.896)	0.419*** (0.067)	0.398*** (0.150)
Diagnostics						
Observations	218					
R^2	0.634	0.634	0.401	0.401	0.003	0.003
F-test (p-value)	0.000	0.000	0.000	0.000	0.127	0.035
Hausman-test (p-value)	0.634		0.000		0.784	
Hypothesis Testing (probability values)						
H_0: $\gamma_0 = 0$ and $\gamma_1 = 1$	0.000	0.000	-	-	-	-
H_0: $\beta = 0$	-	-	-	-	0.127	0.035
H_0: $\theta = 0$	-	-	0.000	0.000	-	-
H_0: $\beta = +1$	-	-	-	-	0.000	0.000
H_0: $\theta = -1$	-	-	0.000	0.000	-	-

Notes: (a) This table reports estimation results for each expectation formation mechanism for the full sample, (b) *, **, *** denote statistical significance at the 10, 5, and 1 percent level respectively, (c) numbers in parentheses denote cluster robust standard errors, (d) β_1, δ and λ are the estimated parameters for Rational, Adaptive and Regressive Expectations respectively, (e) Hausman-test denotes the Hausman (1978) test and its p-values suggest the fixed effects estimator as the appropriate methodology in the Adaptive Expectations model, while the corresponding p-value in the Regressive and the Rational Expectations model suggest the random effects estimator as the appropriate methodology.

Table 4: Estimation results for each Expectation Formation mechanism: Large Firms						
	Rational		**Adaptive**		**Regressive**	
	Fixed Effects	**Random Effects**	**Fixed Effects**	**Random Effects**	**Fixed Effects**	**Random Effects**
γ_1	0.001*** (0.000)	0.001*** (0.000)	-	-	-	-
θ	-	-	-0.474** (0.110)	-0.439*** (0.109)	-	-
β	-	-	-	-	-0.021 (0.059)	-0.024 (0.055)
Constant	5.448** (1.399)	5.731* (3.117)	-1.817** (0.522)	-1.647 (1.417)	0.098 (0.930)	0.058 (1.158)
Diagnostics						
Observations	76					
R^2	0.517	0.517	0.279	0.279	0.001	0.001
F-test (p-value)	0.006	0.000	0.023	0.000	0.742	0.661
Hausman-test (p-value)	0.381		0.172		0.908	
Hypothesis Testing (probability values)						
H_0: $\gamma_0 = 0$ and $\gamma_1 = 1$	0.030	0.000	-	-	-	-
H_0: $\beta = 0$	-	-	-	-	0.242	0.661
H_0: $\theta = 0$	-	-	0.023	0.000	-	-
H_0: $\beta = +1$	-	-	-	-	0.000	0.000
H_0: $\theta = -1$	-	-	0.017	0.000	-	-

Notes: (a) This table reports estimation results for each expectation formation mechanism for the full sample, (b) *, **, *** denote statistical significance at the 10, 5, and 1 percent level respectively, (c) numbers in parentheses denote cluster robust standard errors, (d) β_1, δ and λ are the estimated parameters for Rational, Adaptive and Regressive Expectations respectively, (e) Hausman-test denotes the Hausman (1978) test and its p-values suggest the random effects estimator as the appropriate methodology in all Expectations models.

Table 5: Estimation results for each Expectation Formation mechanism: Periphery EU Countries						
	Rational		**Adaptive**		**Regressive**	
	Fixed Effects	**Random Effects**	**Fixed Effects**	**Random Effects**	**Fixed Effects**	**Random Effects**
γ_1	0.001*** (0.000)	0.001*** (0.000)	-	-	-	-
θ	-	-	-0.523*** (0.092)	-0.443*** (0.081)	-	-
β	-	-	-	-	-0.006 (0.026)	-0.012 (0.017)
Constant	-4.047*** (0.275)	-4.139* (2.333)	2.759*** (0.375)	2.431** (1.087)	0.612*** (0.007)	0.610*** (0.200)
Diagnostics						
Observations	133					
R^2	0.690	0.690	0.296	0.296	0.000	0.000
F-test (p-value)	0.000	0.000	0.001	0.000	0.824	0.457
Hausman-test (p-value)	0.213		0.006		0.823	
Hypothesis Testing (probability values)						
H_0: $\gamma_0 = 0$ and $\gamma_1 = 1$	0.000	0.000	-	-	-	-
H_0: $\beta = 0$	-	-	-	-	0.824	0.457
H_0: $\theta = 0$	-	-	0.001	0.000	-	-
H_0: $\beta = +1$	-	-	-	-	0.000	0.000
H_0: $\theta = -1$	-	-	0.000	0.000	-	-

Notes: (a) This table reports estimation results for each expectation formation mechanism for the full sample, (b) *, **, *** denote statistical significance at the 10, 5, and 1 percent level respectively, (c) numbers in parentheses denote cluster robust standard errors, (d) β_1, δ and λ are the estimated parameters for Rational, Adaptive and Regressive Expectations respectively, (e) Hausman-test denotes the Hausman (1978) test and its p-values suggest the fixed effects estimator as the appropriate methodology in the Adaptive Expectations model, while the corresponding p-value in the Regressive and the Rational Expectations model suggest the random effects estimator as the appropriate methodology.

Table 6: Estimation results for each Expectation Formation mechanism: Core EU Countries						
	Rational		**Adaptive**		**Regressive**	
	Fixed Effects	**Random Effects**	**Fixed Effects**	**Random Effects**	**Fixed Effects**	**Random Effects**
γ_1	0.001*** (0.000)	0.001*** (0.000)	-	-	-	-
θ	-	-	-0.628*** (0.074)	-0.442*** (0.088)	-	-
β	-	-	-	-	-0.112** (0.045)	-0.071** (0.036)
Constant	0.977*** (0.243)	1.117 (2.424)	0.0943*** (0.003)	0.101 (1.097)	-0.225 (0.136)	-0.102 (0.307)
Diagnostics						
Observations	161					
R^2	0.318	0.318	0.413	0.413	0.017	0.017
F-test (p-value)	0.000	0.000	0.000	0.000	0.036	0.047
Hausman-test (p-value)	0.709		0.000		0.322	
Hypothesis Testing (probability values)						
H_0: $\gamma_0 = 0$ and $\gamma_1 = 1$	0.004	0.000	-	-	-	-
H_0: $\beta = 0$	-	-	-	-	0.036	0.047
H_0: $\theta = 0$	-	-	0.000	0.000	-	-
H_0: $\beta = +1$	-	-	-	-	0.000	0.000
H_0: $\theta = -1$	-	-	0.001	0.000	-	-

Notes: (a) This table reports estimation results for each expectation formation mechanism for the full sample, (b) *, **, *** denote statistical significance at the 10, 5, and 1 percent level respectively, (c) numbers in parentheses denote cluster robust standard errors, (d) β_1, δ and λ are the estimated parameters for Rational, Adaptive and Regressive Expectations respectively, (e) Hausman-test denotes the Hausman (1978) test and its p-values suggest the fixed effects estimator as the appropriate methodology in the Adaptive Expectations model, while the corresponding p-value in the Regressive and the Rational Expectations model suggest the random effects estimator as the appropriate methodology.

Figures

Figure 1: Actual vs Expected Availability of Finance