Testing for Changes in Forecasting Performance^{*}

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Abstract

We consider the issue of forecast failure (or breakdown) and propose methods to assess retrospectively whether a given forecasting model provides forecasts which show evidence of changes with respect to some loss function. We adapt the classical structural change tests to the forecast failure context. First, we recommend that all tests should be carried with a fixed scheme to have best power. This ensures a maximum difference between the fitted in and out-of-sample means of the losses and avoids contamination issues under the rolling and recursive schemes. With a fixed scheme, Giacomini and Rossi's (2009) (GR) test is simply a Wald test for a one-time change in the mean of the total (the in-sample plus out-of-sample) losses at a known break date, say m, the value that separates the in and out-of-sample periods. To alleviate this problem, we consider a variety of tests: maximizing the GR test over values of m within a pre-specified range; a Double sup-Wald (DSW) test which for each m performs a sup-Wald test for a change in the mean of the out-of-sample losses and takes the maximum of such tests over some range; we also propose to work directly with the total loss series to define the Total Loss sup-Wald (TLSW) and Total Loss UDmax (TLUD) tests. Using theoretical analyses and simulations, we show that with forecasting models potentially involving lagged dependent variables, the only tests having a monotonic power function for all data-generating processes considered are the DSW and TLUD tests, constructed with a fixed forecasting window scheme. Some explanations are provided and empirical applications illustrate the relevance of our findings in practice.

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1 Introduction

We consider the issue of forecast failure (or breakdown) and propose methods to detect changes in the forecasting performance over time. The aim is to assess retrospectively whether a given forecasting model provides forecasts which show evidence of changes (improvements or deterioration) with respect to some loss function. Since the losses can change because of changes in the variance of the shocks (e.g., good luck), detection of a forecast failure does not necessarily mean that a forecast model should be abandoned. Care must be exercised to assess the source of the changes. But if a model is shown to provide stable forecasts, it can more safely be applied in real time. In practice, such forecasts are made at the time of the last available data, using a fixed, recursive or rolling window. Hence, there is a natural separation between the in and out-of-sample periods dictated by the last data point. Such is not the case when trying to assess retrospectively whether a given model provides stable forecasts. There is a need for a separation between the in and out-of-sample periods at some date labelled m, say. This date should be such that the model in the insample period is stable, i.e., yielding stable forecasts. This can create problems since one needs a truncation point m to assess forecast failures but the choice of this value is itself predicated on some knowledge of stability. An example of such test is that of Giacomini and Rossi (2009), GR hereafter. It is a global and retrospective test which compares the in and out-of-sample averages of the sequence of forecast losses. See Casini (2017) for an extension as well as Casini and Perron (2018) and Perron (2006) for a review of the relevant issues.

We adapt classical structural change tests to the forecast failure context. First, we recommend that all tests should be carried with a fixed scheme to have best power, which ensures the maximum difference between the fitted in and out-of-sample means of the losses; contamination issues under the rolling and recursive schemes induce power losses. With this fixed scheme, GR's test is simply a Wald test for a one-time change in the mean of the total (in-sample plus out-of-sample) losses at a known break date m. To alleviate this problem, which leads to power losses when the forecast breakdown is not at m, one can follow Inoue and Rossi (2012) and maximize the GR test over values of m within a pre-specified range; i.e., a sup-Wald test for a single change at a date constrained to separate the in and out-of-sample periods. The test is still not immune to non-monotonic power problems when multiple changes occur. Hence, we propose a Double sup-Wald (DSW) test which for each mperforms a sup-Wald test for a change in the mean of the out-of-sample losses and takes the maximum over the range $m \in [m_0, m_1]$: $DSW = \max_{m \in [m_0, m_1]} SW_{L^o(m)}$, where $SW_{L^o(m)}$ is the sup-Wald test for a change in the mean of the out-of-sample losses for a forecast horizon τ , $L_t^o(\hat{\beta})$ for $t = m + \tau, \ldots, T$, defined by $SW_{L^o(m)} = \max_{T_b(m) \in [m+\tau+\epsilon n, m+\tau+(1-\epsilon)n]} [SSR_{L^o(m)} - SSR(T_b(m))_{L^o(m)}]/\hat{V}_{L^o(m)}$, where $n = T - m - \tau + 1$, $SSR_{L^o(m)}$ is the restricted sum of squared residuals (SSR), $SSR(T_b(m))_{L^o(m)}$ is the SSR with a change at $T_b(m)$, and $\hat{V}_{L^o(m)}$ is the long-run variance estimate of the out-of-sample losses (ϵ is a small trimming parameter set at 0.1 throughout). We also propose working directly with the total loss series L(m) to define the Total Loss sup-Wald (TLSW) and UDmax tests (TLUD). Using simulations based on the original design of GR, we show that with forecasting models with lagged dependent variables, the only tests with monotonic power for all data-generating processes considered are the DSW and TLUD tests, constructed with a fixed forecasting window scheme.

The benefits of forecast breakdown tests over structural change tests applied to the forecasting model are the following, among others. As stated in GR, they can detect breaks in variance (with a squared error loss); they allow model misspecifications; breaks in coefficients and in variance may offset; they allow for instability in the distribution of the regressors. More interestingly, the two types of tests are complementary. Consider data generated with the predictor changing from x_t to w_t at some date; w_t is not accessible and a regression of $y_{t+\tau}$ on x_t is used. For a given variance of x_t , when the variance of w_t is small the power of the forecasting tests is small, while that of the structural change tests is large (and vice versa), since w_t is part of the error term. This holds for more general tests with unknown multiple breaks. It shows a complementarity between the power of the forecast breakdown and structural change tests. See Supplement (a) for theoretical and simulation analyses.

The paper is structured as follows. Section 2 introduces the statistical framework and some tests: 2.1 reviews the single break case at a known date; 2.2 discusses why using a fixed scheme is preferable; 2.3 considers unknown break dates and proposes new tests. Some limit distributions are stated in Section 3. Section 4 considers the size and power of the tests: 4.1 for the finite sample size of the proposed tests; 4.2 describes the setup to evaluate the power functions; 4.3 contains theoretical results about the shapes of the loss functions. Section 4.4 presents a summary of the results and 4.5 expands on the reasons for non-monotonic power functions. Section 5 provides empirical applications and Section 6 concluding remarks. A supplement contains technical derivations, additional discussions and results.

2 The framework and the tests

We have data (y_t, x_t) with y_t a scalar variable to be forecasted and x_t a q-dimensional vector of predictors for t = 1, ..., T. Consider a model forecasting $y_{t+\tau}$ at period t, a τ -period ahead forecast obtained using the direct method is $\hat{y}_{t+\tau} = f_t(\hat{\beta}_m; x_t)$, where f_t is a known function that defines the model, $\hat{\beta}_m$ is the estimate of the parameter β (q × 1) obtained from an in-sample window of size $m \ge q$; e.g., for the linear model, $f_t(\hat{\beta}_m; x_t) = \hat{\beta}_m x_t$ and $\hat{\beta}_m$ is the OLS estimate from a regression of $y_{t+\tau}$ on x_t using data from the in-sample window. The outof-sample forecast procedure divides the full sample into an in-sample window of size m and an out-of-sample window of size $n = T - m - \tau + 1$. The model is estimated in the in-sample window and the out-of-sample window is used for forecast error evaluation. We consider three popular forecast schemes: fixed window, with the in-sample consisting of observations 1 to m; rolling window, with the in-sample consisting of observations t-m+1 to t; recursive window, with the in-sample consisting of observations 1 to t. We denote the sequence of in-sample losses by $L_t^i(\hat{\beta}_m)$, defined by the in-sample fitted values $\hat{y}_t = f_t(\hat{\beta}_m; x_t)$, and the sequence of out-of-sample losses by $L_t^o(\hat{\beta}_m)$, defined by the forecast values $\hat{y}_{t+\tau}$. With the popular squared error loss function, $L_{t+\tau}^i(\hat{\beta}_m) = (y_{t+\tau} - f_t(\hat{\beta}_m; x_t))^2$ and $L_{t+\tau}^o(\hat{\beta}_m) = (y_{t+\tau} - \hat{y}_{t+\tau})^2$. We also define the in-sample loss sequence: $L^{i}(m) = (L^{i}_{\tau+1}(\hat{\beta}_{m}), ..., L^{i}_{m}(\hat{\beta}_{m}))$, the out-of-sample loss sequence: $L^{o}(m) = (L^{o}_{m+\tau}(\hat{\beta}_{m}), ..., L^{o}_{T}(\hat{\beta}_{m}))$ and the total loss series as the stacked vector of both, i.e., $L(m) = (L_{\tau+1}^{i}(\hat{\beta}_{m}), ..., L_{m}^{i}(\hat{\beta}_{m}), L_{m+\tau}^{o}(\hat{\beta}_{m}), ..., L_{T}^{o}(\hat{\beta}_{m})), a (T - 2\tau + 1)$ vector. A time-indexed total loss series is denoted by $\{L_{t+\tau}\}_{t=1}^{T-2\tau+1}$. Note that we use a "direct forecast" method when $\tau > 1$. Supplement (g) shows that the main theoretical results also apply when using an indirect forecast method.

The goal is to assess whether there are instabilities in forecast accuracy; e.g., a deterioration usually referred to as a "forecast breakdown". This can occur because of a genuine change in the stability of the forecasting regression, via the conditional mean, or from changes in the variance of the errors. It can also occur if the forecasting model is misspecified in which case an over-fitting problem is possible, so that the out-of-sample losses are inflated relative to the in-sample losses irrespective of whether a change in the stability of the forecasts is present or not. We shall be concerned about the former case. If one wants to guard about potential changes related to over-fitting, one can simply adjust the out-of-sample losses by subtracting a correction factor (see GR for the exact expressions for a linear model and a quadratic loss function). The null hypothesis considered is $H_0 : E[L_t(\beta^*)] = \mu_0$, for all $t = \tau + 1, ..., T - \tau + 1$ for some $\beta^* = p \lim_{m \to \infty} \hat{\beta}_m$, which implicitly assumes that the probability limit of $\hat{\beta}_m$ is the same for all m under the null hypothesis. The alternative hypothesis is $H_1 : E[L_t(\beta^*)] \neq E[L_{t+1}(\beta^*)]$ for at least one $t = \tau + 1, ..., T - \tau$. Hence, we are concerned with testing the stability of the forecast performance in population as opposed to in finite samples using the terminology of Clark and McCracken (2013).

2.1 The case with a single break occurring at a known date

We consider first a single break in forecast accuracy at a known date T_b , say, so that the alternative is $E[L_t(\beta^*)] = \mu_1$ for $t \leq T_b, \mu_2$ for $t > T_b$. The obvious thing is then to apply a test for a change in the mean of the total loss series at date T_b , fixed for any given T but increasing with T so that $\lim_{T\to\infty} T_b/T = \lambda$, say, when performing an asymptotic analysis. This is achieved by setting $m = T_b$ and assessing whether the averages of the in and out-ofsample losses are different. This is the test proposed by GR. Define the surprise loss as the out-of-sample loss minus the mean of the in-sample losses, i.e., $SL_{t+\tau}(\hat{\beta}_m) \equiv L^o_{t+\tau}(\hat{\beta}_m) \bar{L}^i(\hat{\beta}_m)$ where $\bar{L}^i(\hat{\beta}_m) \equiv (m-\tau)^{-1} \sum_{s=\tau+1}^m L^i_s(\hat{\beta}_m)$, with the out-of-sample losses adjusted for over-fitting if desired. The test they propose is $GR_m = (n^{-1/2} \sum_{t=m}^{T-\tau} SL_{t+\tau}(\hat{\beta}_m))/\hat{\Omega}^{1/2},$ where $n = T - m - \tau + 1$ is the size of the out-of-sample window and $\hat{\Omega}$ is an estimate of the long-run variance of the loss sequence (see GR for the exact form suggested). It is easy to verify that the square of this test is equivalent to an F-test for a change in mean occurring at date m when applied to the total loss series L(m). This simple observation leads to the following comments. First, it is really inconsequential if we work with the original loss functions (in-sample plus out-of-sample) with a given value of m that assumes a pre-sample with no change or with the "surprise loss functions" for which the average of the in-sample losses is subtracted from the out-of-sample losses. Hence, below, we shall also consider tests constructed via the original (not-demeaned) out-of sample losses, again assuming the model to be stable prior to date m (the demarcation between the in and out-of-sample). Second, the test of GR is problematic since the true break date is unknown in practice even if only one is present. This makes the test sensitive to the choice of m. As will be shown via simulations, it can have non-monotonic power (decreasing as the mean-change of the losses increases) for a range of choices for m. Hence, we also consider tests that allow m to vary within some pre-specified range, whether with the surprise or original losses.

2.2 The choice of the forecasting scheme

Before considering tests that do not assume a known break date, we discuss the merits and drawbacks of the fixed, rolling or recursive forecasting schemes. To get better forecasts it is, in general, better to adopt a recursive or rolling forecasting scheme in the presence of instabilities, or a combination of both; see, e.g., Clark and McCracken (2009). The parameter estimates then adapt to the data-generating process to fit the data better and provide more accurate forecasts. A fixed forecasting scheme fails to provide such adjustments. A rolling one

provides adjustments but at the expense of increased variability due to a smaller in-sample window. However, when trying to detect retrospectively whether a change has occurred the opposite ranking applies. The best scheme to adopt is a fixed one. Suppose that the break date is known and *m* is set accordingly. A fixed scheme ensures the maximum difference between the fitted in and out-of-sample means of the losses. With a recursive scheme, the in-sample fitted mean of the loss series is pushed towards the fitted mean of the out-of-sample losses inducing a loss of power. With a rolling window scheme, the same occurs but in a more pronounced way since the in-sample fitted mean can eventually reach the post-break mean if the window is small. Hence, when testing for changes in forecast accuracy, it is preferable to use a fixed window scheme. This will remain true with one or multiple breaks occurring at unknown dates. We provide explanations with some theory and simulations later.

2.3 The case with unknown break dates

A simple method to alleviate the dependence of the GR_m test on m is to take the supremum over a range of m, say $[m_0, m_1]$, a version denoted by $SGR = \max_{m \in [m_0, m_1]} |GR_m|$. This test is tailored to the alternative hypothesis with T_b unknown. The limit distribution and critical values of SGR are in Inoue and Rossi (2012) for typical values of m_0 and m_1 . Alternatively, one could use $SGR^2 = \max_{m \in [m_0, m_1]} GR_m^2$, which is equivalent to a sup-Wald test for a change in mean and use the critical values in Andrews (1993). This modification will, however, not be immune from power problems when multiple changes occur. To see why, consider the case with two breaks. Then for any choice of m in the range $[m_0, m_1]$ at least one segment will be contaminated due to biased parameter estimates and the average loss will be reduced thereby decreasing the power of the test. As we shall see, this problem can be especially severe when the range $[m_0, m_1]$ is large. To avoid it, one can perform a sup-Wald test for a change in the mean of the out-of-sample losses for each value of m and take the maximum of such tests over a range $m \in [m_0, m_1]$, labelled as the Double sup-Wald (DSW) test, defined by $DSW = \max_{m \in [m_0, m_1]} SW_{L^0(m)}$, where $SW_{L^o(m)}$ is the sup-Wald test for a change in the mean of the out-of-sample loss series $L_t^o(\hat{\beta})$ for $t = m + \tau, ..., T$, defined by

$$SW_{L^{o}(m)} = \max_{T_{b}(m) \in [m+\tau+\epsilon n, m+\tau+(1-\epsilon)n]} [SSR_{L^{o}(m)} - SSR(T_{b}(m))_{L^{o}(m)}] / \hat{V}_{L^{o}(m)},$$
(1)

where $SSR_{L^{o}(m)}$ is the restricted SSR, $SSR(T_{b}(m))_{L^{o}(m)}$ is the SSR with a change at time $T_{b}(m)$, and $\hat{V}_{L^{o}(m)}$ is the long-run variance estimate of the demeaned out-of-sample loss series with the mean changing at date $T_{b}(m)$, obtained using the method of Andrews (1991). The parameter ϵ is a small trimming value set at 0.1. Too small a value leads to size distortions

and large ones to power problems. The results are not sensitive to minor variations, e.g., $\epsilon = 0.05$ or 0.15; see Supplement (c). The limit distribution of the DSW test is stated in Section 3. To construct it: 1) Start with an out-of-sample method with an in-sample length m_0 small but large enough to estimate the model. Let $n \equiv T - m - \tau + 1$. 2) Compute the out-of-sample loss series $\{L_{t+\tau}^o\}_{t=m}^{T-\tau}$. 3) Consider a regression with only a constant: $L_{t+\tau}^o = \gamma + e_{t+\tau}$. Apply a sup-Wald test for the constancy of γ , with a HAC variance estimate if there is evidence of serial correlation in the losses. Store the value as $SW_{L^o(m)}$. 4) Update m to m + 1 and repeat Steps 2-3 up to $m = m_1$. The range of m, $m_1 - m_0$, is some fraction of n, denoted by $\bar{\mu}$. 5) Take the maximum of the sequence of $\{SW_{L^o(m)}\}_{m=m_0}^{m_1}$.

The reason why the DSW test improves upon the SGR test is because it produces three segments instead of only two, which is beneficial with more than one break. Two are defined by m and the other by the date at which the Wald test is maximized in the range $[m + \tau + \epsilon n, m + \tau + (1 - \epsilon)n]$. Hence, three segments can be inserted within the total sample, which guarantees that the two segments with the largest difference can be separated by a break, thereby increasing power. With a single break the mean of at least one segment is contaminated by the values of the means in the other segments, reducing power. The idea is akin to that of Qu (2007) who showed that when searching whether any part of a sample is stationary all one needs is a search with two breaks or three segments. To go further, one can also consider a test similar to the UDmax test for multiple changes of Bai and Perron (1998). However, the size distortions were rather high and we shall not consider it further. An alternative is to work directly with the total loss series L(m) instead of only using the out-of-sample losses. This can yield higher power given that more information is used. We consider two tests following this approach: the Total Loss sup-Wald test (TLSW) and the Total Loss UDmax test (*TLUD*). More precisely, $TLSW = \max_{m \in [m_0, m_1]} SW_{L(m)}$, where $SW_{L(m)}$ is the sup-Wald test applied for a mean-change in the total loss series L(m):

$$SW_{L(m)} = \max_{T_b(m) \in [\tau + \epsilon(T - 2\tau + 1), \tau + (1 - \epsilon)(T - 2\tau + 1)]} [SSR_{L(m)} - SSR(T_b(m))_{L(m)}] / \hat{V}_{L(m)},$$

where $SSR_{L(m)}$ is the restricted SSR, $SSR(T_b(m))_{L(m)}$ is the SSR assuming a one-time change at time $T_b(m)$ and $\hat{V}_{L(m)}$ is the long-run variance estimate of the total loss series using demeaned total loss series with the mean changing at date $T_b(m)$; ϵ is some small trimming parameter set at 0.1. Also, $TLUD(k) = \max_{m \in [m_0, m_1]} UD_{L(m)}^k$, where

$$UD_{L(m)}^{k} = \max_{i=1,\dots,k} \max_{\{T_{b}^{i}(m)\}_{i=1}^{k} \in \Lambda_{\epsilon}} [SSR_{L(m)} - SSR(\{T_{b}^{i}(m)\}_{i=1}^{k})_{L(m)}]/\hat{V}_{L(m)}$$

with $\Lambda_{\epsilon} = \{(T_b^1(m), ..., T_b^k(m)) : |T_b^i(m) - T_b^{i-1}(m)| \ge \tau + \epsilon(T - 2\tau + 1), T_b^0(m) = 1, T_b^k(m) \le \tau + \epsilon(T - 2\tau + 1), T_b^0(m) = 1, T_b^k(m) \le \tau + \epsilon(T - 2\tau + 1), T_b^0(m) = 1, T_b^k(m) \le \tau + \epsilon(T - 2\tau + 1), T_b^0(m) = 1, T_b^k(m) \le \tau + \epsilon(T - 2\tau + 1), T_b^0(m) = 1, T_b^k(m) \le \tau + \epsilon(T - 2\tau + 1), T_b^0(m) = 1, T_b^k(m) \le \tau + \epsilon(T - 2\tau + 1), T_b^0(m) = 1, T_b^k(m) \le \tau + \epsilon(T - 2\tau + 1), T_b^0(m) \le \tau + \epsilon(T - 2\tau + 1), T_b^0(m) = 1, T_b^k(m) \le \tau + \epsilon(T - 2\tau + 1), T_b^0(m) \le \tau$

 $\tau + (1 - \epsilon)(T - 2\tau + 1)$ and $\hat{V}_{L(m)}$ the long-run variance estimate of the total loss series using the demeaned total loss series with the mean changing at dates $T_b^1(m), ..., T_b^k(m)$. We set k = 5. To summarize the construction of the TL tests: 1) start with a value of the in-sample length; e.g., $m_0 = \lfloor 0.15T \rfloor$; 2) compute the total loss series $\{L_{t+\tau}\}_{t=1}^{T-2\tau+1}$; 3) for the regression with only a constant, $L_{t+\tau} = \gamma + e_{t+\tau}$, apply the sup-Wald or UDmax test for the constancy of γ with a HAC variance estimate if there is evidence of serial correlation in the losses. Store the value as $SW_{L(m)}$ or $UD_{L(m)}^k$. 4) Update m to m + 1 and repeat Steps 2-3. Take a choice of $m_1 > m_0$, say $m_1 = \lfloor 0.85T \rfloor$, and continue up to $m = m_1$. The choice of m_0 and m_1 does not affect the asymptotic critical values (Theorem 2 below). 5) Take the maximum of the sequence of $\{SW_{L(m)}\}_{m=m_0}^{m_1}$ or $\{UD_{L(m)}^k\}_{m=m_0}^{m_1}$.

3 Asymptotic distributions of the proposed tests

This section discusses the asymptotic distributions of the proposed test statistics under the null hypothesis. We let " \xrightarrow{p} " denote convergence in probability and " \Rightarrow " denote weak convergence in distribution. We first require the following assumption. Throughout, we assume that T, m, and n go to infinity at the same rate unless otherwise stated.

Assumption 1 Under no change in forecast accuracy: i) $\hat{\beta}_m \xrightarrow{p} \beta^*$ for all $m \in [m_0, m_1]$, with m_0 and m_1 the smallest and largest values of the in-sample lengths; ii) For $L_{t+\tau} \equiv \{L_{t+\tau}(\beta^*)\}_{t=1}^{T-2\tau+1}$, $E[L_{t+\tau}] = \mu$ for all t and $T^{-1}E[\sum_{t=1}^{\lfloor r(T-2\tau+1) \rfloor} (L_{t+\tau} - \mu)]^2 \xrightarrow{p} r\Omega$, as $T \to \infty$, for $r \in [0, 1]$ with τ fixed, Ω a non-random matrix and $T^{-1/2}\sum_{t=1}^{\lfloor r(T-2\tau+1) \rfloor} (L_{t+\tau} - \mu) \Rightarrow \Omega^{1/2}W(r)$, with W(r) a standard Wiener process defined on $r \in [0, 1]$.

These high level assumptions characterize the properties of the loss series under the null hypothesis. It is informative to see what they imply for the linear forecasting model $y_{t+\tau} = x'_t \beta + e_{t+\tau}$. Then Assumption 1 basically requires that β is stable over time under the null hypothesis of no change in forecast accuracy and the loss sequence satisfies a standard functional limit theorem with long-run variance Ω . Another important feature is that the loss series do not depend on m when evaluated at the limit value β^* . The relevance of this assumption is examined using the same example of a correctly specified linear model. Suppose we compute loss series using two distinct in-sample lengths m_1 and m_2 . The coefficient estimates are denoted by $\hat{\beta}^1$ and $\hat{\beta}^2$, say, and the forecasting errors are $y_{t+\tau} - x'_t \hat{\beta}_1$ and $y_{t+\tau} - x'_t \hat{\beta}_2$, respectively. Under the null hypothesis, these series are asymptotically equivalent since, roughly speaking, both estimators converge to a unique limit value β^* for all m. In general, under the null hypothesis of no change in forecast accuracy, in large samples, and under

a quadratic loss function, the losses are proportional to e_t^2 so that, if e_t has constant unconditional variance σ_e^2 , Assumption 1 is satisfied if $T^{-1/2} \sum_{t=1}^{\lfloor r(T-2\tau+1) \rfloor} (e_{t+\tau}^2 - \sigma_e^2) \Rightarrow \Omega^{1/2} W(r)$, where $\Omega = p \lim_{T\to\infty} T^{-1} E[\sum_{t=1}^{T-2\tau+1} (e_{t+\tau}^2 - \sigma_e^2)]^2$ is the long-run variance of the centered values of the squared errors. This allows considerable forms of dependence in the higher moments of e_t , in particular the second moment so that conditional heteroskedasticity or serial correlation in the squared errors is allowed, in which case Ω is different from σ_e^2 and the test statistics need to be scaled by an estimate of the long-run variance of e_t^2 . Hence, the conditions are quite general when the model is stable. Under Assumption 1, $SW_{L(m)}$ and $UD_{L(m)}$ have the same null limiting distribution as the sup-Wald test for a change in mean (Andrews, 1993) and the UD max test of Bai and Perron (1998), respectively. We next present the asymptotic distribution of the DSW test, whose proof is in Supplement (b).

Theorem 1 Under Assumption 1, the limit distribution of DSW is given by

$$DSW \Rightarrow \sup_{\mu \in [0,\bar{\mu}]\lambda \in [\mu+\epsilon(1-\mu), 1-\epsilon(1-\mu)]} \frac{\left[(\lambda-\mu)W(1) + (1-\lambda)W(\mu) - (1-\mu)W(\lambda)\right]^2}{(1-\lambda)(1-\mu)(\lambda-\mu)}$$

as $T, m, n \to \infty$ at the same rate, where W(r) is a standard Wiener process defined on $r \in [0, 1]$, ϵ is the trimming parameter and $\bar{\mu} = \lim_{T \to \infty} (m_1 - m_0)/n_0$, with $n_0 = T - m_0 - \tau + 1$.

The critical values of the DSW test were tabulated using 5,000 replications with 5,000 steps to approximate the Wiener process as partial sums of *i.i.d.* N(0, 1) random variables. We report results for a grid of values for $\bar{\mu}$ in the range [0.20, 0.80] and we set $\epsilon = 0.1$ (used throughout in the simulations and applications). The results are presented in Table 1 (see Supplement (c) for $\epsilon = 0.05$ and 0.15). We next consider the limit distribution of the TLSW and TLUD tests. Exploiting the fact that the loss series $\{L_{t+\tau}(\beta^*)\}_{t=1}^{T-2\tau+1}$ does not asymptotically depend on m under the null hypothesis, we obtain the following theorem.

Theorem 2 Under Assumption 1 and the null hypothesis: a) the limit distribution of TLSW is the same as the sup-Wald test for a change in mean (Andrews, 1993) for any m_0 and m_1 $(1 \le m_0 \le m_1 \le T)$; b) the limit distribution of TLUD is the same as the UDmax test of Bai and Perron (1998) for any m_0 and m_1 $(1 \le m_0 \le m_1 \le T)$.

Under Assumption 1, Theorem 2 follows trivially since $\{L_{t+\tau}(\beta^*)\}_{t=1}^{T-2\tau+1}$ does not depend on m under the null hypothesis and the tests computed with different m's are asymptotically perfectly correlated. This implies no effect of taking the maximum of the statistics over mon the limiting distribution. Note also that, unlike for the DSW test, the choices of m_0 and m_1 do not affect the limiting distribution of the TLSW and TLUD tests.

4 Analysis of the size and power of the tests

We present simulation and theoretical results to address the following issues: 1) the finite sample size of the tests proposed (Section 4.1); 2) the power function of the tests: Section 4.2 describes the experimental design, Section 4.3 provides theoretical results useful to understand the main features of the power functions and Section 4.4 provides a summary of the main results. Section 4.5 expands on the causes of various non-monotonic power functions.

4.1 Finite sample size of the proposed tests

We first examine the size of the TLSW and TLUD tests using the asymptotic distribution of Theorem 2. The DGP specifies $y_t \sim i.i.d.N(0,1)$ of lengths T = 150,300. We consider the squared error loss for the static model: $y_{t+\tau} = c + e_{t+\tau}$, and the dynamic model: $y_{t+\tau} = c + e_{t+\tau}$ $c + \alpha y_t + e_{t+\tau}$, with $\tau = 1$ both estimated by OLS and tests with or without a HAC correction for serial correlation in the losses. The HAC variance estimate is constructed using Andrew's (1991) data dependent method with an AR1 approximation and the Bartlett kernel. For all cases, we consider a fixed, rolling and recursive forecasting scheme. The exact sizes of the tests are presented in Table 2 for T = 300 and $\bar{\mu} = 0.25, 0.5, \text{ and } 0.75$ (for T = 150, see Supplement (d)). The number of replications is 1,000. We label the test without the HAC variance estimate by "non-robust" and with it by "robust". We also set $\epsilon = 0.1, m_0 = \lfloor 0.15T \rfloor$ and $m_1 = \lfloor 0.85T \rfloor$; any reasonable variations of these choices do not change the results qualitatively. The exact size is, in general, close to the nominal size. Some distortions are present with the robust version, which decrease as T increases. The results for the size of the DSW tests are in Table 3, with the same specifications as above (for T = 150, see Supplement (e)). For $\bar{\mu} = 0.25$ and 0.5, the test shows little size distortions, if any, for all cases. Some liberal size distortions are present when $\bar{\mu}$ is as large as 0.75 (caused by parameter uncertainty from unreported simulations). With larger sample sizes, the distortions somewhat decrease but remain substantial for $\bar{\mu} = 0.75$. Hence, we recommend using $\bar{\mu} = 0.25$ or $\bar{\mu} = 0.5$.

4.2 The experimental design for the power analysis

In order to ensure that our simulation design is not biased in favor of the tests we propose, we adopt the same design as in GR. Note, however, that we do not set m to be equal to the date of the first break. GR mention that this corresponds to the worst case scenario from a forecasting point of view. But what is more relevant in the context of assessing the presence of forecast instabilities is the fact that it corresponds to the best case possible for the power of the tests. Hence, such a choice can distort the power properties of the tests which are relevant in practice, given that the date of the break is unknown. There are five different DGPs involving single or multiple changes in level or in variance. They are:

DGP1: (single variance shift): $y_t = \varepsilon_t$, $\varepsilon_t \sim i.i.d.N(0, \sigma_t^2)$, with $\sigma_t^2 = 1 + \beta_A I(t > T/2)$; **DGP2**: (multiple variance shifts): $y_t = \varepsilon_t \sim i.i.d.N(0, \sigma_t^2)$, $\sigma_t^2 = 1 + \beta_A I(t \not\subseteq \Lambda_0)$; **DGP3**: (single mean shift): $y_t = \beta_A I(t > T/2) + \varepsilon_t$, with $\varepsilon_t \sim i.i.d.N(0, 1)$; **DGP4**: (multiple mean shifts): $y_t = -\beta_A + \varepsilon_t$ if $t \in \Lambda_0$, $\beta_A + \varepsilon_t$ otherwise, $\varepsilon_t \sim i.i.d.N(0, 1)$; **DGP5**: (mean shifts at unequal intervals): $y_t = \beta_A I(t \le T/4) - 3\beta_A I(T/4 < t \le T/2) + \sqrt{\beta_A} I(t > T/2) + \varepsilon_t$, $\varepsilon_t \sim i.i.d.N(0, 1)$.

We set T = 150 and with multiple breaks as in DGPs 2 and 4, these occur every 50 periods, i.e. $\Lambda_0 \in \{(1, 50), (101, 150)\}$. The following tests are considered with the squared error loss function: the GR_m test of GR with m = 40 (GR1) and m = 100 (GR2); the supremum of the GR_m tests, labelled SGR over $0.2T \leq m \leq 0.8T$ (SGR1) and $0.3T \leq$ $m \leq 0.7T$ (SGR2), the Double sup-Wald test DSW with $\bar{\mu} = 0.25$ (DSW1) and $\bar{\mu} = 0.50$ (DSW2) with $m_0 = 0.2T$ for both cases; the sup-Wald test for a single break and the UDmax test for multiple breaks (up to 5) applied to the total loss series, denoted TLSWand TLUD, with $0.15T \leq m \leq 0.85T$. Two forecasting models are used: a static model: $y_{t+\tau} = c + e_{t+\tau}$, and the dynamic one: $y_{t+\tau} = c + \alpha y_t + e_{t+\tau}$, with $\tau = 1$, both estimated by OLS, and for each, two versions with or without a HAC correction for serial correlation in the losses. In the dynamic model an irrelevant lagged dependent variable is included (i.e., $\alpha = 0$), which is completely inconsequential. We could extend the DGPs to include genuine dynamics with $\alpha \neq 0$. The qualitative features would remain the same. The nonmonotonicities reported would simply be more severe (e.g., Section 4.5). The static model with no HAC correction is labelled "static, non-robust" and with a HAC correction "static, robust". The dynamic model with no HAC correction is labelled "dynamic, non-robust" and the one with a HAC correction "dynamic, robust". We consider forecasting schemes using a fixed, rolling or recursive window. The number of replications is 1,000. The results are presented in Tables 4-1 to 4-5. The foremost criterion adopted to compare the tests is whether the power function is monotonically increasing as the magnitude of the change(s) in forecast accuracy increases. We view this as an essential feature for any reasonable test. For tests with monotonically increasing power, we compare the relative power functions. We start with some theoretical results about the limit value of the expected loss function that will help understand the sources of the power differences across various forecasting schemes.

4.3 Theoretical results about the limit of the loss function

We consider the limit of the loss sequence for a single coefficient or variance break. Our results pertain to the loss sequence in large samples, which are used for all tests. The surprise losses are used for the GR_m and SGR tests but since these simply differ by subtracting the average of the in-sample losses, the dynamics of both sequences are similar. Hence, we consider only the expected values of $p \lim_{T\to\infty} L_t = L^*(r)$, defined on the unit interval $r \in [0, 1]$ where $r = \lim(t/T)$. The squared loss function is applied. For simplicity, and without substantive loss of generality, we consider the single break model:

$$y_{t+\tau} = x_t \beta_t + e_{t+\tau}, \text{ for } t = 1, ..., T - \tau,$$
 (2)

where $\beta_t = \beta_1$ for $t \leq [T\lambda_0]$ and $\beta_t = \beta_2$ for $t > [T\lambda_0]$. Again for simplicity, the predictor x_t is a scalar that satisfies $E(x_t^2) = \sigma_x^2$ and $E(x_t x_{t-j}) = \sigma_{xj}$. Also, $e_t \sim i.i.d.(0, \sigma_t^2)$, with $\sigma_t^2 = \sigma_1^2$ for $t \leq [T\lambda_0]$ and $\sigma_t^2 = \sigma_2^2$ for $t > [T\lambda_0]$. The in-sample length is $m = [T\lambda]$ chosen so that $\lambda \leq \lambda_0$. We consider the following two cases: a coefficient change, i.e., $\beta_1 = 0$ and $\beta_2 = \Delta_\beta$ with $\sigma_1^2 = \sigma_2^2 = \sigma^2$; a variance change, i.e., $\sigma_1^2 = \sigma^2$ and $\sigma_2^2 = \sigma^2 + \Delta_{\sigma^2}$ with $\beta_1 = \beta_2 = \beta$. Suppose we use the static regression model of $y_{t+\tau}$ on x_t to produce τ -period ahead forecasts at time t. For the out-of-sample procedure, we use the estimate of β obtained from the insample information, labelled as $\hat{\beta}_{[1,t]}$. We consider the three window schemes and estimate the coefficient using OLS for the sample period $[1, m-\tau]$ with the fixed scheme, $[t-m+1, t-\tau]$ with the rolling scheme, and $[1, t - \tau]$ with the recursive scheme. Hence, $\hat{\beta}_{[1,t]}$ with the same t can be different depending on the window scheme. When the static regression is used, $E\left[L^{*}(r)\right] = E[\lim_{T \to \infty} (y_{t+\tau} - x_{t}\hat{\beta}_{[1,t]})^{2}] = \sigma_{r}^{2} + \sigma_{x}^{2}(\beta_{r} - \beta_{[0,r]}^{*})^{2}, \text{ where } \beta_{[0,r]}^{*} = p\lim_{T \to \infty} \hat{\beta}_{[1,t]}.$ We also denote the limit true value of β_t and σ_t^2 , defined on the interval $r \in [0, 1]$, by β_r and σ_r^2 . Next, we consider a dynamic regression, i.e., $y_{t+\tau} = \alpha y_t + x_t \beta_t + e_{t+\tau}$. Including y_t as a predictor while the true model is (2) is inconsequential in a stable environment since the dynamic model nests the DGP. Things are quite different when instabilities are present. For the dynamic model, with $\alpha_{[0,r]}^* = p \lim_{T \to \infty} \hat{\alpha}_{[1,t]}$, and $\beta_{[0,r]}^* = p \lim_{T \to \infty} \beta_{[1,t]}$, $E[L^*(r)] = (1 + \alpha_{[0,r]}^{*2})\sigma_r^{*2} + \sigma_x^2[(1 - \alpha_{[0,r]}^*)\beta_r - \beta_{[0,r]}^*]^2 \text{ (see Supplement (f)). Figures S.1-}$ S.2 present $E[L^*(r)]$ for the variance change case using the static and dynamic regressions, respectively. The limit of the loss sequence always has a stepwise change, whose magnitude depends on Δ_{σ^2} . Hence, all tests should have power monotonically increasing in Δ_{σ^2} .

Since the expressions for the case of a coefficient change are quite complex and yields little insights per se, we only present numerical values in the text for $E[L^*(r)]$. We set $\sigma^2 = 1$, $\lambda = 0.1$ and $\lambda_0 = 0.5$ and a small $(\Delta_\beta, \Delta_{\sigma^2} = 1)$ and large break $(\Delta_\beta, \Delta_{\sigma^2} = 5)$ to investigate how the size of the break affects the shape of the loss sequence. Figures 1-2 present $E[L^*(r)]$ for the coefficient change case for the static and dynamic regressions, respectively. The upper (lower) panels report the case of a small (large) break. When the static model is used (Figure 1), we see a stepwise change in the loss sequence when the fixed scheme is used. However, the same change in coefficient translates into a spiked shape with the rolling scheme and a triangular shape with the recursive scheme. This explains why the fixed scheme is to be preferred and why using the rolling or recursive scheme induces a loss of power. Note, however, that the break magnitude only changes the height of the change in the loss sequence, not the shapes of the loss sequences. Hence, increasing the magnitude of the break size should still increase power under all schemes. Things are different when considering the dynamic model. We still have the same general shapes for the loss sequences. However, the spikes and the triangular shape for the rolling and the recursive schemes become more narrow and closer to an outlier as the break becomes larger. This explains why, when using a dynamic model, the use of a rolling or recursive scheme leads to a non-monotonic power function, i.e., the power decreases as the break magnitude increases. We shall use the insights provided by these results to explain the power differences across the tests and the forecasting schemes. We show in Supplement (g) that the main theoretical results continue to hold using an indirect forecast method. The results are also similar with multiple breaks, in which case the shapes essentially repeat themselves for each break date; see Figures S.5 and S.6 in Supplement (h), which present a "typical" realization of the loss sequences for DGPs 3-5 under the three forecasting schemes for the tests SGR2, DSW2 and TLSW.

4.4 Summary of the main power results

The main findings of interest can be illustrated by the results for DGPs 4-5 for a dynamic forecasting model with a correction for serial correlation in the loss sequence. Only three tests have a monotonically increasing power function: the two versions of DSW and the TLUD tests using a fixed forecasting window. All the other tests have a power function that eventually decreases to zero as the magnitude of changes increases in at least one and most often many cases. One exception is the SGR test with a rolling window, whose power appears high because of large size-distortions. The distortions are reduced as m increases as in GR2 and SGR2 and the power is then decreasing to 0 as the magnitude of the change increases. Cases with tests having a power function that eventually reaches zero as the magnitude of the change(s) increases can also be found when dealing with other DGPs with shifts in the conditional mean (i.e., not DGPs 1-2, which only affects the variance) and other

forecasting methods. The GR_m tests can have zero or trivial power even in the "static, non-robust" case; see DGP4 (fixed and rolling), and DGP5 (recursive).

To compare the power of the tests, we focus on $\beta_A = 0.5$, a value with power not close to one or zero. We disregard the SGR test with the rolling window given the large sizedistortions. For a single break (DGPs 1 and 3) the TLUD and SGR tests have equally the highest power. However, with multiple breaks (DGPs 2, 4 and 5), the TLUD and DSWtests outweigh the SGR tests in all cases. In summary, the test with highest power is the TLUD (for DGP1 the TLUD and DSW tests have nearly the same power). The TLUDtest has a monotonically increasing power and also highest power for small values of the alternative. Hence, we recommend using the TLUD test followed by the DSW, both with a fixed forecasting scheme. The loss in power when using the DSW test instead of the TLUDtest may, however, be DGP-specific since the changes involved, i.e., recurrent regimes, are those most prone to cause power problems for the DSW tests. With non-recurrent regimes, the power of the DSW tests would be closer to that of TLUD.

4.5 Explanations for the power properties

DGPs 1-2 are cases with single and multiple variance changes (Tables 4-1 and 4-2). For such type of instability the forecast model is unaffected by the choice of T_m or the forecasting scheme. The forecast model is still consistently estimated because the conditional mean of the variable to be forecasted is unchanged. All tests have nontrivial power in all cases. The substantial difference between GR1 and GR2 is caused solely by the choice of m, showing its importance. SGR resolves this problem by maximizing the test statistics over all permissible m and achieves a reasonably high power in all cases. All tests proposed (DSW, TLSWand TLUD) have, overall, high power. Under DGP1, DSW has a slightly lower power than TLSW and TLUD, while under DGP2, DSW and TLUD have a higher power than TLSW, because the latter accounts for a single break. Also, under DGP2, the power of these tests does not reach one because of the nature of the breaks; i.e., two breaks with the first and last regimes being the same, which is the most difficult case to detect with a single break test (e.g., Bai and Perron, 2006). The problem is alleviated allowing for multiple changes so that the TLUD and DSW tests are the most powerful in this setting. These observations are consistent with the theoretical results reported in Section 4.3.

We now turn to models with mean breaks so that the conditional mean of the variable to be forecasted changes, i.e., DGPs 3-5 (results reported in Tables 4-3 to 4-5). The power functions exhibit non-monotonicity or a significant power loss because of three potential sources. The first is the "robust effect" indicated with an "R" in the last row of a case with non-monotonic power. The second is the "window effect" indicated with a "W". The third cause is the "dynamic effect", indicated with a "D". The simulation results pertaining to the window and dynamic effects follow from the theoretical ones in Section 4.3. The "robust effect" is due to a failure to properly account for serial correlations in the loss sequence. As is well known, when neglected breaks are present in the losses when constructing the HAC variance estimate, they inflate the sample autocovariances and the value of the bandwidth, thereby increasing HAC variance estimates and reducing power. This is a standard problem that has been discussed at length (e.g., Vogelsang, 1999, Crainiceanu and Vogelsang, 2007, Deng and Perron, 2008, Kim and Perron, 2009, Perron and Yamamoto, 2016, Martins and Perron, 2016, Chang and Perron, 2018). The "window effect" refers to the change in the loss sequence induced by using some window that separates the in and out-of-sample data and causes a loss in power. This applies, e.g., when breaks occur in the in-sample partition so that the model is not consistently estimated. The "dynamic effect" is the most pronounced and caused by in-sample contaminations when using a dynamic model. It is well known that if a dynamic model is estimated in the presence of mean breaks the coefficient estimate for the lagged dependent variable is biased toward one as the break magnitude becomes larger (Perron, 1989, 1990, 2019). This results in forecast errors being roughly the first-differences of those from a static model. Hence, the mean breaks become outliers in the loss sequence and the tests have no power. Note that the "dynamic effect" will not occur with the fixed scheme if m is sufficiently small and there is a chance that the model can be consistently estimated in a stable in-sample window. See the theoretical results in Section 4.3.

We now explain some power functions reported in Tables 4-3 to 4-5. First, as shown in panel (a), with the static model and the fixed scheme, all non-robust tests have a monotonic power. However, the "robust effect" applies to tests constructed with a HAC variance estimate in panel (b), which is pronounced for GR1 and GR2 and also applies to SGR1, SGR2 and TLSW when multiple breaks are present. With the fixed scheme, the "robust effect" applies to GR1 under DGPs 3 and 5, and to GR1, GR2, SGR1, SGR2 and TLSW under DGP4. With either the rolling or recursive scheme, it applies to GR2 and DSW1 under DGP3, to GR1, GR2, SGR1, SGR2, DSW1 and DSW2 under DGP4 and to GR1, GR2 and SGR2 under DGP5. The results suggest not using GR and SGR with a HAC variance estimate under any forecasting scheme nor TLSW with multiple breaks. Note that even in panel (a) the power of GR1 and GR2 is sometimes very low. GR1 has non-monotonic power with the rolling scheme under DGP3, with both the fixed and the rolling

schemes under DGP4 and with the recursive scheme under DGP5, while GR2 does so with the recursive scheme under DGP5. This is because they are affected by the "window effect" when a break occurs in the in-sample window. With a fixed scheme, the "window effect" applies to GR2 under DGP4. With the rolling scheme, it applies to GR2 under DGPs 3-4 and with the recursive scheme to GR1 under DGP5. Also, DSW may lose power with the rolling or recursive scheme because the loss sequence takes a triangular shape (Figure 1). This applies to DSW1 and DSW2 under DGP4. For DSW, the "window effect" can be exacerbated by the "robust effect" (labelled "R, W" in panel (b)); cf. DSW1 with the rolling scheme under DGP3 and DSW1 and DSW2 with the rolling and recursive schemes under DGP4. The source of the "window effect" can be explained by the results in Figure 1. With the fixed scheme, the loss sequence takes a step-wise pattern for all three DGPs and tests. With the rolling or recursive scheme, it shows an abrupt increase followed by a gradual decline. For DGP-3, the increase occurs when the in-sample window covers a stable period and the initial date of the out-of-sample period coincides with the true break date. After, the window increasingly contains post-break data, which gradually causes a bias in the estimated forecast model and thus a decline of the loss sequence. More importantly, the shape is robust with either the static or dynamic model, except when the first break is included in the in-sample window (e.g., SGR2 under DGP5 with the dynamic model).

The non-monotonic power functions are more pronounced with a dynamic model. Panel (c) of Tables 4-3 to 4-5 (DGPs 3-5) report power functions with non-robust standard errors. With the rolling or recursive schemes, this "dynamic effect" applies to almost all tests, even when the fixed scheme is used if the in-sample window is large and includes the break date; e.g., for GR2 under DGPs 3-4 and for GR1, GR2 and SGR2 under DGP5. This suggests not to use any tests with a rolling or recursive scheme when the forecast model has lagged dependent variables. The results for the dynamic model with the robust tests are presented in panel (d) of Tables 4-3 to 4-5, which highlight all tests with a non-monotonic power function. The results are consistent with the limit of the power losses in Figure 2, which showed that coefficient breaks are transformed into spikes in the loss sequence, getting narrower as the magnitude of the change increases when using the rolling or recursive scheme.

5 Empirical applications

We now provide applications to illustrate the ability of the proposed and existing tests to detect changes in forecast accuracy; one related to the equity premium and the other to forecasting inflation. The results show the relevance of the theoretical and simulation results.

5.1 Equity premium forecasts

The equity premium of the S&P 500 returns is constructed as the difference between the stock yield and the risk free rate, following Jagannathan et al. (2000). For the stock yield, we use the dividend price ratio plus the expected future growth rate of dividends. We use the historical average of the annual growth rates of dividends since 1928:01 to proxy for the latter. For the risk free rate, we use the 10-years treasury constant maturity rate. The data were obtained from Robert Shiller's web site (http://www.econ.yale.edu/~shiller/data.htm). Figure 3 plots the resulting equity premium from 1980:1 to 2017:12. Jagannathan et al. (2000) and Lettau et al. (2008) noted that it was in an unprecedented low level in the 1990s and the early 2000s. The plot shows a sharp increase around 2007 because of the financial crisis. Afterwards, the equity premium stayed high likely because of the zero interest rate monetary policy. Lettau and Nieuwerburgh (2008) and Xu and Perron (2018) documented the presence of level shifts and structural breaks in excess return prediction regressions.

We use a static, regressing $y_{t+\tau}$ on x_t and a dynamic model, regressing $y_{t+\tau}$ on y_t and x_t (both with a constant) to produce τ -period ahead forecasts. We use the dividend price ratio as the predictor x_t , as is commonly done; e.g., Campbell and Shiller (1988) and Fama and French (1988). We consider forecast horizons $\tau = 1, 3, 6$ and 12, and apply the following tests with the quadratic loss function: the DSW tests (DSW1 and DSW2 for $\bar{\mu} = 0.25$ and 0.5), the TLSW and TLUD tests. The truncation $\varepsilon = 0.1$ and the maximum number of breaks is 5 for the TLUD test. We also apply the GR_m tests with m = 331 and 347, which correspond to the outsets of the global financial crisis (2007:7) and the month prior to the initiation of the zero interest rate monetary policy (2008:11). We consider the SGR tests for $0.2T \le m \le 0.8T$ (SGR1) and for $0.3T \le m \le 0.7T$ (SGR2). The results are presented in Table 5. We first test for the presence of serial correlation in the loss sequence using the LM test of Godfrey (1978) whose results are presented in the columns labelled "LM1" for m = 331 and "LM2" for m = 347. They strongly indicate the presence of serial correlation in the loss sequences. Hence, the tests account for serial correlations using a HAC variance estimate. With the static model, there is evidence for a forecast breakdown with any of the proposed tests and the p-values when using the fixed scheme are an order of magnitude smaller compared to using the rolling or recursive scheme. Some GR-based tests also reject in all cases when the rolling window scheme is used but not with the fixed or recursive one. This is likely due to high power induced by large size distortions as documented above. The GR-based tests also show less rejections when long horizons are considered under the fixed and recursive schemes. With the dynamic model, we obtain a much clearer contrast. The GR_m tests now show very few rejections and the tests proposed strongly reject the null hypothesis for all horizons with the fixed window. As expected from the theoretical results, the DSW test fails to reject with the rolling or recursive scheme, while the TLSW and TLUD tests still show rejections, although much weaker in terms of p-values.

5.2 Inflation forecasts using the Phillips curve

Forecasting inflation using the Phillips Curve was advanced by, e.g., Stock and Watson (1999) and Atkeson and Ohanian (2001), among many others. We use the model:

$$\pi_{t+\tau} = \theta_0 + \theta_1(L)u_t + \theta_2(L)\pi_t + error,$$

where π_t is a measure of inflation, u_t is the unemployment gap (the unemployment rate minus and a measure of the NAIRU). The order of the lag polynomial $\theta_1(L)$ was set to $q_u = 1$ or $q_u = 3$. Since the results are similar, we only report the case with $q_u = 3$. For the order of $\theta_2(L)$ we report results for both $q_{\pi} = 1$ and 3, labelled 'Dynamic 1' and 'Dynamic 3', respectively. We consider two window sizes for the GR_m tests: 1) GR1 with m = 241, as in GR, so that the period before 1979 is within the in-sample and the highinflation period of Volker's Fed Chairmanship is in the out-of-sample; 2) GR2 with m = 301(1984:1), in which case the out-of-sample window covers the Great Moderation. Orphanides and van Norden (2005) find that Phillips curve-based forecasts outperform an autoregressive benchmark prior to 1983 but without improvement for the period after 1984, while Dotsey et al. (2018) find that while the Phillips curve forecasts improve when the economy is weak, the improvement vanishes in the post-1984 period. In either case, the presumption is that a change in forecasting performance occurred. We consider the forecast horizons $\tau = 1, 3, 6$ and 12 months. We use the monthly real-time CPI (consumer price index) and unemployment gap data for the period 1959:1 to 2018:7. The data were obtained from the Federal Reserve Bank of Philadelphia Real-Time Data Set in which the CPI is available only after 1998:11 and the unemployment rate after 1965:11. The earlier data were obtained from the Swanson, van Dijk and Callan dataset (http://econweb.rutgers.edu/nswanson/realtime.htm). Since the data from two sources are very similar in the overlapping period, this merging should not affect the results. Also, as in GR we assume that a time-invariant NAIRU is embodied in the intercept. We construct the annual rate of inflation as $\pi_t = (1200) \ln(P_t/P_{t-1})$, where P_t is the CPI at month t, whose graph is in Figure 4.

The results are presented in Table 6 for the same tests as in Section 5.1. The LM tests for serial correlation in the loss function (Table 6; last two columns) indicate the presence

of serial correlation, so the tests are constructed with a HAC correction. For "Dynamic 1", all proposed tests show strong rejections at any horizon when the fixed window scheme is used. With the rolling or recursive scheme, the DSW tests fail to reject in most cases, consistent with our theoretical results about the non-monotonic power with a rolling or recursive scheme. The results suggest multiple breaks since the value of TLUD is much larger than TLSW, although both tests reject the null hypothesis at the 1% significance level. More interestingly, all the GR-based tests, except for the SGR1 with the fixed and the rolling schemes, have no power. The results are qualitatively the same for "Dynamic 3". Again, all the GR-based tests find no or very weak evidence of a change in forecast accuracy in the high inflation period of the Volker's Chairmanship period. They are also not able to detect a change due to the Great Moderation that occurred in the mid-1980s. In contrast, the proposed DSW, TLSW and TLUD tests clearly show evidence of changes in forecast accuracy when the fixed scheme is used.

6 Conclusion

We considered the issue of forecast failure (or breakdown) and proposed methods to detect changes in the forecasting performance over time. The aim is to assess retrospectively whether a given forecasting model provides forecasts which show evidence of changes (improvements or deterioration) with respect to some loss function. We adapted the classical structural change tests to the forecast failure context. First, we recommend that all tests should be carried with a fixed scheme to have best power. We considered a variety of tests: the GR test (a t-test for a change at some pre-specified date m); maximizing the GR_m test over all values of m within a pre-specified range; a Double sup-Wald test which for each mperforms a sup-Wald test for a change in the mean of the out-of-sample losses and takes the maximum of such tests over some range; we also proposed to work directly with the total loss series to define the TLSW and the TLUD tests. The only tests having a monotonic power function for all data-generating processes are the DSW and TLUD tests, constructed with a fixed forecasting window scheme. The power of the TLUD test is usually higher than that of the DSW test, hence it is recommended for practical applications.

References

Andrews, D.W.K. (1991), "Heteroskedasticity and Autocorrelation Consistent Covariance Matrix Estimation," *Econometrica*, 59, 817-858.

Andrews, D.W.K. (1993), "Tests for Parameter Instability and Structural Change with Unknown Change Point," *Econometrica*, 61, 821-856.

Atkeson, A. and Ohanian, L.E. (2001), "Are Phillips Curves Useful for Forecasting Inflation?" *Federal Reserve Bank of Minneapolis Quarterly Review* 25(1), 2-11.

Bai, J. and Perron, P. (1998), "Estimating and Testing Linear Models with Multiple Structural Changes," *Econometrica*, 66, 47-78.

Bai, J. and Perron, P. (2006), "Multiple Structural Change Models: A Simulation Analysis," in *Econometric Theory and Practice: Frontiers of Analysis and Applied Research*, eds. D. Corbae, S. Durlauf and B. E. Hansen, Cambridge: Cambridge University Press, pp. 212-237.

Campbell, J.Y. and Shiller, R.J. (1988), "The Dividend-Price Ratio and Expectations of Future Dividends and Discount Factors," *Review of Financial Studies*, 1, 195-228.

Casini, A. (2017), "Tests for Forecast Instability and Forecast Failure under a Continuous Record Asymptotic Framework," Unpublished Manuscript, Department of Economics, Boston University.

Casini, A. and Perron, P. (2018), "Structural Breaks in Time Series," forthcoming in the Oxford Research Encyclopedia of Economics and Finance.

Chang, S.Y. and Perron, P. (2018), "A Comparison of Alternative Methods to Construct Confidence Intervals for the Estimate of a Break Date in Linear Regression Models," *Econometric Reviews*, 37, 577-601.

Clark T.E. and McCracken, M.W. (2009), "Improving Forecast Accuracy by Combining Recursive and Rolling Forecasts," *International Economic Review*, 50, 363-395.

Clark, T.E. and McCracken, M.W. (2013), "Advances in Forecast Evaluation". In *Handbook* of *Economic Forecasting*, Vol. 2, eds. G. Elliott and A. Timmermann. Amsterdam: Elsevier, pp. 1107-1201.

Crainiceanu, C. M. and Vogelsang, T.J. (2007), "Nonmonotonic Power for Tests of a Mean Shift in a Time Series," *Journal of Statistical Computation and Simulation*, 77, 457-476.

Deng, A. and Perron, P. (2008), "A Non-local Perspective on the Power Properties of the CUSUM and CUSUM of Squares Tests for Structural Change," *Journal of Econometrics*, 142, 212-240.

Dotsey, M., Fujita, S. and Stark, T. (2018), "Do Phillips Curves Conditionally Help to Forecast Inflation?" *International Journal of Central Banking*, 14, 43-92.

Fama, E.F. and French, K.R. (1988), "Dividend Yields and Expected Stock Returns," *Journal of Financial Economics*, 22, 3-25.

Giacomini, R. and Rossi, B. (2009), "Detecting and Predicting Forecast Breakdowns," *The Review of Economic Studies*, 76, 669-705.

Godfrey, L.G. (1978), "Testing for Higher Order Serial Correlation in Regression Equations when the Regressors Include Lagged Dependent Variables." *Econometrica* 46, 1303-1310.

Inoue, A. and Rossi, B. (2012), "Out-of-sample Forecast Test Robust to the Window Size Choice," *Journal of Business and Economic Statistics*, 30, 432-453.

Jagannathan, R., McGrattan, E.R., and Scherbina, A. (2000), "The Declining U.S. Equity Premium," *Federal Reserve Bank of Minneapolis Quarterly Review*, 24(4), 3-19.

Kim, D. and Perron, P. (2009), "Assessing the Relative Power of Structural Break Tests using a Framework Based on the Approximate Bahadur Slope," *Journal of Econometrics*, 149, 26-51.

Lettau, M., Ludvigson, S.C., and Wachter, J.A. (2008), "The Declining Equity Premium: What Role Does Macroeconomic Risk Play?" *Review of Financial Studies*, 21, 1653-1687.

Lettau, M. and Van Nieuwerburgh, S., (2008) "Reconciling the Return Predictability Evidence," *Review of Financial Studies*, 21, 1607-1652.

Martins, L.F. and Perron, P. (2016), "Improved Tests for Forecast Comparisons in the Presence of Instabilities," *Journal of Time Series Analysis*, 37, 650-659.

Orphanides, A., and van Norden, S. (2005), "The Reliability of Inflation Forecasts Based on Output Gap Estimates in Real Time," *Journal of Money, Credit and Banking*, 37, 583-600.

Perron, P. (1989), "The Great Crash, the Oil Price Shock and the Unit Root Hypothesis," *Econometrica*, 57, 1361-1401.

Perron, P. (1990), "Testing for a Unit Root in a Time Series Regression with a Changing Mean," *Journal of Business and Economic Statistics*, 8, 153-162.

Perron, P. (2006), "Dealing with Structural Breaks". In *Palgrave Handbook of Econometrics, Vol. 1: Econometric Theory*, eds. K. Patterson and T.C. Mills, New York: Palgrave Macmillan, pp. 278-352.

Perron, P. (2019), "A Test for Changes in a Polynomial Trend Function for a Dynamic Time Series," forthcoming in *Time Series Econometrics: Volume 2: Structural Change*, ed. P. Perron, World Scientific.

Perron, P. and Yamamoto, Y. (2016), "On the Usefulness or Lack Thereof of Optimality Criteria for Structural Change Tests," *Econometric Reviews*, 35, 782-844.

Qu, Z. (2007), "Searching for Cointegration in a Dynamic System," *The Econometrics Jour*nal, 10, 580-604.

Stock, J.H., and Watson, M.W. (1999), "Forecasting Inflation," Journal of Monetary Economics, 44, 293–335.

Vogelsang. T.J. (1999), "Sources of Nonmonotonic Power when Testing for a Shift in Mean of a Dynamic Time Series," *Journal of Econometrics*, 88, 283-299.

Xu, J. and Perron, P. (2018), "Forecasting in the Presence of in and Out of Sample Breaks," Unpublished Manuscript, Department of Economics, Boston University.

$\bar{\mu}$	10%	5%	2.5%	1%
0.20	10.609	12.217	13.779	15.620
0.25	10.928	12.782	14.018	16.310
0.30	11.264	13.065	15.087	17.688
0.35	11.648	13.529	15.247	17.660
0.40	11.761	13.770	15.537	17.777
0.45	12.134	14.027	15.768	17.968
0.50	12.469	14.279	16.031	17.961
0.55	12.932	14.565	16.184	18.455
0.60	13.103	14.850	16.512	18.562
0.65	13.367	15.003	16.654	19.027
0.70	13.596	15.181	16.622	19.103
0.75	13.769	15.418	17.075	19.130
0.80	14.108	15.870	17.736	19.968

Table 1: Critical values of the DSW test ($\epsilon = 0.1$)

Table 2: Size of the TLSW and TLUD tests (T = 300)

a) static, non-robust

		10%	5%	1%
SW	fixed	0.112	0.061	0.020
	rolling	0.117	0.063	0.019
	recursive	0.096	0.058	0.016
UD	fixed	0.125	0.067	0.019
	rolling	0.127	0.070	0.019
	recursive	0.107	0.061	0.018

b) static, robust

		10%	5%	1%
SW	fixed	0.146	0.076	0.021
	rolling	0.144	0.060	0.012
	recursive	0.096	0.058	0.016
UD	fixed	0.167	0.085	0.021
	rolling	0.148	0.079	0.011
	recursive	0.107	0.061	0.018

c) dynamic, non-robust 10% SW/ fixed 0.109 0

		10%	5%	1%
SW	fixed	0.109	0.057	0.013
	rolling	0.120	0.057	0.013
	recursive	0.092	0.047	0.011
UD	fixed	0.125	0.067	0.013
	rolling	0.127	0.071	0.013
	recursive	0.105	0.055	0.010

d) dynamic, robust

		10%	5%	1%
SW	fixed	0.142	0.072	0.019
	rolling	0.146	0.072	0.022
	recursive	0.099	0.063	0.013
UD	fixed	0.188	0.101	0.023
	rolling	0.186	0.102	0.014
	recursive	0.112	0.081	0.016

a) static, n	on-robust									
			10%			5%			1%	
mu_bar	m0	0.3T	0.2T	0.1T	0.3T	0.2T	0.1T	0.3T	0.2T	0.1T
0.25	fixed	0.075	0.080	0.071	0.043	0.050	0.036	0.018	0.019	0.017
	rolling	0.083	0.067	0.049	0.046	0.038	0.021	0.020	0.019	0.007
	recursive	0.075	0.082	0.085	0.039	0.047	0.045	0.015	0.017	0.014
0.5	fixed	0.104	0.097	0.093	0.064	0.056	0.058	0.019	0.023	0.025
	rolling	0.116	0.102	0.078	0.067	0.061	0.048	0.023	0.021	0.018
	recursive	0.103	0.098	0.095	0.061	0.058	0.057	0.022	0.024	0.022
0.75	fixed	0.169	0.167	0.142	0.117	0.114	0.088	0.047	0.045	0.040
	rolling	0.164	0.155	0.124	0.122	0.114	0.087	0.051	0.047	0.034
	recursive	0.172	0.173	0.147	0.113	0.108	0.087	0.050	0.047	0.042

Table 3: Size of the DSW test (T = 300)

b) static, robust

			10%			5%			1%	
mu_bar	m0	0.3T	0.2T	0.1T	0.3T	0.2T	0.1T	0.3T	0.2T	0.1T
0.25	fixed	0.090	0.088	0.079	0.055	0.059	0.049	0.018	0.021	0.015
	rolling	0.096	0.081	0.054	0.054	0.042	0.022	0.020	0.018	0.009
	recursive	0.092	0.090	0.081	0.047	0.049	0.044	0.016	0.016	0.014
0.5	fixed	0.121	0.110	0.112	0.078	0.071	0.071	0.033	0.032	0.029
	rolling	0.135	0.114	0.096	0.089	0.075	0.054	0.035	0.028	0.025
	recursive	0.126	0.117	0.111	0.078	0.068	0.072	0.035	0.030	0.027
0.75	fixed	0.213	0.210	0.173	0.157	0.150	0.121	0.080	0.073	0.059
	rolling	0.210	0.195	0.154	0.167	0.152	0.101	0.082	0.073	0.062
	recursive	0.210	0.205	0.174	0.158	0.151	0.120	0.082	0.074	0.062

c) dynamic, non-robust

			10%			5%			1%	
mu_bar	m0	0.3T	0.2T	0.1T	0.3T	0.2T	0.1T	0.3T	0.2T	0.1T
0.25	fixed	0.087	0.090	0.088	0.052	0.059	0.053	0.018	0.027	0.022
	rolling	0.091	0.069	0.054	0.047	0.036	0.022	0.018	0.018	0.007
	recursive	0.086	0.086	0.089	0.044	0.047	0.042	0.017	0.021	0.018
0.5	fixed	0.107	0.103	0.110	0.065	0.063	0.069	0.028	0.030	0.027
	rolling	0.116	0.111	0.081	0.071	0.065	0.049	0.029	0.024	0.019
	recursive	0.108	0.106	0.105	0.070	0.067	0.068	0.029	0.031	0.026
0.75	fixed	0.175	0.175	0.155	0.115	0.113	0.103	0.047	0.046	0.050
	rolling	0.178	0.169	0.127	0.126	0.119	0.089	0.054	0.052	0.036
	recursive	0.177	0.175	0.151	0.128	0.125	0.102	0.050	0.050	0.049

d) dynamic, robust

			10%			5%			1%	
mu_bar	m0	0.3T	0.2T	0.1T	0.3T	0.2T	0.1T	0.3T	0.2T	0.1T
0.25	fixed	0.105	0.093	0.081	0.058	0.060	0.051	0.019	0.024	0.018
	rolling	0.103	0.077	0.054	0.052	0.039	0.022	0.019	0.020	0.008
	recursive	0.104	0.095	0.091	0.051	0.050	0.046	0.017	0.021	0.020
0.5	fixed	0.127	0.119	0.119	0.081	0.076	0.077	0.032	0.033	0.034
	rolling	0.138	0.126	0.094	0.089	0.075	0.050	0.037	0.031	0.026
	recursive	0.128	0.128	0.115	0.087	0.078	0.074	0.036	0.033	0.035
0.75	fixed	0.221	0.215	0.180	0.152	0.145	0.125	0.080	0.073	0.070
	rolling	0.222	0.204	0.154	0.171	0.160	0.099	0.083	0.075	0.062
	recursive	0.219	0.211	0.178	0.164	0.160	0.122	0.088	0.082	0.068

Table 4-1: Power comparison under DGP1 (5% level)

<u>a)</u> 5	tatic, n		ISC						
	bA	GR1	GR2	SGR1	SGR2	DSW1	DSW2	TLSW	TLUD
	0.0	0.091	0.063	0.127	0.089	0.047	0.071	0.062	0.064
	0.5	0.982	0.766	0.997	0.997	0.598	0.480	0.988	0.985
eq	1.0	1.000	0.908	1.000	1.000	0.892	0.821	1.000	1.000
fix	2.5	1.000	0.963	1.000	1.000	0.974	0.942	1.000	1.000
	5.0	1.000	0.975	1.000	1.000	0.986	0.971	1.000	1.000
	7.5	1.000	0.974	1.000	1.000	0.988	0.975	1.000	1.000
	10.0	1.000	0.976	1.000	1.000	0.988	0.973	1.000	1.000
	bA	GR1	GR2	SGR1	SGR2	DSW1	DSW2	TLSW	TLUD
	0.0	0.238	0.058	0.364	0.105	0.052	0.069	0.064	0.072
	0.5	0.991	0.598	0.988	0.993	0.637	0.512	0.991	0.991
bu	1.0	1.000	0.764	1.000	1.000	0.907	0.836	1.000	1.000
illo	2.5	1.000	0.845	1.000	1.000	0.979	0.953	1.000	1.000
-	5.0	1.000	0.878	1.000	1.000	0.990	0.977	1.000	1.000
	7.5	1.000	0.870	1.000	1.000	0.991	0.977	1.000	1.000
	10.0	1.000	0.896	1.000	1.000	0.989	0.974	1.000	1.000
	bA	GR1	GR2	SGR1	SGR2	DSW1	DSW2	TLSW	TLUD
	0.0	0 072	0.060	0 074	0.058	0.055	0 075	0.051	0.057
Ð	0.5	0.998	0 763	0.994	0.995	0.608	0 491	0.986	0.986
si<	1.0	1.000	0.910	1.000	1.000	0.898	0.824	1.000	0.999
cur	2.5	1.000	0.965	1.000	1.000	0.974	0.944	1.000	1.000
ē	5.0	1.000	0.975	1.000	1.000	0.986	0.974	1.000	1.000
	7.5	1.000	0.971	1.000	1.000	0.988	0.976	1.000	1.000
	10.0	1.000	0.978	1.000	1.000	0.988	0.969	1.000	1.000
·									
b) s	tatic, re	obust							
b)s	tatic, ro bA	obust GR1	GR2	SGR1	SGR2	DSW1	DSW2	TLSW	TLUD
b) s	bA 0.0	GR1 0.090	GR2 0.061	SGR1 0.111	SGR2 0.096	DSW1 0.083	DSW2 0.109	TLSW 0.069	TLUD 0.081
b) s	bA 0.0 0.5	GR1 0.090 0.965	GR2 0.061 0.758	SGR1 0.111 0.992	SGR2 0.096 0.997	DSW1 0.083 0.602	DSW2 0.109 0.527	TLSW 0.069 0.986	TLUD 0.081 0.987
b) s	tatic, ro bA 0.0 0.5 1.0	GR1 0.090 0.965 1.000	GR2 0.061 0.758 0.894	SGR1 0.111 0.992 1.000	SGR2 0.096 0.997 1.000	DSW1 0.083 0.602 0.884	DSW2 0.109 0.527 0.805	TLSW 0.069 0.986 1.000	TLUD 0.081 0.987 1.000
fixed (q	tatic, ro bA 0.0 0.5 1.0 2.5	GR1 0.090 0.965 1.000 1.000	GR2 0.061 0.758 0.894 0.944	SGR1 0.111 0.992 1.000 1.000	SGR2 0.096 0.997 1.000 1.000	DSW1 0.083 0.602 0.884 0.963	DSW2 0.109 0.527 0.805 0.942	TLSW 0.069 0.986 1.000 1.000	TLUD 0.081 0.987 1.000 1.000
fixed (q	tatic, re bA 0.0 0.5 1.0 2.5 5.0	GR1 0.090 0.965 1.000 1.000 1.000	GR2 0.061 0.758 0.894 0.944 0.965	SGR1 0.111 0.992 1.000 1.000 1.000	SGR2 0.096 0.997 1.000 1.000 1.000	DSW1 0.083 0.602 0.884 0.963 0.977	DSW2 0.109 0.527 0.805 0.942 0.956	TLSW 0.069 0.986 1.000 1.000 1.000	TLUD 0.081 0.987 1.000 1.000 1.000
fixed g	tatic, ro bA 0.0 0.5 1.0 2.5 5.0 7.5	GR1 0.090 0.965 1.000 1.000 1.000 1.000	GR2 0.061 0.758 0.894 0.944 0.965 0.949	SGR1 0.111 0.992 1.000 1.000 1.000 1.000	SGR2 0.096 0.997 1.000 1.000 1.000 1.000	DSW1 0.083 0.602 0.884 0.963 0.977 0.980	DSW2 0.109 0.527 0.805 0.942 0.956 0.954	TLSW 0.069 0.986 1.000 1.000 1.000 1.000	TLUD 0.081 0.987 1.000 1.000 1.000 1.000
fixed g	tatic, ro bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0	GR1 0.090 0.965 1.000 1.000 1.000 1.000 1.000	GR2 0.061 0.758 0.894 0.944 0.965 0.949 0.968	SGR1 0.111 0.992 1.000 1.000 1.000 1.000 1.000	SGR2 0.096 0.997 1.000 1.000 1.000 1.000 1.000	DSW1 0.083 0.602 0.884 0.963 0.977 0.980 0.981	DSW2 0.109 0.527 0.805 0.942 0.956 0.954 0.968	TLSW 0.069 0.986 1.000 1.000 1.000 1.000 1.000	TLUD 0.081 0.987 1.000 1.000 1.000 1.000 1.000
fixed (q	tatic, ro bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 bA	GR1 0.090 0.965 1.000 1.000 1.000 1.000 1.000 GR1	GR2 0.061 0.758 0.894 0.944 0.965 0.949 0.968 GR2	SGR1 0.111 0.992 1.000 1.000 1.000 1.000 SGR1	SGR2 0.096 0.997 1.000 1.000 1.000 1.000 SGR2	DSW1 0.083 0.602 0.884 0.963 0.977 0.980 0.981 DSW1	DSW2 0.109 0.527 0.805 0.942 0.956 0.954 0.968 DSW2	TLSW 0.069 0.986 1.000 1.000 1.000 1.000 TLSW	TLUD 0.081 0.987 1.000 1.000 1.000 1.000 TLUD
fixed g	tatic, re bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 bA 0.0	GR1 0.090 0.965 1.000 1.000 1.000 1.000 1.000 GR1 0.261	GR2 0.061 0.758 0.894 0.944 0.965 0.949 0.968 GR2 0.054	SGR1 0.111 0.992 1.000 1.000 1.000 1.000 SGR1 0.367	SGR2 0.096 0.997 1.000 1.000 1.000 1.000 SGR2 0.129	DSW1 0.083 0.602 0.884 0.963 0.977 0.980 0.981 DSW1 0.077	DSW2 0.109 0.527 0.805 0.942 0.956 0.954 0.968 DSW2 0.103	TLSW 0.069 0.986 1.000 1.000 1.000 1.000 TLSW 0.072	TLUD 0.081 0.987 1.000 1.000 1.000 1.000 TLUD 0.088
fixed g	tatic, re bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 bA 0.0 0.5	GR1 0.090 0.965 1.000 1.000 1.000 1.000 1.000 GR1 0.261 0.975	GR2 0.061 0.758 0.894 0.944 0.965 0.949 0.968 GR2 0.054 0.583	SGR1 0.111 0.992 1.000 1.000 1.000 1.000 1.000 SGR1 0.367 0.971	SGR2 0.096 0.997 1.000 1.000 1.000 1.000 1.000 SGR2 0.129 0.976	DSW1 0.083 0.602 0.884 0.963 0.977 0.980 0.981 DSW1 0.077 0.624	DSW2 0.109 0.527 0.805 0.942 0.956 0.954 0.968 DSW2 0.103 0.555	TLSW 0.069 0.986 1.000 1.000 1.000 1.000 TLSW 0.072 0.988	TLUD 0.081 0.987 1.000 1.000 1.000 1.000 TLUD 0.088 0.989
ing fixed (tatic, re bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 bA 0.0 0.5 1.0	GR1 0.090 0.965 1.000 1.000 1.000 1.000 1.000 GR1 0.261 0.975 1.000	GR2 0.061 0.758 0.894 0.944 0.965 0.949 0.968 GR2 0.054 0.583 0.735	SGR1 0.111 0.992 1.000 1.000 1.000 1.000 1.000 SGR1 0.367 0.971 0.997	SGR2 0.096 0.997 1.000 1.000 1.000 1.000 1.000 SGR2 0.129 0.976 1.000	DSW1 0.083 0.602 0.884 0.963 0.977 0.980 0.981 DSW1 0.077 0.624 0.884	DSW2 0.109 0.527 0.805 0.942 0.956 0.954 0.968 DSW2 0.103 0.555 0.816	TLSW 0.069 0.986 1.000 1.000 1.000 1.000 TLSW 0.072 0.988 1.000	TLUD 0.081 0.987 1.000 1.000 1.000 1.000 TLUD 0.088 0.989 1.000
rolling fixed (tatic, re bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 bA 0.0 0.5 1.0 2.5	GR1 0.090 0.965 1.000 1.000 1.000 1.000 0.000 0.000 0.261 0.975 1.000 1.000	GR2 0.061 0.758 0.894 0.944 0.965 0.949 0.968 GR2 0.054 0.583 0.735 0.805	SGR1 0.111 0.992 1.000 1.000 1.000 1.000 SGR1 0.367 0.971 0.997	SGR2 0.096 0.997 1.000 1.000 1.000 1.000 SGR2 0.129 0.976 1.000 0.999	DSW1 0.083 0.602 0.884 0.963 0.977 0.980 0.981 DSW1 0.077 0.624 0.884 0.965	DSW2 0.109 0.527 0.805 0.942 0.956 0.954 0.968 DSW2 0.103 0.555 0.816 0.945	TLSW 0.069 0.986 1.000 1.000 1.000 1.000 TLSW 0.072 0.988 1.000 1.000	TLUD 0.081 0.987 1.000 1.000 1.000 1.000 TLUD 0.088 0.989 1.000 1.000
rolling fixed d	tatic, ro bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 bA 0.0 0.5 1.0 2.5 5.0	GR1 0.090 0.965 1.000 1.000 1.000 0.000 0.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000	GR2 0.061 0.758 0.894 0.965 0.949 0.968 GR2 0.054 0.583 0.735 0.805 0.841	SGR1 0.111 0.992 1.000 1.000 1.000 1.000 SGR1 0.367 0.971 0.997 0.998 0.999	SGR2 0.096 0.997 1.000 1.000 1.000 1.000 0.000 SGR2 0.129 0.976 1.000 0.999 0.999	DSW1 0.083 0.602 0.884 0.963 0.977 0.980 0.981 DSW1 0.077 0.624 0.884 0.965 0.980	DSW2 0.109 0.527 0.805 0.942 0.956 0.954 0.968 DSW2 0.103 0.555 0.816 0.945 0.962	TLSW 0.069 0.986 1.000 1.000 1.000 1.000 TLSW 0.072 0.988 1.000 1.000	TLUD 0.081 0.987 1.000 1.000 1.000 1.000 TLUD 0.088 0.989 1.000 1.000
rolling fixed (d	tatic, ro bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 bA 0.0 0.5 1.0 2.5 5.0 7.5	GR1 0.090 0.965 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000	GR2 0.061 0.758 0.894 0.944 0.965 0.949 0.968 GR2 0.054 0.583 0.735 0.805 0.841 0.832	SGR1 0.111 0.992 1.000 1.000 1.000 1.000 SGR1 0.367 0.971 0.998 0.999 1.000	SGR2 0.096 0.997 1.000 1.000 1.000 1.000 1.000 SGR2 0.129 0.976 1.000 0.999 1.000	DSW1 0.083 0.602 0.884 0.963 0.977 0.980 0.981 DSW1 0.077 0.624 0.884 0.965 0.980 0.982	DSW2 0.109 0.527 0.805 0.942 0.956 0.954 0.968 DSW2 0.103 0.555 0.816 0.945 0.962 0.958	TLSW 0.069 0.986 1.000 1.000 1.000 TLSW 0.072 0.988 1.000 1.000 1.000	TLUD 0.081 0.987 1.000 1.000 1.000 1.000 TLUD 0.088 0.989 1.000 1.000 1.000
rolling fixed a	tatic, re bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 bA 0.5 1.0 2.5 5.0 7.5 10.0 2.5 5.0 7.5 10.0	GR1 0.090 0.965 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000	GR2 0.061 0.758 0.894 0.965 0.949 0.968 GR2 0.054 0.583 0.735 0.805 0.841 0.832 0.860	SGR1 0.111 0.992 1.000 1.000 1.000 1.000 SGR1 0.367 0.971 0.998 0.999 1.000 1.000	SGR2 0.096 0.997 1.000 1.000 1.000 1.000 SGR2 0.129 0.976 1.000 0.999 1.000	DSW1 0.083 0.602 0.884 0.963 0.977 0.980 0.981 DSW1 0.077 0.624 0.965 0.980 0.982 0.982	DSW2 0.109 0.527 0.805 0.942 0.956 0.954 0.968 DSW2 0.103 0.555 0.816 0.945 0.962 0.958 0.966	TLSW 0.069 0.986 1.000 1.000 1.000 1.000 TLSW 0.072 0.988 1.000 1.000 1.000	TLUD 0.081 0.987 1.000 1.000 1.000 1.000 TLUD 0.088 0.989 1.000 1.000 1.000 1.000
rolling fixed g	tatic, re bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 bA 0.5 1.0 2.5 5.0 7.5 10.0 bA bA	GR1 0.090 0.965 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 GR1	GR2 0.061 0.758 0.894 0.965 0.949 0.968 GR2 0.054 0.583 0.735 0.805 0.841 0.832 0.860 GR2	SGR1 0.111 0.992 1.000 1.000 1.000 1.000 SGR1 0.971 0.997 0.998 0.999 1.000 SGR1	SGR2 0.096 0.997 1.000 1.000 1.000 1.000 SGR2 0.129 0.976 1.000 0.999 1.000 1.000 SGR2	DSW1 0.083 0.602 0.884 0.963 0.977 0.980 0.981 DSW1 0.077 0.624 0.884 0.965 0.980 0.982 0.982 DSW1	DSW2 0.109 0.527 0.805 0.954 0.954 0.968 DSW2 0.103 0.555 0.816 0.945 0.962 0.958 0.962 0.956 DSW2	TLSW 0.069 0.986 1.000 1.000 1.000 1.000 TLSW 0.072 0.988 1.000 1.000 1.000 1.000 1.000 TLSW	TLUD 0.081 0.987 1.000 1.000 1.000 1.000 TLUD 0.088 0.989 1.000 1.000 1.000 1.000 TLUD
rolling fixed a	tatic, re bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 bA 0.5 1.0 2.5 5.0 7.5 1.0 2.5 5.0 7.5 10.0 bA 0.0 bA 0.0	GR1 0.990 0.965 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 0.085	GR2 0.061 0.758 0.894 0.965 0.949 0.968 GR2 0.054 0.583 0.735 0.805 0.805 0.805 0.841 0.832 0.860 GR2 0.660	SGR1 0.111 0.992 1.000 1.000 1.000 1.000 SGR1 0.997 0.998 0.999 1.000 1.000 SGR1 0.699	SGR2 0.096 0.997 1.000 1.000 1.000 1.000 SGR2 0.129 0.976 1.000 0.999 1.000 1.000 SGR2 0.064	DSW1 0.083 0.602 0.884 0.963 0.977 0.980 0.981 DSW1 0.077 0.624 0.985 0.980 0.982 0.982 DSW1 0.079	DSW2 0.109 0.527 0.805 0.954 0.954 0.968 DSW2 0.103 0.555 0.816 0.945 0.962 0.956 0.966 DSW2 0.115	TLSW 0.069 0.986 1.000 1.000 1.000 1.000 TLSW 0.072 0.988 1.000 1.000 1.000 1.000 TLSW 0.061	TLUD 0.081 0.987 1.000 1.000 1.000 1.000 TLUD 0.088 0.989 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000
e rolling fixed a	tatic, re bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 bA 0.5 1.0 2.5 5.0 0.5 1.0 0.5 1.0 2.5 5.0 0.5 1.0 0.5 1.0 0.5 5.0 0.5 1.0 0.5 1.0 0.5 5.0 0.5 1.0 0.5 5.0 0.5 1.0 0.5 1.0 0.5 5.0 0.5 1.0 0.5 1.0 0.5 5.0 0.5 1.0 0.5 5.0 0.5 1.0 0.5 5.0 0.5 1.0 0.5 5.0 7.5 1.0 0.5 5.5 5	GR1 0.990 0.965 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 0.000 GR1 0.0855 0.994	GR2 0.061 0.758 0.894 0.965 0.949 0.968 GR2 0.054 0.583 0.735 0.805 0.841 0.832 0.860 GR2 0.860 GR2 0.060 0.752	SGR1 0.111 0.992 1.000 1.000 1.000 1.000 SGR1 0.997 0.998 0.999 1.000 1.000 SGR1 0.669 0.980	SGR2 0.096 0.997 1.000 1.000 1.000 1.000 SGR2 0.129 0.976 1.000 0.999 0.999 1.000 1.000 SGR2 0.064 0.989	DSW1 0.083 0.602 0.884 0.963 0.980 0.980 0.980 0.981 0.077 0.624 0.884 0.965 0.980 0.982 0.982 0.982 DSW1	DSW2 0.109 0.527 0.805 0.942 0.954 0.968 DSW2 0.103 0.555 0.816 0.945 0.962 0.962 0.962 0.962 0.962 0.962 0.962 0.962 0.962	TLSW 0.069 0.986 1.000 1.000 1.000 1.000 TLSW 0.072 0.988 1.000 1.000 1.000 1.000 1.000 TLSW 0.061 0.986	TLUD 0.081 0.987 1.000 1.000 1.000 1.000 TLUD 0.088 0.989 1.000 1.000 1.000 1.000 1.000 1.000 TLUD 0.071 0.985
rsive rolling fixed a	tatic, re bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 bA 0.5 1.0 2.5 5.0 7.5 10.0 2.5 5.0 7.5 10.0 bA 0.5 1.0 0.5 1.0	GR1 0.990 0.965 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 GR1 0.085 0.994 1.000	GR2 0.061 0.758 0.894 0.965 0.949 0.968 GR2 0.054 0.583 0.735 0.805 0.805 0.841 0.832 0.860 GR2 0.860 GR2 0.860 0.752 0.889	SGR1 0.111 0.992 1.000 1.000 1.000 1.000 SGR1 0.997 0.998 0.999 1.000 1.000 SGR1 0.689 0.980 1.000	SGR2 0.096 0.997 1.000 1.000 1.000 1.000 SGR2 0.129 0.976 1.000 0.999 0.999 1.000 1.000 SGR2 0.064 0.989 1.000	DSW1 0.083 0.602 0.884 0.963 0.980 0.980 0.980 0.980 0.981 0.077 0.624 0.884 0.965 0.980 0.982 0.982 DSW1 0.079 0.614 0.880	DSW2 0.109 0.527 0.805 0.942 0.956 0.958 0.968 0.555 0.816 0.945 0.962 0.962 0.962 0.962 0.962 0.962 0.962 0.962 0.962 0.962 0.968 0.966 0.964	TLSW 0.069 0.986 1.000 1.000 1.000 TLSW 0.072 0.988 1.000 1.000 1.000 1.000 1.000 TLSW 0.061 0.986 0.999	TLUD 0.081 0.987 1.000 1.000 1.000 1.000 TLUD 0.088 0.989 1.000 1.000 1.000 1.000 1.000 1.000 TLUD 0.071 0.985 0.999
cursive rolling fixed a	tatic, re bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 bA 0.5 1.0 2.5 5.0 7.5 10.0 2.5 5.0 7.5 10.0 0.5 1.0 0.5 1.0 0.5 1.0 0.5 1.0 2.5 5.0 7.5 10.0 0.5 1.0 0 0.5 1.0 0 0.5 1.0 0 0.5 1.0 0 0.5 1.0 0 0.5 1.0 0 0.5 1.0 0 0.5 1.0 0 0.5 1.0 0 0.5 1.0 0 1.0 0 0.5 1.0 0 0 0 0.5 1.0 0 0 0.5 1.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	GR1 0.990 0.965 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 0.985 0.994 1.000 1.000	GR2 0.061 0.758 0.894 0.944 0.965 0.949 0.968 GR2 0.054 0.583 0.735 0.805 0.841 0.832 0.860 GR2 0.860 GR2 0.860 0.752 0.889 0.945	SGR1 0.111 0.992 1.000 1.000 1.000 SGR1 0.367 0.971 0.997 0.998 0.999 1.000 1.000 SGR1 0.699 0.980 0.980 1.000	SGR2 0.096 0.997 1.000 1.000 1.000 1.000 0.000 SGR2 0.129 0.976 1.000 0.999 0.999 1.000 1.000 SGR2 0.064 0.989 1.000	DSW1 0.083 0.602 0.884 0.963 0.980 0.980 0.980 0.980 0.982 0.982 0.982 0.982 DSW1 0.079 0.614 0.884 0.965	DSW2 0.109 0.527 0.805 0.942 0.956 0.954 0.964 0.555 0.816 0.945 0.962 0.958 0.962 0.958 0.966 DSW2 0.115 0.529 0.804 0.942	TLSW 0.069 0.986 1.000 1.000 1.000 1.000 TLSW 0.072 0.988 1.000 1.000 1.000 1.000 TLSW 0.061 0.986 0.999 1.000	TLUD 0.081 0.987 1.000 1.000 1.000 1.000 TLUD 0.088 0.989 1.000 1.000 1.000 1.000 1.000 1.000 TLUD 0.071 0.985 0.999 1.000
recursive rolling fixed a	tatic, re bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 bA 0.5 1.0 2.5 5.0 7.5 10.0 2.5 5.0 7.5 10.0 bA 0.5 1.0 2.5 5.0 7.5 10.0 2.5 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5	obust GR1 0.090 0.965 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 0.261 0.975 1.000 1.000 1.000 1.000 1.000 0.994 1.000 1.000 1.000	GR2 0.061 0.758 0.894 0.945 0.949 0.965 0.949 0.968 GR2 0.054 0.583 0.735 0.805 0.841 0.832 0.860 GR2 0.860 GR2 0.660 0.752 0.889 0.945 0.965	SGR1 0.111 0.992 1.000 1.000 1.000 1.000 SGR1 0.997 0.998 0.999 1.000 1.000 SGR1 0.969 0.980 1.000 1.000	SGR2 0.096 0.997 1.000 1.000 1.000 1.000 SGR2 0.129 0.976 1.000 0.999 0.999 1.000 1.000 SGR2 0.064 0.989 1.000 1.000	DSW1 0.083 0.602 0.884 0.963 0.977 0.980 0.981 DSW1 0.077 0.624 0.884 0.965 0.980 0.982 0.982 DSW1 0.079 0.614 0.880 0.965 0.980	DSW2 0.109 0.527 0.805 0.942 0.956 0.954 0.964 0.965 0.816 0.945 0.962 0.962 0.968 0.966 DSW2 0.115 0.528 0.966 DSW2 0.115 0.529 0.804 0.942 0.959	TLSW 0.069 0.986 1.000 1.000 1.000 1.000 TLSW 0.072 0.988 1.000 1.000 1.000 TLSW 0.061 0.986 0.999 1.000	TLUD 0.081 0.987 1.000 1.000 1.000 1.000 TLUD 0.088 0.989 1.000 1.000 1.000 1.000 1.000 TLUD 0.071 0.985 0.999 1.000
recursive rolling fixed a	tatic, re bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 bA 0.5 1.0 2.5 5.0 7.5 10.0 bA 0.5 1.0 2.5 5.0 7.5 10.0 bA 0.5 5.0 7.5 10.0 5.0 7.5 10.0 2.5 5.0 7.5 10.0 5.0 7.5 5.0 7.5 10.0 5.0 7.5 1.0 5.0 7.5 1.0 5.0 7.5 1.0 5.0 7.5 1.0 5.0 7.5 1.0 5.0 7.5 1.0 5.0 7.5 5.0 7.5 5.0 7.5 1.0 5.0 7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5	GR1 0.990 0.965 1.000	GR2 0.061 0.758 0.894 0.945 0.949 0.965 0.949 0.965 0.735 0.805 0.841 0.832 0.805 0.841 0.832 0.860 GR2 0.860 0.752 0.869 0.945 0.965 0.946	SGR1 0.111 0.992 1.000 1.000 1.000 1.000 SGR1 0.997 0.998 0.999 1.000 1.000 SGR1 0.069 0.980 1.000 1.000 1.000	SGR2 0.096 0.997 1.000 1.000 1.000 1.000 SGR2 0.129 0.976 1.000 0.999 1.000 1.000 SGR2 0.064 0.989 1.000 1.000 1.000	DSW1 0.083 0.602 0.884 0.963 0.977 0.980 0.981 DSW1 0.077 0.624 0.884 0.965 0.980 0.982 0.982 DSW1 0.079 0.614 0.880 0.965 0.980 0.9614	DSW2 0.109 0.527 0.805 0.942 0.956 0.964 0.968 DSW2 0.103 0.555 0.816 0.945 0.962 0.958 0.966 DSW2 0.115 0.599 0.804 0.942 0.959 0.956	TLSW 0.069 0.986 1.000 1.000 1.000 1.000 TLSW 0.072 0.988 1.000 1.000 1.000 TLSW 0.061 0.999 1.000 1.000 1.000	TLUD 0.081 0.987 1.000 1.000 1.000 1.000 TLUD 0.088 0.989 1.000 1.000 1.000 1.000 1.000 TLUD 0.071 0.985 0.999 1.000 1.000 1.000

c) a	lynamio	c, non-r	obust						
	bA	GR1	GR2	SGR1	SGR2	DSW1	DSW2	TLSW	TLUD
	0.0	0.128	0.059	0.177	0.117	0.074	0.090	0.093	0.114
	0.5	0.987	0.813	0.999	0.999	0.623	0.495	0.992	0.992
ed	1.0	1.000	0.943	0.999	0.999	0.900	0.824	1.000	1.000
fix	2.5	1.000	0.971	1.000	1.000	0.972	0.954	1.000	1.000
	5.0	1.000	0.988	1.000	1.000	0.989	0.975	1.000	1.000
	7.5	1.000	0.976	1.000	1.000	0.993	0.976	1.000	1.000
	10.0	1.000	0.976	1.000	1.000	0.986	0.973	1.000	1.000
	bA	GR1	GR2	SGR1	SGR2	DSW1	DSW2	TLSW	TLUD
	0.0	0.511	0.047	0.734	0.240	0.064	0.080	0.082	0.096
_	0.5	0.999	0.666	0.997	0.996	0.634	0.534	0.994	0.997
ling	1.0	1.000	0.811	0.999	0.999	0.905	0.842	1.000	1.000
2	2.5	1.000	0.887	1.000	1.000	0.968	0.943	1.000	1.000
	5.0	1.000	0.914	0.999	1.000	0.976	0.964	1.000	1.000
	7.5	1.000	0.904	1.000	1.000	0.974	0.962	1.000	1.000
	10.0	1.000	0.923	1.000	1.000	0.967	0.951	1.000	1.000
	bA	GR1	GR2	SGR1	SGR2	DSW1	DSW2	TLSW	TLUD
	0.0	0.102	0.056	0.090	0.073	0.068	0.087	0.055	0.063
<e></e>	0.5	0.998	0.820	0.996	0.999	0.596	0.492	0.988	0.986
Irsi	1.0	1.000	0.942	0.999	0.999	0.896	0.833	0.999	0.999
eci	2.5	1.000	0.970	1.000	1.000	0.967	0.943	1.000	1.000
-	5.0	1.000	0.986	1.000	1.000	0.983	0.972	1.000	1.000
	7.5	1.000	0.975	1.000	1.000	0.981	0.973	1.000	1.000
	10.0	1.000	0.974	1.000	1.000	0.982	0.968	1.000	1.000
d) d									
u 1 u	ivnami	c. robus	st						
u) t	bA	GR1	st GR2	SGR1	SGR2	DSW1	DSW2	TLSW	TLUD
	bA 0.0	GR1 0.129	st GR2 0.049	SGR1 0.138	SGR2 0.096	DSW1 0.085	DSW2 0.119	TLSW 0.088	TLUD 0.111
	bA 0.0 0.5	c, robus GR1 0.129 0.987	st GR2 0.049 0.762	SGR1 0.138 0.998	SGR2 0.096 0.999	DSW1 0.085 0.581	DSW2 0.119 0.492	TLSW 0.088 0.989	TLUD 0.111 0.991
ey c	bA 0.0 0.5 1.0	GR1 0.129 0.987 1.000	GR2 0.049 0.762 0.905	SGR1 0.138 0.998 1.000	SGR2 0.096 0.999 1.000	DSW1 0.085 0.581 0.871	DSW2 0.119 0.492 0.785	TLSW 0.088 0.989 1.000	TLUD 0.111 0.991 1.000
fixed	bA 0.0 0.5 1.0 2.5	GR1 0.129 0.987 1.000 1.000	GR2 0.049 0.762 0.905 0.954	SGR1 0.138 0.998 1.000 1.000	SGR2 0.096 0.999 1.000 1.000	DSW1 0.085 0.581 0.871 0.955	DSW2 0.119 0.492 0.785 0.926	TLSW 0.088 0.989 1.000 1.000	TLUD 0.111 0.991 1.000 1.000
fixed	bA 0.0 0.5 1.0 2.5 5.0	GR1 0.129 0.987 1.000 1.000 1.000	t GR2 0.049 0.762 0.905 0.954 0.967	SGR1 0.138 0.998 1.000 1.000 1.000	SGR2 0.096 0.999 1.000 1.000 1.000	DSW1 0.085 0.581 0.871 0.955 0.982	DSW2 0.119 0.492 0.785 0.926 0.948	TLSW 0.088 0.989 1.000 1.000 1.000	TLUD 0.111 0.991 1.000 1.000 1.000
fixed	bA 0.0 0.5 1.0 2.5 5.0 7.5	GR1 0.129 0.987 1.000 1.000 1.000 1.000	t GR2 0.049 0.762 0.905 0.954 0.967 0.976	SGR1 0.138 0.998 1.000 1.000 1.000 1.000	SGR2 0.096 0.999 1.000 1.000 1.000 1.000	DSW1 0.085 0.581 0.871 0.955 0.982 0.968	DSW2 0.119 0.492 0.785 0.926 0.948 0.945	TLSW 0.088 0.989 1.000 1.000 1.000 1.000	TLUD 0.111 0.991 1.000 1.000 1.000 1.000
fixed	bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0	GR1 0.129 0.987 1.000 1.000 1.000 1.000 1.000	GR2 0.049 0.762 0.905 0.954 0.967 0.976 0.978	SGR1 0.138 0.998 1.000 1.000 1.000 1.000 1.000	SGR2 0.096 0.999 1.000 1.000 1.000 1.000 1.000	DSW1 0.085 0.581 0.871 0.955 0.982 0.968 0.974	DSW2 0.119 0.492 0.785 0.926 0.948 0.945 0.958	TLSW 0.088 0.989 1.000 1.000 1.000 1.000 1.000	TLUD 0.111 1.000 1.000 1.000 1.000 1.000
fixed	bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 bA	GR1 0.129 0.987 1.000 1.000 1.000 1.000 0.000 GR1	t GR2 0.049 0.762 0.905 0.954 0.967 0.976 0.978 GR2	SGR1 0.138 0.998 1.000 1.000 1.000 1.000 SGR1	SGR2 0.096 0.999 1.000 1.000 1.000 1.000 SGR2	DSW1 0.085 0.581 0.871 0.955 0.982 0.968 0.974 DSW1	DSW2 0.119 0.492 0.785 0.926 0.948 0.945 0.945 0.958 DSW2	TLSW 0.088 0.989 1.000 1.000 1.000 1.000 1.000 TLSW	TLUD 0.111 0.991 1.000 1.000 1.000 1.000 TLUD
lixed	bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 bA 0.0	GR1 0.129 0.987 1.000 1.000 1.000 1.000 1.000 GR1 0.528	t GR2 0.049 0.762 0.905 0.954 0.967 0.976 0.978 GR2 0.052	SGR1 0.138 0.998 1.000 1.000 1.000 1.000 SGR1 0.754	SGR2 0.096 0.999 1.000 1.000 1.000 1.000 SGR2 0.229	DSW1 0.085 0.581 0.955 0.982 0.968 0.974 DSW1 0.075	DSW2 0.119 0.492 0.785 0.926 0.948 0.945 0.958 DSW2 0.108	TLSW 0.088 0.989 1.000 1.000 1.000 1.000 TLSW 0.089	TLUD 0.111 0.991 1.000 1.000 1.000 1.000 TLUD 0.109
fixed	bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 bA 0.0 0.5	GR1 0.129 0.987 1.000 1.000 1.000 1.000 1.000 GR1 0.528 0.998	t GR2 0.049 0.762 0.905 0.954 0.967 0.976 0.978 GR2 0.052 0.630	SGR1 0.138 0.998 1.000 1.000 1.000 1.000 SGR1 0.754 0.992	SGR2 0.096 0.999 1.000 1.000 1.000 1.000 SGR2 0.229 0.990	DSW1 0.085 0.581 0.955 0.982 0.968 0.974 DSW1 0.075 0.604	DSW2 0.119 0.492 0.785 0.926 0.948 0.945 0.958 DSW2 0.108 0.528	TLSW 0.088 0.989 1.000 1.000 1.000 1.000 TLSW 0.089 0.991	TLUD 0.111 0.991 1.000 1.000 1.000 1.000 TLUD 0.109 0.993
ing fixed	bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 bA 0.0 0.5 1.0	GR1 0.129 0.987 1.000 1.000 1.000 1.000 GR1 0.528 0.998 1.000	t GR2 0.049 0.762 0.905 0.954 0.976 0.976 0.977 GR2 0.052 0.630 0.776	SGR1 0.138 0.998 1.000 1.000 1.000 1.000 SGR1 0.754 0.992 0.998	SGR2 0.096 0.999 1.000 1.000 1.000 1.000 SGR2 0.229 0.990 0.998	DSW1 0.085 0.581 0.955 0.982 0.968 0.974 DSW1 0.075 0.604 0.855	DSW2 0.119 0.492 0.785 0.926 0.948 0.945 0.958 DSW2 0.108 0.528 0.794	TLSW 0.088 0.989 1.000 1.000 1.000 1.000 TLSW 0.089 0.991 0.999	TLUD 0.111 0.991 1.000 1.000 1.000 1.000 TLUD 0.109 0.993 0.999
rolling fixed	bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 bA 0.0 0.5 1.0 2.5	C, FOBUS GR1 0.129 0.987 1.000 1.000 1.000 1.000 1.000 GR1 0.528 0.998 1.000 1.000	t GR2 0.049 0.762 0.905 0.954 0.967 0.976 0.976 0.978 GR2 0.052 0.630 0.776 0.839	SGR1 0.138 0.998 1.000 1.000 1.000 1.000 1.000 SGR1 0.754 0.992 0.998 1.000	SGR2 0.096 0.999 1.000 1.000 1.000 1.000 1.000 SGR2 0.229 0.990 0.998 1.000	DSW1 0.085 0.581 0.955 0.982 0.968 0.974 DSW1 0.075 0.604 0.855 0.941	DSW2 0.119 0.492 0.785 0.926 0.948 0.945 0.958 DSW2 0.108 0.528 0.794 0.908	TLSW 0.088 0.989 1.000 1.000 1.000 1.000 TLSW 0.089 0.991 0.999 1.000	TLUD 0.111 0.991 1.000 1.000 1.000 1.000 TLUD 0.109 0.993 0.999 1.000
rolling fixed	bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 bA 0.0 0.5 1.0 2.5 5.0	C, FOBUS GR1 0.129 0.987 1.000 1.000 1.000 1.000 1.000 GR1 0.528 0.998 1.000 1.000 1.000	t GR2 0.049 0.762 0.905 0.954 0.967 0.976 0.976 0.978 GR2 0.052 0.630 0.776 0.839 0.871	SGR1 0.138 0.998 1.000 1.000 1.000 1.000 1.000 SGR1 0.754 0.992 0.998 1.000 1.000	SGR2 0.096 0.999 1.000 1.000 1.000 1.000 1.000 SGR2 0.229 0.990 0.998 1.000 1.000	DSW1 0.085 0.581 0.955 0.982 0.968 0.974 DSW1 0.075 0.604 0.855 0.941 0.948	DSW2 0.119 0.492 0.785 0.926 0.948 0.945 0.958 DSW2 0.108 0.528 0.794 0.908 0.920	TLSW 0.088 0.989 1.000 1.000 1.000 1.000 TLSW 0.089 0.991 0.999 1.000 1.000	TLUD 0.111 0.991 1.000 1.000 1.000 1.000 TLUD 0.109 0.993 0.999 1.000 1.000
rolling fixed	bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 bA 0.0 0.5 1.0 2.5 5.0 7.5	GR1 0.129 0.987 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000	t GR2 0.049 0.762 0.905 0.954 0.976 0.976 0.976 0.976 0.630 0.630 0.776 0.839 0.871 0.886	SGR1 0.138 0.998 1.000 1.000 1.000 1.000 SGR1 0.754 0.992 1.000 1.000 1.000	SGR2 0.096 0.999 1.000 1.000 1.000 1.000 1.000 SGR2 0.229 0.990 0.998 1.000 1.000	DSW1 0.085 0.581 0.955 0.968 0.974 DSW1 0.075 0.604 0.855 0.941 0.948 0.937	DSW2 0.119 0.492 0.785 0.926 0.948 0.945 0.945 0.958 0.528 0.794 0.908 0.920 0.921	TLSW 0.088 0.989 1.000 1.000 1.000 1.000 TLSW 0.089 0.991 1.000 1.000 1.000	TLUD 0.111 0.991 1.000 1.000 1.000 1.000 TLUD 0.109 0.993 0.999 1.000 1.000 1.000
rolling fixed	bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 bA 0.5 1.0 2.5 5.0 7.5 10.0	GR1 0.129 0.987 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000	t GR2 0.049 0.762 0.905 0.954 0.976 0.976 0.976 0.976 0.630 0.776 0.839 0.871 0.886 0.898	SGR1 0.138 0.998 1.000 1.000 1.000 1.000 SGR1 0.754 0.998 1.000 1.000 1.000 1.000	SGR2 0.096 0.999 1.000 1.000 1.000 1.000 1.000 SGR2 0.229 0.990 0.998 1.000 1.000 1.000	DSW1 0.085 0.581 0.955 0.968 0.974 DSW1 0.075 0.604 0.855 0.941 0.948 0.937 0.930	DSW2 0.119 0.492 0.785 0.926 0.948 0.945 0.945 0.958 0.528 0.794 0.908 0.920 0.917 0.916	TLSW 0.088 0.989 1.000 1.000 1.000 1.000 TLSW 0.089 0.991 1.000 1.000 1.000 1.000	TLUD 0.111 0.991 1.000 1.000 1.000 1.000 TLUD 0.109 0.993 1.000 1.000 1.000
rolling fixed	bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 bA 0.5 1.0 2.5 5.0 7.5 10.0 bA	GR1 0.129 0.987 1.000	t GR2 0.049 0.762 0.905 0.954 0.967 0.976 0.978 GR2 0.052 0.630 0.776 0.839 0.871 0.886 0.898 0.898	SGR1 0.138 0.998 1.000 1.000 1.000 1.000 SGR1 0.754 0.992 0.998 1.000 1.000 1.000 SGR1	SGR2 0.096 0.999 1.000 1.000 1.000 1.000 SGR2 0.229 0.990 0.998 1.000 1.000 1.000 1.000 SGR2	DSW1 0.085 0.581 0.955 0.982 0.968 0.974 DSW1 0.075 0.604 0.855 0.941 0.948 0.937 0.930 DSW1	DSW2 0.119 0.492 0.785 0.926 0.948 0.945 0.958 DSW2 0.108 0.528 0.794 0.908 0.920 0.917 0.916 DSW2	TLSW 0.088 0.989 1.000 1.000 1.000 1.000 TLSW 0.089 0.991 0.999 1.000 1.000 1.000 TLSW	TLUD 0.111 0.991 1.000 1.000 1.000 1.000 TLUD 0.109 0.993 0.993 1.000 1.000 1.000 1.000 TLUD
fixed fixed	bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 bA 0.5 1.0 0.5 1.0 0.5 1.0 0.5 1.0 0.5 1.0 0.5 1.0 0.5 1.0 0.0 bA 0.0 0.5 1.0 0.0 bA 0.0 0.0 5 1.0 2.5 5.0 7.5 1.0 2.5 5.0 7.5 1.0 0.0 5 1.0 2.5 5.0 7.5 1.0 0.0 5 1.0 2.5 5.0 7.5 1.0 0 5 1.0 2.5 5.0 7.5 1.0 0 2.5 5.0 7.5 1.0 0 2.5 5.0 7.5 1.0 0 2.5 5.0 7.5 1.0 0 2.5 5.0 7.5 1.0 0 2.5 5.0 7.5 1.0 0 2.5 5 5.0 7.5 1.0 0 2.5 5 5.0 7.5 1.0 0 2.5 5 0.0 7.5 1.0 0 2.5 5 0.0 7.5 1.0 0 2.5 5 0.0 7.5 1.0 0 2.5 5 0.0 7.5 1.0 0 2.5 5 0.0 7.5 1.0 0 2.5 5 1.0 0 2.5 5 1.0 0 2.5 5 1.0 0 2.5 1.0 0 2.5 5 1.0 0 2.5 5 1.0 0 2.5 5 1.0 0 2.5 5 1.0 2.5 5 1.0 2.5 5 2.5 0 2.5 5 2.5 0 2.5 5 2.5 1.0 2.5 5 1.0 2.5 5 2.5 0 2.5 5 2.5 1.0 2.5 5 2.5 2.5 2.5 2.5 2.5 2.5 2.5 2.5 2	GR1 0.129 0.987 1.000 0.103	t GR2 0.049 0.762 0.905 0.954 0.967 0.976 0.976 0.978 GR2 0.630 0.776 0.630 0.776 0.8371 0.886 0.898 GR2 0.047	SGR1 0.138 0.998 1.000 1.000 1.000 1.000 1.000 SGR1 0.754 0.992 0.998 1.000 1.000 1.000 1.000 SGR1 0.063	SGR2 0.096 0.999 1.000 1.000 1.000 1.000 SGR2 0.229 0.990 0.998 1.000 1.000 1.000 SGR2 0.209 0.998	DSW1 0.085 0.581 0.955 0.982 0.968 0.974 DSW1 0.075 0.604 0.855 0.941 0.948 0.930 DSW1 0.085	DSW2 0.119 0.492 0.785 0.926 0.948 0.945 0.958 DSW2 0.108 0.528 0.794 0.908 0.920 0.917 0.916 DSW2 0.119	TLSW 0.088 0.989 1.000 1.000 1.000 1.000 TLSW 0.099 1.000 1.000 1.000 1.000 TLSW 0.066	TLUD 0.111 0.991 1.000 1.000 1.000 1.000 TLUD 0.109 0.993 0.999 1.000 1.000 1.000 1.000 TLUD 0.080
ve rolling fixed	bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 bA 0.5 1.0 0.5 1.0 0.5 1.0 0.5 1.0 0.5 1.0 0.5 1.0 0.5 1.0 0.5 1.0 0.5 1.0 0.5 1.0 0.5 5.0 7.5 5.0 7.5 1.0 0.5 5.0 7.5 5.0 7.5 1.0 0.5 5.0 7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5	GR1 0.129 0.987 1.000 1.000 1.000 1.000 1.000 1.000 0.987 0.987 1.000 1.000 0.001 0.002 GR1 0.528 0.998 1.000 1.000 1.000 1.000 0.103 0.999	t GR2 0.049 0.762 0.905 0.954 0.967 0.976 0.976 0.978 GR2 0.052 0.630 0.776 0.839 0.871 0.886 0.898 GR2 0.047 0.763	SGR1 0.138 0.998 1.000 1.000 1.000 1.000 SGR1 0.754 0.992 0.998 1.000 1.000 1.000 1.000 SGR1 0.063 0.993	SGR2 0.096 0.999 1.000 1.000 1.000 1.000 SGR2 0.229 0.990 0.998 1.000 1.000 1.000 1.000 SGR2 0.299 0.998	DSW1 0.085 0.581 0.955 0.982 0.968 0.974 DSW1 0.075 0.604 0.855 0.941 0.948 0.930 DSW1 0.085 0.930	DSW2 0.119 0.492 0.785 0.926 0.948 0.945 0.958 DSW2 0.108 0.528 0.794 0.908 0.920 0.917 0.916 DSW2 0.119 0.501	TLSW 0.088 0.989 1.000 1.000 1.000 1.000 TLSW 0.099 1.000 1.000 1.000 1.000 TLSW 0.066 0.986	TLUD 0.111 0.991 1.000 1.000 1.000 1.000 TLUD 0.109 0.993 0.999 1.000 1.000 1.000 1.000 TLUD 0.080 0.986
Irsive rolling fixed	bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 bA 0.5 1.0 2.5 5.0 7.5 10.0 bA 0.5 1.0 0.5 1.0 0.5 1.0 0.5 1.0 0.5 1.0 2.5 5.0 7.5 1.0 0.5 1.0 2.5 5.0 7.5 1.0 0.5 1.0 2.5 5.0 7.5 1.0 0.5 1.0 0.5 5.0 7.5 1.0 0.0 1.5 1.0 0.0 1.0 0.5 1.0 0.0 1.0 0.0 1.0 0.0 1.0 0.0 0.5 1.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	GR1 0.129 0.987 1.000	t GR2 0.049 0.762 0.905 0.954 0.976 0.976 0.978 GR2 0.052 0.630 0.776 0.839 0.871 0.886 0.898 GR2 0.047 0.763 0.906	SGR1 0.138 0.998 1.000 1.000 1.000 1.000 SGR1 0.754 0.992 0.998 1.000 1.000 1.000 1.000 SGR1 0.663 0.993 1.000	SGR2 0.096 0.999 1.000 1.000 1.000 1.000 SGR2 0.229 0.990 0.998 1.000 1.000 1.000 1.000 SGR2 0.049 0.997 1.000	DSW1 0.085 0.581 0.955 0.982 0.968 0.974 DSW1 0.075 0.604 0.855 0.941 0.948 0.937 0.930 DSW1 0.085 0.571 0.861	DSW2 0.119 0.492 0.785 0.926 0.948 0.945 0.958 DSW2 0.108 0.528 0.794 0.908 0.907 0.916 DSW2 0.119 0.501 0.796	TLSW 0.088 0.989 1.000 1.000 1.000 1.000 TLSW 0.099 1.000 1.000 1.000 TLSW 0.066 0.986 0.999	TLUD 0.111 0.991 1.000 1.000 1.000 TLUD 0.109 0.993 0.999 1.000 1.000 1.000 1.000 TLUD 0.080 0.986 0.999
ecursive rolling fixed	bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 bA 0.0 0.5 1.0 0.5 1.0 2.5	GR1 0.129 0.987 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 GR1 0.103 0.999 1.000 1.000	t GR2 0.049 0.762 0.905 0.954 0.976 0.976 0.9776 0.978 GR2 0.052 0.630 0.776 0.839 0.871 0.886 0.898 GR2 0.047 0.763 0.906 0.906	SGR1 0.138 0.998 1.000 1.000 1.000 1.000 SGR1 0.754 0.992 0.998 1.000 1.000 1.000 1.000 SGR1 0.653 0.993 1.000 1.000	SGR2 0.096 0.999 1.000 1.000 1.000 1.000 0.990 0.998 1.000 1.000 1.000 1.000 SGR2 0.229 0.990 0.998 1.000 1.000 1.000 1.000	DSW1 0.085 0.581 0.955 0.982 0.968 0.974 DSW1 0.075 0.604 0.855 0.941 0.948 0.937 0.930 DSW1 0.085 0.571 0.861 0.952	DSW2 0.119 0.492 0.785 0.926 0.948 0.945 0.958 DSW2 0.108 0.528 0.794 0.908 0.920 0.917 0.916 DSW2 0.119 0.501 0.501 0.796 0.923	TLSW 0.088 0.989 1.000 1.000 1.000 TLSW 0.089 0.991 0.999 1.000 1.000 TLSW 0.066 0.986 0.989 1.000	TLUD 0.111 0.991 1.000 1.000 1.000 TLUD 0.109 0.993 0.999 1.000 1.000 1.000 1.000 TLUD 0.080 0.986 0.999 1.000
recursive rolling fixed	bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 bA 0.0 7.5 10.0 2.5 5.0 7.5 10.0 0.5 1.0 0.5 1.0 2.5 5.0 7.5 10.0 5.0 7.5 10.0 5.0 7.5 5.0 5.0 7.5 5.0 5.0 7.5 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5	C, FOBUS GR1 0.129 0.987 1.000	t GR2 0.049 0.762 0.905 0.954 0.976 0.976 0.976 0.978 GR2 0.052 0.630 0.776 0.839 0.871 0.886 0.886 0.886 0.886 0.886 0.892 0.047 0.763 0.906 0.900 0.900 0.970	SGR1 0.138 0.998 1.000 1.000 1.000 1.000 SGR1 0.754 0.992 0.998 1.000 1.000 1.000 SGR1 0.063 0.993 1.000 1.000 1.000 1.000	SGR2 0.996 0.999 1.000 1.000 1.000 1.000 SGR2 0.229 0.990 0.998 1.000 1.000 1.000 SGR2 0.049 0.997 1.000 1.000 1.000	DSW1 0.085 0.581 0.955 0.982 0.968 0.974 DSW1 0.075 0.604 0.855 0.941 0.948 0.937 0.930 DSW1 0.085 0.571 0.861 0.952 0.964	DSW2 0.119 0.492 0.785 0.926 0.948 0.945 0.945 0.528 0.794 0.528 0.794 0.908 0.920 0.917 0.916 DSW2 0.119 0.501 0.796 0.923 0.923 0.952	TLSW 0.088 0.989 1.000 1.000 1.000 1.000 TLSW 0.089 0.991 0.999 1.000 1.000 1.000 TLSW 0.066 0.986 0.999 1.000 1.000	TLUD 0.111 0.991 1.000 1.000 1.000 TLUD 0.109 0.993 0.999 1.000 1.000 1.000 TLUD 0.080 0.986 0.999 1.000 1.000
recursive rolling fixed	bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 bA 0.0 7.5 10.0 2.5 5.0 7.5 10.0 bA 0.5 1.0 2.5 5.0 7.5 10.0 2.5 5.0 7.5 1.0 7.5 1.0 7.5 1.0 7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5	GR1 0.129 0.987 1.000	t GR2 0.049 0.762 0.905 0.954 0.976 0.976 0.978 GR2 0.630 0.776 0.839 0.871 0.886 0.898 GR2 0.847 0.886 0.898 GR2 0.047 0.763 0.906 0.960 0.970 0.975	SGR1 0.138 0.998 1.000 1.000 1.000 1.000 1.000 SGR1 0.992 0.998 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000	SGR2 0.996 0.999 1.000 1.000 1.000 1.000 SGR2 0.229 0.990 0.998 1.000 1.000 1.000 1.000 SGR2 0.049 0.997 1.000 1.000 1.000	DSW1 0.085 0.581 0.955 0.982 0.968 0.974 DSW1 0.075 0.604 0.855 0.941 0.948 0.937 0.930 DSW1 0.085 0.571 0.861 0.952 0.964 0.949	DSW2 0.119 0.492 0.785 0.926 0.945 0.945 0.945 0.528 0.794 0.528 0.794 0.908 0.920 0.917 0.916 DSW2 0.119 0.501 0.796 0.923 0.922 0.942	TLSW 0.088 0.989 1.000 1.000 1.000 1.000 TLSW 0.089 0.991 0.999 1.000 1.000 1.000 TLSW 0.066 0.986 0.989 1.000 1.000 1.000	TLUD 0.111 0.991 1.000 1.000 1.000 TLUD 0.109 0.993 0.999 1.000 1.000 1.000 TLUD 0.080 0.989 1.000 1.000 1.000 1.000

Table 4-2: Power comparison under DGP2 (5% level)

	a) sta	atic, no	on-robu	st						
		bA	GR1	GR2	SGR1	SGR2	DSW1	DSW2	TLSW	TLUD
		0.0	0.091	0.063	0.127	0.089	0.047	0.071	0.062	0.064
		0.5	0.135	0.375	0.229	0.263	0.780	0.675	0.512	0.626
	ed	1.0	0.220	0.478	0.355	0.403	0.951	0.914	0.697	0.870
	fix	2.5	0.286	0.590	0.519	0.567	0.988	0.974	0.771	0.961
		5.0	0.311	0.622	0.557	0.629	0.993	0.982	0.791	0.966
		7.5	0.324	0.623	0.572	0.647	0.993	0.982	0.838	0.983
		10.0	0.301	0.677	0.549	0.628	0.990	0.988	0.818	0.986
		bA	GR1	GR2	SGR1	SGR2	DSW1	DSW2	TLSW	TLUD
		0.0	0.238	0.058	0.364	0.105	0.052	0.069	0.064	0.072
	-	0.5	0.157	0.649	0.413	0.409	0.778	0.684	0.516	0.637
	in D	1.0	0.112	0.833	0.548	0.580	0.952	0.905	0.691	0.887
	2	2.5	0.083	0.886	0.638	0.686	0.988	0.976	0.781	0.968
		5.0	0.096	0.916	0.696	0.743	0.995	0.987	0.799	0.968
		7.5	0.091	0.907	0.696	0.740	0.998	0.988	0.841	0.985
		10.0	0.099	0.929	0.720	0.768	0.994	0.987	0.832	0.988
		bA	GR1	GR2	SGR1	SGR2	DSW1	DSW2	TLSW	TLUD
		0.0	0.072	0.060	0.074	0.058	0.055	0.075	0.051	0.057
	ive	0.5	0.063	0.383	0.146	0.193	0.786	0.675	0.480	0.602
	urs	1.0	0.085	0.483	0.218	0.261	0.958	0.915	0.663	0.869
	<u>Ser</u>	2.5	0.110	0.574	0.321	0.359	0.989	0.976	0.739	0.961
		5.0	0.095	0.617	0.358	0.393	0.994	0.989	0.770	0.965
		7.5 10.0	0.117	0.620	0.300	0.419	0.998	0.967	0.014	0.902
		10.0	0.095	0.004	0.342	0.394	0.991	0.907	0.790	0.905
	b) st	atic, ro	bust							
п										
		bA	GR1	GR2	SGR1	SGR2	DSW1	DSW2	TLSW	TLUD
		bA 0.0	GR1 0.090	GR2 0.061	SGR1 0.111	SGR2 0.096	DSW1 0.083	DSW2 0.109	TLSW 0.069	TLUD 0.081
		bA 0.0 0.5	GR1 0.090 0.133	GR2 0.061 0.376	SGR1 0.111 0.238	SGR2 0.096 0.278	DSW1 0.083 0.790	DSW2 0.109 0.703	TLSW 0.069 0.488	TLUD 0.081 0.669
	be	bA 0.0 0.5 1.0	GR1 0.090 0.133 0.192	GR2 0.061 0.376 0.468	SGR1 0.111 0.238 0.313	SGR2 0.096 0.278 0.376	DSW1 0.083 0.790 0.940	DSW2 0.109 0.703 0.881	TLSW 0.069 0.488 0.639	TLUD 0.081 0.669 0.888
	fixed	bA 0.0 0.5 1.0 2.5	GR1 0.090 0.133 0.192 0.233	GR2 0.061 0.376 0.468 0.574	SGR1 0.111 0.238 0.313 0.426	SGR2 0.096 0.278 0.376 0.493	DSW1 0.083 0.790 0.940 0.983	DSW2 0.109 0.703 0.881 0.961	TLSW 0.069 0.488 0.639 0.688	TLUD 0.081 0.669 0.888 0.961
	fixed	bA 0.0 0.5 1.0 2.5 5.0	GR1 0.090 0.133 0.192 0.233 0.256	GR2 0.061 0.376 0.468 0.574 0.590	SGR1 0.111 0.238 0.313 0.426 0.451	SGR2 0.096 0.278 0.376 0.493 0.526	DSW1 0.083 0.790 0.940 0.983 0.991	DSW2 0.109 0.703 0.881 0.961 0.975	TLSW 0.069 0.488 0.639 0.688 0.701	TLUD 0.081 0.669 0.888 0.961 0.961
	fixed	bA 0.0 0.5 1.0 2.5 5.0 7.5	GR1 0.090 0.133 0.192 0.233 0.256 0.288	GR2 0.061 0.376 0.468 0.574 0.590 0.606	SGR1 0.111 0.238 0.313 0.426 0.451 0.479	SGR2 0.096 0.278 0.376 0.493 0.526 0.566	DSW1 0.083 0.790 0.940 0.983 0.991 0.990	DSW2 0.109 0.703 0.881 0.961 0.975 0.970	TLSW 0.069 0.488 0.639 0.688 0.701 0.753	TLUD 0.081 0.669 0.888 0.961 0.961 0.978
	fixed	bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0	GR1 0.090 0.133 0.192 0.233 0.256 0.288 0.278	GR2 0.061 0.376 0.468 0.574 0.590 0.606 0.620	SGR1 0.111 0.238 0.313 0.426 0.451 0.479 0.497	SGR2 0.096 0.278 0.376 0.493 0.526 0.566 0.572	DSW1 0.083 0.790 0.940 0.983 0.991 0.990 0.986	DSW2 0.109 0.703 0.881 0.961 0.975 0.970 0.977	TLSW 0.069 0.488 0.639 0.688 0.701 0.753 0.723	TLUD 0.081 0.669 0.888 0.961 0.961 0.978 0.979
	fixed	bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 bA	GR1 0.090 0.133 0.192 0.233 0.256 0.288 0.278 GR1	GR2 0.061 0.376 0.468 0.574 0.590 0.606 0.620 GR2	SGR1 0.111 0.238 0.313 0.426 0.451 0.479 0.497 SGR1	SGR2 0.096 0.278 0.376 0.493 0.526 0.566 0.572 SGR2	DSW1 0.083 0.790 0.940 0.983 0.991 0.990 0.986 DSW1	DSW2 0.109 0.703 0.881 0.961 0.975 0.970 0.977 DSW2	TLSW 0.069 0.488 0.639 0.688 0.701 0.753 0.723 TLSW	TLUD 0.081 0.669 0.888 0.961 0.961 0.978 0.979 TLUD
	fixed	bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 bA 0.0	GR1 0.090 0.133 0.192 0.233 0.256 0.288 0.278 GR1 0.261	GR2 0.061 0.376 0.468 0.574 0.590 0.606 0.620 GR2 0.054	SGR1 0.111 0.238 0.313 0.426 0.451 0.479 0.497 SGR1 0.367	SGR2 0.096 0.278 0.376 0.493 0.526 0.566 0.572 SGR2 0.129	DSW1 0.083 0.790 0.940 0.983 0.991 0.990 0.986 DSW1 0.077	DSW2 0.109 0.703 0.881 0.961 0.975 0.970 0.977 DSW2 0.103	TLSW 0.069 0.488 0.639 0.688 0.701 0.753 0.723 TLSW 0.072	TLUD 0.081 0.669 0.888 0.961 0.961 0.978 0.979 TLUD 0.088
	fixed	bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 bA 0.0 0.5	GR1 0.090 0.133 0.192 0.233 0.256 0.288 0.278 GR1 0.261 0.261 0.122	GR2 0.061 0.376 0.468 0.574 0.590 0.606 0.620 GR2 0.054 0.638	SGR1 0.111 0.238 0.313 0.426 0.451 0.479 0.497 SGR1 0.367 0.374	SGR2 0.096 0.278 0.376 0.493 0.526 0.566 0.572 SGR2 0.129 0.378	DSW1 0.083 0.790 0.940 0.983 0.991 0.990 0.986 DSW1 0.077 0.794	DSW2 0.109 0.703 0.881 0.961 0.975 0.970 0.977 DSW2 0.103 0.706	TLSW 0.069 0.488 0.639 0.688 0.701 0.753 0.723 TLSW 0.072 0.498	TLUD 0.081 0.669 0.888 0.961 0.961 0.978 0.979 TLUD 0.088 0.677
	ling fixed	bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 bA 0.0 0.5 1.0	GR1 0.090 0.133 0.192 0.233 0.256 0.288 0.278 GR1 0.261 0.261 0.122 0.100	GR2 0.061 0.376 0.468 0.574 0.590 0.606 0.620 GR2 0.054 0.638 0.790	SGR1 0.111 0.238 0.313 0.426 0.451 0.479 0.497 SGR1 0.367 0.374 0.374	SGR2 0.096 0.278 0.376 0.493 0.526 0.566 0.572 SGR2 0.129 0.378 0.522	DSW1 0.083 0.790 0.940 0.983 0.991 0.990 0.986 DSW1 0.077 0.794 0.939	DSW2 0.109 0.703 0.881 0.961 0.975 0.970 0.977 DSW2 0.103 0.706 0.889	TLSW 0.069 0.488 0.639 0.688 0.701 0.753 0.723 TLSW 0.072 0.498 0.639	TLUD 0.081 0.669 0.888 0.961 0.961 0.978 0.979 TLUD 0.088 0.677 0.897
	rolling fixed	bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 bA 0.0 0.5 1.0 2.5	GR1 0.090 0.133 0.192 0.233 0.256 0.288 0.278 GR1 0.261 0.122 0.100 0.101	GR2 0.061 0.376 0.468 0.574 0.590 0.606 0.620 GR2 0.054 0.638 0.790 0.863	SGR1 0.111 0.238 0.313 0.426 0.451 0.479 0.497 SGR1 0.367 0.374 0.367 0.374 0.484 0.600	SGR2 0.096 0.278 0.376 0.493 0.526 0.572 SGR2 0.129 0.378 0.522 0.633	DSW1 0.083 0.790 0.940 0.983 0.991 0.990 0.986 DSW1 0.077 0.794 0.939 0.983	DSW2 0.109 0.703 0.881 0.961 0.975 0.970 0.977 DSW2 0.103 0.706 0.889 0.961	TLSW 0.069 0.488 0.639 0.688 0.701 0.753 0.723 TLSW 0.072 0.498 0.639 0.688	TLUD 0.081 0.669 0.888 0.961 0.978 0.979 TLUD 0.088 0.677 0.897 0.963
	rolling fixed	bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 bA 0.0 0.5 1.0 2.5 5.0	GR1 0.090 0.133 0.192 0.233 0.256 0.288 0.278 GR1 0.261 0.122 0.100 0.101 0.081	GR2 0.061 0.376 0.468 0.574 0.590 0.606 0.620 GR2 0.054 0.638 0.790 0.863 0.897	SGR1 0.111 0.238 0.313 0.426 0.451 0.479 0.497 SGR1 0.367 0.374 0.367 0.374 0.484 0.600 0.630	SGR2 0.096 0.278 0.376 0.493 0.526 0.572 SGR2 0.129 0.378 0.522 0.633 0.671	DSW1 0.083 0.790 0.940 0.983 0.991 0.990 0.986 DSW1 0.077 0.794 0.939 0.983 0.992	DSW2 0.109 0.703 0.881 0.961 0.975 0.970 0.977 DSW2 0.103 0.706 0.889 0.961 0.978	TLSW 0.069 0.488 0.639 0.688 0.701 0.753 0.723 TLSW 0.072 0.498 0.639 0.688 0.707	TLUD 0.081 0.669 0.888 0.961 0.978 0.979 TLUD 0.088 0.677 0.897 0.963 0.966
	fixed	bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 bA 0.0 0.5 1.0 2.5 5.0 7.5	GR1 0.090 0.133 0.192 0.233 0.256 0.288 0.278 GR1 0.261 0.122 0.100 0.101 0.081 0.101	GR2 0.061 0.376 0.468 0.574 0.590 0.606 0.620 GR2 0.054 0.638 0.790 0.863 0.897 0.891	SGR1 0.111 0.238 0.313 0.426 0.451 0.479 0.497 SGR1 0.367 0.374 0.484 0.600 0.630 0.654	SGR2 0.096 0.278 0.376 0.493 0.526 0.566 0.572 SGR2 0.129 0.378 0.522 0.633 0.671 0.697	DSW1 0.083 0.790 0.940 0.983 0.991 0.990 0.986 DSW1 0.077 0.794 0.939 0.983 0.992 0.991	DSW2 0.109 0.703 0.881 0.961 0.975 0.970 0.977 DSW2 0.103 0.706 0.889 0.961 0.978 0.980	TLSW 0.069 0.488 0.639 0.688 0.701 0.753 0.723 TLSW 0.072 0.498 0.639 0.688 0.707 0.751	TLUD 0.081 0.669 0.888 0.961 0.978 0.979 TLUD 0.088 0.677 0.897 0.963 0.966 0.980
	fixed	bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 bA 0.5 1.0 2.5 5.0 7.5 10.0 7.5 10.0	GR1 0.090 0.133 0.192 0.233 0.256 0.288 0.278 GR1 0.278 GR1 0.122 0.100 0.101 0.081 0.101 0.076	GR2 0.061 0.376 0.468 0.574 0.590 0.606 0.620 GR2 0.054 0.638 0.790 0.863 0.897 0.891 0.910	SGR1 0.111 0.238 0.426 0.451 0.479 0.497 SGR1 0.367 0.374 0.484 0.600 0.630 0.654 0.654	SGR2 0.096 0.278 0.376 0.493 0.526 0.566 0.572 SGR2 0.129 0.378 0.522 0.633 0.671 0.697 0.704	DSW1 0.083 0.790 0.940 0.983 0.991 0.990 0.986 DSW1 0.077 0.794 0.939 0.983 0.992 0.991 0.990	DSW2 0.109 0.703 0.881 0.961 0.975 0.970 0.977 DSW2 0.103 0.706 0.889 0.961 0.978 0.980 0.977	TLSW 0.069 0.488 0.639 0.688 0.701 0.753 0.723 TLSW 0.072 0.498 0.639 0.688 0.707 0.751 0.729	TLUD 0.081 0.669 0.888 0.961 0.978 0.979 TLUD 0.088 0.677 0.897 0.963 0.966 0.980 0.984
	rolling fixed	bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 bA 0.5 1.0 2.5 5.0 7.5 10.0 7.5 10.0 bA	GR1 0.090 0.133 0.192 0.233 0.256 0.288 0.278 GR1 0.261 0.122 0.100 0.101 0.081 0.101 0.076 GR1	GR2 0.061 0.376 0.468 0.574 0.590 0.620 GR2 0.054 0.638 0.790 0.863 0.897 0.891 0.910 GR2	SGR1 0.111 0.238 0.313 0.426 0.451 0.479 0.497 SGR1 0.367 0.374 0.600 0.630 0.654 0.654 SGR1	SGR2 0.096 0.278 0.376 0.493 0.526 0.572 SGR2 0.572 0.378 0.522 0.633 0.671 0.697 0.704 SGR2	DSW1 0.083 0.790 0.940 0.983 0.991 0.990 0.986 DSW1 0.077 0.794 0.939 0.983 0.992 0.991 0.990 DSW1	DSW2 0.109 0.703 0.881 0.961 0.975 0.970 0.977 DSW2 0.103 0.706 0.889 0.961 0.978 0.980 0.977 DSW2	TLSW 0.069 0.488 0.639 0.688 0.701 0.753 0.723 TLSW 0.639 0.688 0.707 0.751 0.729 TLSW	TLUD 0.081 0.669 0.888 0.961 0.978 0.979 TLUD 0.088 0.677 0.897 0.963 0.966 0.980 0.984 TLUD
	rolling fixed	bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 bA 0.5 1.0 2.5 5.0 7.5 10.0 bA 0.0 0.5	GR1 0.090 0.133 0.192 0.233 0.256 0.288 0.278 GR1 0.212 0.100 0.101 0.081 0.0081 0.076 GR1 0.085	GR2 0.061 0.376 0.468 0.574 0.590 0.606 0.620 GR2 0.054 0.638 0.790 0.863 0.790 0.863 0.897 0.891 0.910 GR2 0.060	SGR1 0.111 0.238 0.313 0.426 0.451 0.479 0.497 SGR1 0.367 0.374 0.600 0.630 0.654 0.654 SGR1 0.069	SGR2 0.096 0.278 0.376 0.493 0.526 0.572 SGR2 0.129 0.378 0.522 0.633 0.671 0.697 0.704 SGR2 0.064	DSW1 0.083 0.790 0.940 0.983 0.991 0.990 0.986 DSW1 0.777 0.794 0.939 0.983 0.992 0.991 0.990 DSW1 0.079	DSW2 0.109 0.703 0.881 0.961 0.975 0.970 0.977 DSW2 0.103 0.706 0.889 0.961 0.978 0.980 0.977 DSW2 0.115	TLSW 0.069 0.488 0.639 0.688 0.701 0.753 0.723 TLSW 0.072 0.498 0.639 0.688 0.707 0.751 0.729 TLSW 0.061	TLUD 0.081 0.669 0.888 0.961 0.978 0.979 TLUD 0.088 0.677 0.963 0.966 0.980 0.984 TLUD 0.071
	ive rolling fixed	bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 bA 0.0 7.5 10.0 2.5 5.0 7.5 10.0 bA 0.0 0.5 5.0 7.5	GR1 0.090 0.133 0.192 0.233 0.256 0.288 0.278 GR1 0.212 0.100 0.101 0.081 0.0081 0.0076 GR1 0.085 0.065 0.065	GR2 0.061 0.376 0.468 0.574 0.590 0.606 0.620 GR2 0.054 0.638 0.790 0.863 0.897 0.891 0.910 GR2 0.060 0.376	SGR1 0.111 0.238 0.313 0.426 0.451 0.479 0.497 SGR1 0.367 0.374 0.600 0.630 0.654 0.654 SGR1 0.069 0.159 0.159	SGR2 0.096 0.278 0.376 0.493 0.526 0.572 0.566 0.572 0.572 0.378 0.522 0.633 0.671 0.697 0.704 SGR2 0.064 0.182	DSW1 0.083 0.790 0.940 0.983 0.991 0.990 0.986 DSW1 0.077 0.794 0.933 0.992 0.991 0.990 DSW1 0.079 0.798 0.798	DSW2 0.109 0.703 0.881 0.961 0.975 0.970 0.977 DSW2 0.103 0.706 0.889 0.961 0.978 0.980 0.977 DSW2 0.115 0.705	TLSW 0.069 0.488 0.639 0.688 0.701 0.753 0.723 TLSW 0.072 0.498 0.639 0.688 0.707 0.751 0.729 TLSW 0.061 0.458 0.061 0.458	TLUD 0.081 0.669 0.888 0.961 0.978 0.979 TLUD 0.088 0.979 0.963 0.963 0.966 0.980 0.984 TLUD 0.071 0.652
	ursive rolling fixed	bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 bA 0.5 1.0 2.5 5.0 7.5 10.0 bA 0.5 1.0 2.5 5.0 7.5 10.0 5.0 7.5	GR1 0.090 0.133 0.192 0.233 0.256 0.288 0.278 GR1 0.261 0.102 0.100 0.101 0.081 0.001 0.0076 GR1 0.085 0.065 0.072	GR2 0.061 0.376 0.468 0.574 0.590 0.606 0.620 GR2 0.054 0.638 0.790 0.863 0.897 0.891 0.910 GR2 0.060 0.376 0.471	SGR1 0.111 0.238 0.313 0.426 0.451 0.479 0.497 SGR1 0.367 0.367 0.367 0.364 0.630 0.654 0.654 SGR1 0.069 0.159 0.186	SGR2 0.096 0.278 0.376 0.493 0.526 0.566 0.572 SGR2 0.129 0.378 0.522 0.633 0.671 0.697 0.704 SGR2 0.064 0.182 0.239	DSW1 0.083 0.790 0.940 0.983 0.991 0.990 0.986 DSW1 0.077 0.794 0.939 0.983 0.992 0.991 0.990 DSW1 0.079 0.798 0.944	DSW2 0.109 0.703 0.881 0.961 0.975 0.970 0.977 DSW2 0.103 0.706 0.889 0.961 0.978 0.980 0.977 DSW2 0.115 0.705 0.895	TLSW 0.069 0.488 0.639 0.688 0.701 0.753 0.723 TLSW 0.072 0.498 0.639 0.688 0.707 0.751 0.729 TLSW 0.061 0.458 0.609 0.609	TLUD 0.081 0.669 0.888 0.961 0.978 0.979 TLUD 0.088 0.677 0.963 0.963 0.966 0.980 0.966 0.980 0.964 TLUD 0.0560 0.884
	recursive rolling fixed	bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 bA 0.5 1.0 2.5 5.0 7.5 10.0 bA 0.5 1.0 2.5 5.0 7.5 10.0 5.0 7.5 5.0 7.5 5.0 7.5 5.0 5.0 7.5 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5	GR1 0.090 0.133 0.192 0.233 0.256 0.288 0.278 GR1 0.261 0.261 0.101 0.101 0.081 0.101 0.081 0.005 0.072 0.073 0.073 0.073	GR2 0.061 0.376 0.468 0.574 0.590 0.606 0.620 GR2 0.054 0.638 0.790 0.863 0.897 0.891 0.910 GR2 0.060 0.376 0.471 0.573 0.573	SGR1 0.111 0.238 0.313 0.426 0.451 0.479 0.497 SGR1 0.367 0.374 0.367 0.374 0.600 0.630 0.654 0.654 SGR1 0.069 0.159 0.186 0.261 0.261	SGR2 0.096 0.278 0.376 0.493 0.526 0.566 0.572 SGR2 0.129 0.378 0.522 0.633 0.671 0.697 0.704 SGR2 0.64 0.182 0.239 0.321 0.321	DSW1 0.083 0.790 0.940 0.983 0.991 0.990 0.986 DSW1 0.077 0.794 0.939 0.983 0.992 0.991 0.990 DSW1 0.079 0.798 0.944 0.984 0.994	DSW2 0.109 0.703 0.881 0.961 0.975 0.970 0.977 DSW2 0.103 0.706 0.889 0.961 0.978 0.980 0.977 DSW2 0.115 0.705 0.895 0.895 0.962 0.072	TLSW 0.069 0.488 0.639 0.688 0.701 0.753 0.723 TLSW 0.072 0.498 0.688 0.707 0.751 0.729 TLSW 0.061 0.458 0.609 0.658 0.609	TLUD 0.081 0.669 0.888 0.961 0.978 0.979 TLUD 0.088 0.677 0.963 0.963 0.966 0.980 0.9680 0.9680 0.9680 0.9680 0.9650 0.8800 0.9555
	recursive rolling fixed	bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 bA 0.5 1.0 2.5 5.0 7.5 10.0 bA 0.5 1.0 2.5 5.0 7.5 10.0 5.5 1.0 2.5 5.0 7.5 1.0 0.5 7.5 1.0 5.5 0 7.5 5.0 7.5 5.0 7.5 5.0 7.5 5.0 7.5 5.0 7.5 5.0 7.5 5.0 7.5 5.0 7.5 5.0 7.5 5.0 7.5 5.0 7.5 5.0 7.5 5.0 7.5 5.0 7.5 5.0 7.5 1.0 0 5.5 5.5 5.5 5.5 5.5 5.5 5.5 5.5 5.5	GR1 0.090 0.133 0.256 0.288 0.278 GR1 0.261 0.122 0.100 0.101 0.081 0.0076 GR1 0.085 0.072 0.073 0.082 0.073	GR2 0.061 0.376 0.468 0.574 0.590 0.606 0.620 GR2 0.054 0.638 0.790 0.863 0.897 0.891 0.910 GR2 0.060 0.376 0.471 0.573 0.590	SGR1 0.111 0.238 0.313 0.426 0.451 0.479 0.497 SGR1 0.367 0.374 0.367 0.374 0.660 0.654 0.654 0.654 SGR1 0.069 0.159 0.186 0.261 0.261 0.295	SGR2 0.096 0.278 0.376 0.493 0.526 0.566 0.572 SGR2 0.129 0.378 0.633 0.671 0.697 0.704 SGR2 0.647 0.697 0.704 SGR2 0.064 0.182 0.239 0.321 0.355	DSW1 0.083 0.790 0.940 0.983 0.991 0.990 0.986 DSW1 0.077 0.794 0.993 0.992 0.991 0.990 DSW1 0.079 0.798 0.994 0.984 0.984	DSW2 0.109 0.703 0.881 0.961 0.975 0.970 0.977 DSW2 0.103 0.706 0.889 0.961 0.978 0.980 0.977 DSW2 0.115 0.705 0.895 0.962 0.975	TLSW 0.069 0.488 0.639 0.688 0.701 0.753 0.723 TLSW 0.072 0.498 0.688 0.707 0.751 0.751 0.729 TLSW 0.061 0.458 0.609 0.658 0.662 0.658	TLUD 0.081 0.669 0.888 0.961 0.978 0.979 TLUD 0.088 0.677 0.963 0.966 0.980 0.980 0.980 0.980 0.984 TLUD 0.071 0.650 0.880 0.958 0.958
	recursive rolling fixed	bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 bA 0.5 1.0 2.5 5.0 7.5 10.0 bA 0.5 1.0 2.5 5.0 7.5 10.0 bA 0.5 7.5 10.0 2.5 5.0 7.5 1.0 2.5 5.0 7.5 5.0 7.5 5.0 7.5 5.0 7.5 5.0 7.5 5.0 7.5 5.0 7.5 5.0 7.5 5.0 7.5 5.0 7.5 5.0 7.5 5.0 7.5 5.0 7.5 5.0 7.5 5.0 7.5 5.0 7.5 5.0 7.5 5.0 7.5 5.0 7.5 7.5 10.0 7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5	GR1 0.090 0.133 0.192 0.233 0.256 0.288 0.278 0.261 0.122 0.100 0.101 0.081 0.076 GR1 0.085 0.065 0.072 0.073 0.082 0.091 0.203	GR2 0.061 0.376 0.468 0.574 0.606 0.620 GR2 0.054 0.638 0.790 0.863 0.897 0.891 0.910 GR2 0.060 0.376 0.471 0.573 0.590 0.602	SGR1 0.111 0.238 0.313 0.426 0.451 0.479 0.497 SGR1 0.367 0.374 0.367 0.374 0.660 0.630 0.654 0.654 0.654 0.654 0.654 0.295 0.130 0.295 0.313 0.205	SGR2 0.096 0.278 0.376 0.493 0.526 0.566 0.572 SGR2 0.129 0.378 0.522 0.633 0.671 0.697 0.704 SGR2 0.064 0.182 0.239 0.321 0.355 0.377	DSW1 0.083 0.790 0.940 0.983 0.991 0.990 0.986 DSW1 0.077 0.794 0.939 0.983 0.992 0.991 0.079 0.798 0.994 0.993 0.994 0.993 0.992 0.992	DSW2 0.109 0.703 0.881 0.975 0.970 0.977 DSW2 0.103 0.978 0.980 0.977 DSW2 0.978 0.980 0.977 DSW2 0.115 0.705 0.895 0.962 0.979 0.975	TLSW 0.069 0.488 0.639 0.688 0.701 0.753 0.723 TLSW 0.072 0.498 0.639 0.688 0.707 0.751 0.729 TLSW 0.061 0.458 0.609 0.658 0.662 0.718 0.662	TLUD 0.081 0.669 0.888 0.961 0.978 0.979 TLUD 0.088 0.677 0.963 0.966 0.980 0.980 0.980 0.984 TLUD 0.071 0.650 0.9880 0.958 0.959 0.979

bA GR1 GR2 SGR1 SGR2 DSW1 DSW2 TLSW TLUD 0.0 0.128 0.059 0.177 0.117 0.074 0.090 0.033 0.114 0.5 0.120 0.413 0.233 0.281 0.788 0.696 0.567 0.670 2.5 0.210 0.642 0.512 0.570 0.988 0.971 0.823 0.970 5.0 0.254 0.669 0.639 0.994 0.983 0.869 0.991 10.0 0.247 0.701 0.583 0.662 0.990 0.987 0.864 0.991 0.0 0.511 0.447 0.734 0.240 0.664 0.933 0.993 0.571 0.902 0.5 0.317 0.921 0.783 0.762 0.988 0.976 0.832 0.975 7.5 0.341 0.921 0.783 0.762 0.984 0.833 0.899 0.983 0.899 0.832	c) dy	ynamic	, non-ro	bust						
0.0 0.128 0.059 0.177 0.117 0.074 0.090 0.093 0.114 0.5 0.120 0.413 0.233 0.231 0.788 0.666 0.679 0.803 2.5 0.210 0.642 0.512 0.570 0.984 0.994 0.833 0.869 0.991 5.0 0.2247 0.701 0.583 0.662 0.990 0.987 0.864 0.991 0.0 0.211 0.477 0.713 0.523 0.662 0.990 0.987 0.864 0.991 0.0 0.511 0.492 0.590 0.466 0.784 0.694 0.572 0.860 0.5 0.317 0.692 0.590 0.464 0.791 0.984 0.832 0.975 0.5 0.314 0.941 0.881 0.868 0.646 0.934 0.980 0.887 0.993 10.0 0.331 0.922 0.830 0.816 0.997 0.55 0.		bA	GR1	GR2	SGR1	SGR2	DSW1	DSW2	TLSW	TLUD
0.5 0.120 0.413 0.233 0.281 0.788 0.696 0.567 0.670 92 1.0 0.179 0.545 0.356 0.415 0.954 0.916 0.749 0.830 0.972 5.0 0.254 0.669 0.569 0.639 0.994 0.984 0.830 0.972 7.5 0.254 0.701 0.583 0.662 0.990 0.987 0.864 0.991 0.0 0.511 0.047 0.731 0.583 0.666 0.943 0.905 0.751 0.906 0.5 0.317 0.692 0.590 0.460 0.784 0.904 0.572 0.680 0.976 0.332 0.975 0.50 0.304 0.921 0.783 0.762 0.988 0.976 0.332 0.937 0.55 0.310 0.952 0.830 0.889 0.993 0.993 0.993 0.899 0.993 1.0 0.301 0.952 0.300 0.373		0.0	0.128	0.059	0.177	0.117	0.074	0.090	0.093	0.114
B 1.0 0.179 0.545 0.356 0.415 0.954 0.964 0.749 0.880 5.0 0.210 0.642 0.512 0.570 0.988 0.971 0.823 0.970 7.5 0.254 0.705 0.564 0.629 0.994 0.984 0.830 0.991 10.0 0.247 0.701 0.583 0.662 0.990 0.987 0.864 0.991 0.5 0.511 0.047 0.734 0.240 0.064 0.800 0.882 0.966 0.5 0.317 0.692 0.590 0.460 0.744 0.664 0.752 0.880 0.993 0.5 0.319 0.921 0.733 0.762 0.984 0.983 0.889 0.993 7.5 0.341 0.946 0.835 0.827 0.994 0.983 0.889 0.993 10.0 0.331 0.952 0.830 0.816 0.992 0.987 0.887 0.98	_	0.5	0.120	0.413	0.233	0.281	0.788	0.696	0.567	0.670
# 2.5 0.210 0.649 0.570 0.994 0.981 0.830 0.971 7.5 0.254 0.669 0.569 0.639 0.994 0.983 0.869 0.991 7.5 0.254 0.705 0.564 0.622 0.990 0.987 0.864 0.991 0.0 0.511 0.047 0.714 0.240 0.064 0.802 0.090 0.0 0.511 0.047 0.734 0.240 0.064 0.802 0.905 0.5 0.317 0.692 0.590 0.460 0.784 0.692 0.572 0.803 0.5 0.319 0.921 0.783 0.762 0.988 0.976 0.832 0.975 7.5 0.341 0.946 0.835 0.827 0.986 0.887 0.993 10.0 0.31 0.942 0.830 0.899 0.887 0.655 0.667 10.0 0.102 0.556 0.307 0.991	xed	1.0	0.179	0.545	0.356	0.415	0.954	0.916	0.749	0.890
5.0 0.254 0.669 0.569 0.639 0.994 0.984 0.830 0.699 10.0 0.247 0.701 0.583 0.662 0.990 0.987 0.864 0.991 0.0 0.511 0.047 0.734 0.240 0.064 0.080 0.822 0.966 0.5 0.317 0.692 0.590 0.460 0.784 0.694 0.572 0.880 0.5 0.317 0.692 0.590 0.460 0.784 0.694 0.832 0.975 5.0 0.304 0.921 0.783 0.762 0.988 0.976 0.837 0.993 10.0 0.331 0.952 0.830 0.816 0.992 0.983 0.899 0.993 10.0 0.102 0.566 0.900 0.073 0.668 0.877 0.877 0.887 0.993 10.0 0.102 0.566 0.900 0.073 0.568 0.984 0.788 0.675 <td< td=""><td>Ę,</td><td>2.5</td><td>0.210</td><td>0.642</td><td>0.512</td><td>0.570</td><td>0.988</td><td>0.971</td><td>0.823</td><td>0.970</td></td<>	Ę,	2.5	0.210	0.642	0.512	0.570	0.988	0.971	0.823	0.970
7.5 0.254 0.701 0.563 0.629 0.993 0.864 0.991 bA GR1 GR2 SGR1 SGR2 DSW1 DSW2 TLSW TLUD 0.0 0.511 0.047 0.734 0.240 0.064 0.082 0.996 0.5 0.317 0.692 0.590 0.460 0.784 0.694 0.572 0.680 0.5 0.317 0.692 0.590 0.460 0.784 0.694 0.571 0.906 5.0 0.304 0.941 0.814 0.791 0.994 0.983 0.899 0.993 10.0 0.331 0.952 0.830 0.816 0.992 0.987 0.887 0.993 0.0 0.102 0.056 0.090 0.073 0.068 0.679 0.499 0.529 1.0 0.666 0.552 0.265 0.307 0.955 0.961 0.675 0.872 2.5 0.068 0.644		5.0	0.254	0.669	0.569	0.639	0.994	0.984	0.830	0.972
10.0 0.247 0.701 0.583 0.662 0.997 0.864 0.991 bA GR1 GR2 SGR1 SGR2 DSW1 DSW2 TLSW TLUD 0.0 0.511 0.047 0.734 0.240 0.064 0.080 0.082 0.096 1.0 0.298 0.847 0.689 0.464 0.943 0.905 0.751 0.906 2.5 0.319 0.921 0.783 0.762 0.988 0.976 0.832 0.977 7.5 0.341 0.940 0.835 0.827 0.994 0.983 0.899 0.993 10.0 0.331 0.952 0.830 0.816 0.992 0.987 0.487 0.993 0.5 0.062 0.422 0.166 0.201 0.796 0.757 0.752 0.962 1.0 0.066 0.552 0.265 0.307 0.975 0.752 0.962 1.0 0.106 0.717		7.5	0.254	0.705	0.564	0.629	0.994	0.983	0.869	0.991
bA GR1 GR2 SGR1 SGR2 DSW1 DSW2 ILSW ILDD 0.0 0.511 0.047 0.734 0.240 0.064 0.080 0.082 0.096 0.5 0.319 0.921 0.783 0.762 0.988 0.976 0.832 0.975 5.0 0.304 0.941 0.814 0.791 0.994 0.986 0.861 0.977 7.5 0.341 0.946 0.835 0.827 0.994 0.983 0.899 0.993 10.0 0.331 0.952 0.830 0.816 0.992 0.987 0.887 0.993 10.0 0.062 0.422 0.166 0.201 0.796 0.679 0.499 0.629 1.0 0.066 0.552 0.265 0.307 0.955 0.961 0.675 0.872 2.5 0.068 0.644 0.370 0.415 0.996 0.985 0.830 0.888 1.0		10.0	0.247	0.701	0.583	0.662	0.990	0.987	0.864	0.991
b.0 0.311 0.447 0.734 0.240 0.064 0.064 0.062 0.095 D 0.51 0.317 0.692 0.590 0.460 0.784 0.694 0.572 0.880 D 0.298 0.847 0.689 0.646 0.943 0.995 0.751 0.906 2.5 0.319 0.921 0.783 0.762 0.988 0.976 0.832 0.975 5.0 0.304 0.941 0.814 0.791 0.994 0.986 0.887 0.993 10.0 0.331 0.952 0.827 0.987 0.887 0.993 0.0 0.102 0.056 0.090 0.073 0.068 0.087 0.055 0.063 0.0 0.102 0.056 0.990 0.073 0.055 0.916 0.675 0.872 0.0 0.062 0.422 0.166 0.201 0.796 0.975 0.752 0.996 0.0 0.073		DA	GRI	GR2	5GR1	5GR2	0.064	0.000	112500	
b 0.317 0.322 0.330 0.430 0.104 0.134 0.134 0.134 0.134 0.134 0.134 0.134 0.134 0.134 0.134 0.134 0.931 0.932 0.134 0.941 0.844 0.648 0.646 0.943 0.995 0.751 0.906 5.0 0.304 0.941 0.814 0.791 0.994 0.986 0.861 0.977 7.5 0.341 0.946 0.835 0.827 0.994 0.983 0.899 0.993 0.0 0.331 0.952 0.830 0.816 0.992 0.987 0.887 0.993 0.0 0.102 0.056 0.090 0.073 0.068 0.647 0.499 0.622 2.5 0.068 0.644 0.370 0.415 0.995 0.916 0.675 0.872 9.5 0.070 0.673 0.376 0.443 0.995 0.944 0.880 0.988 10.0 <t< td=""><td></td><td>0.0</td><td>0.317</td><td>0.047</td><td>0.734</td><td>0.240</td><td>0.004</td><td>0.000</td><td>0.002</td><td>0.090</td></t<>		0.0	0.317	0.047	0.734	0.240	0.004	0.000	0.002	0.090
Image Image <th< td=""><td>þ</td><td>1.0</td><td>0.017</td><td>0.032</td><td>0.030</td><td>0.400</td><td>0.704</td><td>0.034</td><td>0.372</td><td>0.000</td></th<>	þ	1.0	0.017	0.032	0.030	0.400	0.704	0.034	0.372	0.000
L 1.0304 0.9341 0.814 0.791 0.994 0.986 0.861 0.977 7.5 0.341 0.946 0.835 0.827 0.994 0.983 0.899 0.993 10.0 0.331 0.952 0.830 0.816 0.992 0.987 0.887 0.993 10.0 0.331 0.952 0.830 0.816 0.992 0.987 0.887 0.993 0.0 0.102 0.056 0.990 0.073 0.068 0.487 0.055 0.063 0.5 0.066 0.552 0.265 0.307 0.955 0.916 0.675 0.872 2.5 0.068 0.644 0.370 0.415 0.996 0.985 0.830 0.988 10.0 0.073 0.716 0.409 0.413 0.995 0.944 0.788 0.968 10.0 0.129 0.449 0.138 0.996 0.855 0.111 0.05 0.986 0.511	ollin	2.5	0.230	0.921	0.000	0.762	0.988	0.976	0.832	0.975
T.5 0.341 0.946 0.835 0.827 0.994 0.983 0.899 0.993 10.0 0.331 0.952 0.830 0.816 0.992 0.987 0.887 0.993 bA GR1 GR2 SGR1 SGR2 DSW1 DSW2 TLSW TLUD 0.0 0.102 0.056 0.090 0.073 0.068 0.087 0.055 0.063 0.5 0.066 0.552 0.265 0.307 0.955 0.916 0.675 0.872 2.5 0.068 0.644 0.370 0.443 0.995 0.984 0.788 0.968 7.5 0.077 0.705 0.409 0.413 0.996 0.985 0.830 0.988 10.0 0.073 0.716 0.406 0.447 0.991 0.984 0.814 0.986 0.5 0.098 0.385 0.218 0.085 0.119 0.088 0.111 0.5 0.098	-	5.0	0.304	0.941	0.814	0.791	0.994	0.986	0.861	0.977
10.0 0.331 0.952 0.830 0.816 0.992 0.987 0.887 0.993 bA GR1 GR2 SGR1 SGR2 DSW1 DSW2 TLSW TLUD 0.0 0.102 0.056 0.090 0.073 0.068 0.087 0.055 0.063 0.5 0.066 0.552 0.265 0.307 0.955 0.916 0.675 0.872 2.5 0.068 0.644 0.370 0.415 0.996 0.985 0.830 0.988 10.0 0.073 0.716 0.409 0.441 0.991 0.984 0.788 0.988 10.0 0.073 0.716 0.406 0.447 0.991 0.984 0.880 0.888 10.0 0.173 0.716 0.406 0.447 0.991 0.984 0.788 0.985 10.0 0.129 0.499 0.343 0.966 0.685 0.119 0.888 0.611 0.901 0.722 <td></td> <td>7.5</td> <td>0.341</td> <td>0.946</td> <td>0.835</td> <td>0.827</td> <td>0.994</td> <td>0.983</td> <td>0.899</td> <td>0.993</td>		7.5	0.341	0.946	0.835	0.827	0.994	0.983	0.899	0.993
bA GR1 GR2 SGR1 SGR2 DSW1 DSW2 TLSW TLUD 0.0 0.102 0.056 0.090 0.073 0.068 0.087 0.055 0.062 0.5 0.062 0.422 0.166 0.201 0.796 0.679 0.499 0.629 2.5 0.068 0.644 0.370 0.415 0.987 0.975 0.752 0.962 5.0 0.070 0.673 0.376 0.443 0.995 0.984 0.788 0.968 7.5 0.077 0.705 0.409 0.451 0.996 0.985 0.830 0.988 10.0 0.073 0.716 0.406 0.447 0.991 0.984 0.814 0.986 0.0 0.129 0.049 0.138 0.096 0.885 0.111 0.586 0.541 0.705 0.5 0.098 0.385 0.218 0.255 0.788 0.695 0.541 0.705		10.0	0.331	0.952	0.830	0.816	0.992	0.987	0.887	0.993
0.0 0.102 0.056 0.090 0.073 0.068 0.087 0.055 0.063 0.5 0.062 0.422 0.166 0.201 0.796 0.679 0.499 0.629 1.0 0.066 0.552 0.265 0.307 0.955 0.916 0.675 0.872 2.5 0.068 0.644 0.370 0.415 0.987 0.975 0.752 0.962 5.0 0.070 0.673 0.376 0.443 0.995 0.984 0.788 0.968 10.0 0.073 0.716 0.406 0.447 0.991 0.984 0.814 0.986 0.0 0.129 0.499 0.138 0.966 0.885 0.111 0.088 0.111 0.5 0.098 0.385 0.218 0.255 0.788 0.695 0.541 0.705 1.0 0.153 0.499 0.343 0.383 0.929 0.880 0.681 0.901 1.0 <th></th> <th>bA</th> <th>GR1</th> <th>GR2</th> <th>SGR1</th> <th>SGR2</th> <th>DSW1</th> <th>DSW2</th> <th>TLSW</th> <th>TLUD</th>		bA	GR1	GR2	SGR1	SGR2	DSW1	DSW2	TLSW	TLUD
9 0.5 0.062 0.422 0.166 0.201 0.796 0.679 0.499 0.629 1.0 0.066 0.552 0.265 0.307 0.955 0.916 0.675 0.872 2.5 0.068 0.644 0.370 0.415 0.987 0.975 0.752 0.962 5.0 0.070 0.673 0.376 0.443 0.995 0.984 0.788 0.968 7.5 0.077 0.705 0.409 0.451 0.996 0.985 0.830 0.988 10.0 0.073 0.716 0.406 0.447 0.991 0.984 0.814 0.986 0.0 0.129 0.049 0.138 0.096 0.885 0.111 0.088 0.111 0.5 0.098 0.385 0.218 0.255 0.788 0.695 0.541 0.705 1.0 0.153 0.499 0.343 0.383 0.929 0.880 0.681 0.901		0.0	0.102	0.056	0.090	0.073	0.068	0.087	0.055	0.063
1.0 0.066 0.552 0.265 0.307 0.955 0.916 0.675 0.872 2.5 0.068 0.644 0.370 0.415 0.987 0.975 0.752 0.962 5.0 0.070 0.673 0.376 0.443 0.995 0.984 0.788 0.968 7.5 0.077 0.705 0.409 0.451 0.996 0.985 0.830 0.988 10.0 0.073 0.716 0.406 0.447 0.991 0.984 0.814 0.986 0.0 0.129 0.049 0.138 0.096 0.085 0.119 0.088 0.111 0.5 0.098 0.385 0.218 0.255 0.788 0.695 0.541 0.705 1.0 0.153 0.499 0.343 0.383 0.929 0.880 0.681 0.901 2.5 0.206 0.580 0.577 0.989 0.967 0.737 0.966 5.0 0.242 <td>e/e</td> <td>0.5</td> <td>0.062</td> <td>0.422</td> <td>0.166</td> <td>0.201</td> <td>0.796</td> <td>0.679</td> <td>0.499</td> <td>0.629</td>	e/e	0.5	0.062	0.422	0.166	0.201	0.796	0.679	0.499	0.629
Definition 2.5 0.068 0.644 0.370 0.415 0.987 0.975 0.752 0.962 5.0 0.070 0.673 0.376 0.443 0.995 0.984 0.788 0.988 7.5 0.077 0.705 0.409 0.451 0.996 0.985 0.830 0.988 10.0 0.073 0.716 0.406 0.447 0.991 0.984 0.814 0.986 d) dynamic, robust 0.073 0.716 0.406 0.447 0.991 0.984 0.814 0.986 0.0 0.129 0.049 0.138 0.096 0.085 0.119 0.088 0.111 0.5 0.098 0.385 0.218 0.255 0.788 0.665 0.541 0.702 1.0 0.153 0.499 0.343 0.383 0.929 0.880 0.681 0.901 2.5 0.206 0.580 0.577 0.989 0.967 0.737 0.966 <tr< td=""><td>rsi</td><td>1.0</td><td>0.066</td><td>0.552</td><td>0.265</td><td>0.307</td><td>0.955</td><td>0.916</td><td>0.675</td><td>0.872</td></tr<>	rsi	1.0	0.066	0.552	0.265	0.307	0.955	0.916	0.675	0.872
L 5.0 0.070 0.673 0.376 0.443 0.995 0.984 0.788 0.968 7.5 0.077 0.705 0.409 0.451 0.996 0.985 0.830 0.988 10.0 0.073 0.716 0.406 0.447 0.991 0.984 0.814 0.986 d) dynamic, robust bA GR1 GR2 SGR1 SGR2 DSW1 DSW2 TLSW TLUD 0.0 0.129 0.049 0.138 0.096 0.085 0.111 0.088 0.111 0.5 0.098 0.385 0.218 0.255 0.788 0.6651 0.541 0.702 2.5 0.206 0.580 0.448 0.503 0.976 0.954 0.722 0.966 5.0 0.242 0.656 0.508 0.577 0.989 0.967 0.737 0.966 7.5 0.234 0.640 0.502 0.574 0.229 0.765<	ecu	2.5	0.068	0.644	0.370	0.415	0.987	0.975	0.752	0.962
7.5 0.077 0.705 0.409 0.451 0.996 0.985 0.830 0.988 10.0 0.073 0.716 0.406 0.447 0.991 0.984 0.814 0.986 d) dynamic, robust scher SGR2 SGR2 DSW1 DSW2 TLSW TLUD 0.0 0.129 0.049 0.138 0.096 0.085 0.111 0.088 0.111 0.5 0.098 0.385 0.218 0.255 0.788 0.695 0.541 0.705 1.0 0.153 0.499 0.343 0.383 0.929 0.880 0.681 0.705 2.5 0.206 0.580 0.448 0.503 0.976 0.954 0.722 0.966 5.0 0.242 0.656 0.508 0.577 0.989 0.967 0.737 0.966 7.5 0.234 0.640 0.502 0.572 0.983 0.972 0.765 0.982 10.0 <t< td=""><td><u> </u></td><td>5.0</td><td>0.070</td><td>0.673</td><td>0.376</td><td>0.443</td><td>0.995</td><td>0.984</td><td>0.788</td><td>0.968</td></t<>	<u> </u>	5.0	0.070	0.673	0.376	0.443	0.995	0.984	0.788	0.968
10.0 0.073 0.716 0.406 0.447 0.991 0.984 0.814 0.986 d) dynamic, robust bA GR1 GR2 SGR1 SGR2 DSW1 DSW2 TLSW TLUD 0.0 0.129 0.049 0.138 0.096 0.085 0.119 0.088 0.111 0.5 0.098 0.385 0.218 0.255 0.788 0.695 0.541 0.705 10 0.153 0.499 0.343 0.383 0.929 0.880 0.6811 0.901 2.5 0.206 0.580 0.448 0.503 0.976 0.954 0.722 0.966 5.0 0.242 0.656 0.508 0.577 0.989 0.967 0.737 0.966 7.5 0.234 0.640 0.504 0.572 0.983 0.972 0.765 0.982 0.0 0.528 0.622 0.754 0.229 0.075 0.108 0.089 0.109		7.5	0.077	0.705	0.409	0.451	0.996	0.985	0.830	0.988
d) dynamic, robust bA GR1 GR2 SGR1 SGR2 DSW1 DSW2 TLSW TLUD 0.0 0.129 0.049 0.138 0.096 0.085 0.111 0.088 0.111 0.5 0.098 0.385 0.218 0.255 0.788 0.695 0.541 0.705 1.0 0.153 0.499 0.343 0.383 0.929 0.880 0.681 0.901 2.5 0.206 0.580 0.448 0.503 0.976 0.954 0.722 0.966 5.0 0.242 0.656 0.508 0.577 0.989 0.967 0.737 0.966 7.5 0.234 0.640 0.500 0.562 0.987 0.972 0.765 0.982 10.0 0.232 0.644 0.504 0.572 0.983 0.972 0.765 0.982 0.0 0.528 0.522 0.754 0.229 0.075 0.108 0.089		10.0	0.073	0.716	0.406	0.447	0.991	0.984	0.814	0.986
bA GR1 GR2 SGR1 SGR2 DSW1 DSW2 TLSW TLUD 0.0 0.129 0.049 0.138 0.096 0.085 0.119 0.088 0.111 0.5 0.098 0.385 0.218 0.255 0.788 0.695 0.541 0.705 1.0 0.153 0.499 0.343 0.383 0.929 0.880 0.681 0.901 2.5 0.206 0.580 0.448 0.503 0.976 0.954 0.722 0.966 5.0 0.242 0.656 0.508 0.577 0.989 0.967 0.737 0.966 7.5 0.234 0.640 0.500 0.562 0.987 0.972 0.766 0.982 10.0 0.232 0.644 0.504 0.572 0.983 0.972 0.765 0.982 0.0 0.528 0.502 0.754 0.229 0.075 0.108 0.899 0.111 0.0	d) dv	vnamio	. robus	t						
0.0 0.129 0.049 0.138 0.096 0.085 0.119 0.088 0.111 0.5 0.098 0.385 0.218 0.255 0.788 0.695 0.541 0.705 1.0 0.153 0.499 0.343 0.383 0.929 0.880 0.681 0.901 2.5 0.206 0.580 0.448 0.503 0.976 0.954 0.722 0.966 5.0 0.242 0.656 0.508 0.577 0.989 0.972 0.796 0.985 10.0 0.232 0.644 0.504 0.572 0.983 0.972 0.765 0.982 10.0 0.232 0.644 0.504 0.572 0.983 0.972 0.765 0.982 10.0 0.232 0.644 0.504 0.572 0.983 0.972 0.765 0.982 10.0 0.528 0.520 0.754 0.229 0.775 0.108 0.689 0.111 10.		bA	GR1	GR2	SGR1	SGR2	DSW1	DSW2	TLSW	TLUD
0.5 0.098 0.385 0.218 0.255 0.788 0.695 0.541 0.705 1.0 0.153 0.499 0.343 0.383 0.929 0.880 0.681 0.901 2.5 0.206 0.580 0.448 0.503 0.976 0.954 0.722 0.966 5.0 0.242 0.666 0.508 0.577 0.989 0.967 0.737 0.966 7.5 0.232 0.644 0.504 0.572 0.983 0.972 0.766 0.982 10.0 0.232 0.644 0.504 0.572 0.983 0.972 0.765 0.982 0.0 0.528 0.652 0.754 0.229 0.075 0.108 0.089 0.109 0.5 0.307 0.672 0.598 0.433 0.782 0.683 0.540 0.711 1.0 0.285 0.820 0.639 0.559 0.915 0.874 0.685 0.998 1.0 <td></td> <td>0.0</td> <td>0.129</td> <td>0.049</td> <td>0.138</td> <td>0.096</td> <td>0.085</td> <td>0.119</td> <td>0.088</td> <td>0.111</td>		0.0	0.129	0.049	0.138	0.096	0.085	0.119	0.088	0.111
Definition 0.153 0.499 0.343 0.383 0.929 0.880 0.681 0.901 2.5 0.206 0.580 0.448 0.503 0.976 0.954 0.722 0.966 5.0 0.242 0.656 0.508 0.577 0.989 0.967 0.737 0.966 7.5 0.232 0.644 0.500 0.562 0.987 0.972 0.765 0.982 10.0 0.232 0.644 0.504 0.572 0.983 0.972 0.765 0.982 0.0 0.528 0.652 0.754 0.229 0.075 0.108 0.089 0.109 0.5 0.307 0.672 0.598 0.433 0.782 0.683 0.540 0.711 1.0 0.285 0.820 0.639 0.559 0.915 0.874 0.685 0.908 2.5 0.283 0.892 0.710 0.743 0.977 0.961 0.815 0.989 <td< td=""><td></td><td>0.5</td><td>0.098</td><td>0.385</td><td>0.218</td><td>0.255</td><td>0.788</td><td>0.695</td><td>0.541</td><td>0.705</td></td<>		0.5	0.098	0.385	0.218	0.255	0.788	0.695	0.541	0.705
E 2.5 0.206 0.580 0.448 0.503 0.976 0.954 0.722 0.966 5.0 0.242 0.656 0.508 0.577 0.989 0.967 0.737 0.966 7.5 0.232 0.644 0.500 0.562 0.987 0.972 0.765 0.982 10.0 0.232 0.644 0.504 0.572 0.983 0.972 0.765 0.982 0.0 0.528 0.622 0.754 0.229 0.075 0.108 0.089 0.109 0.5 0.307 0.672 0.598 0.433 0.782 0.683 0.540 0.711 0.5 0.307 0.672 0.598 0.433 0.782 0.683 0.540 0.711 1.0 0.285 0.820 0.679 0.943 0.740 0.974 5.0 0.284 0.910 0.776 0.738 0.977 0.961 0.815 0.989 1.0 0.354	ed	1.0	0.153	0.499	0.343	0.383	0.929	0.880	0.681	0.901
5.0 0.242 0.656 0.508 0.577 0.989 0.967 0.737 0.966 7.5 0.234 0.640 0.500 0.562 0.987 0.972 0.796 0.985 10.0 0.232 0.644 0.504 0.572 0.983 0.972 0.765 0.982 bA GR1 GR2 SGR1 SGR2 DSW1 DSW2 TLW TLUD 0.0 0.528 0.672 0.598 0.433 0.782 0.683 0.500 0.711 0.5 0.307 0.672 0.598 0.433 0.782 0.683 0.500 0.711 0.5 0.307 0.672 0.967 0.943 0.740 0.974 5.0 0.284 0.910 0.776 0.738 0.977 0.961 0.815 0.989 10.0 0.354 0.924 0.791 0.750 0.977 0.961 0.815 0.989 10.0 0.477 0.833	fix	2.5	0.206	0.580	0.448	0.503	0.976	0.954	0.722	0.966
7.5 0.234 0.640 0.500 0.562 0.987 0.972 0.796 0.985 10.0 0.232 0.644 0.504 0.572 0.983 0.972 0.765 0.982 bA GR1 GR2 SGR1 SGR2 DSW1 DSW2 TLW TLUD 0.0 0.528 0.052 0.754 0.229 0.075 0.108 0.089 0.109 0.5 0.307 0.672 0.598 0.433 0.782 0.683 0.540 0.711 1.0 0.285 0.672 0.599 0.915 0.874 0.685 0.908 2.5 0.283 0.892 0.710 0.672 0.967 0.943 0.740 0.974 5.0 0.284 0.910 0.776 0.738 0.977 0.961 0.815 0.989 10.0 0.354 0.924 0.791 0.750 0.977 0.961 0.766 0.845 0.673 10.0		5.0	0.242	0.656	0.508	0.577	0.989	0.967	0.737	0.966
10.0 0.232 0.644 0.504 0.572 0.983 0.972 0.765 0.982 bA GR1 GR2 SGR1 SGR2 DSW1 DSW2 TLSW TLUD 0.0 0.528 0.052 0.754 0.229 0.075 0.108 0.089 0.109 0.5 0.307 0.672 0.598 0.433 0.782 0.683 0.540 0.711 1.0 0.285 0.820 0.639 0.559 0.915 0.874 0.685 0.908 2.5 0.283 0.820 0.710 0.772 0.967 0.943 0.740 0.974 5.0 0.284 0.910 0.776 0.738 0.978 0.966 0.770 0.974 7.5 0.324 0.927 0.770 0.743 0.977 0.961 0.815 0.989 10.0 0.354 0.924 0.791 0.750 0.977 0.961 0.815 0.989 0.0		7.5	0.234	0.640	0.500	0.562	0.987	0.972	0.796	0.985
bA GR1 GR2 SGR1 SGR2 DSW1 DSW2 TLSW TLUD 0.0 0.528 0.052 0.754 0.229 0.075 0.108 0.089 0.109 0.5 0.307 0.672 0.598 0.433 0.782 0.683 0.540 0.711 1.0 0.285 0.820 0.639 0.559 0.915 0.874 0.685 0.908 2.5 0.284 0.910 0.776 0.782 0.967 0.943 0.740 0.974 5.0 0.284 0.910 0.776 0.783 0.977 0.961 0.815 0.989 10.0 0.354 0.927 0.770 0.743 0.977 0.961 0.815 0.989 10.0 0.354 0.927 0.770 0.750 0.977 0.961 0.815 0.989 10.0 0.635 0.927 0.750 0.977 0.961 0.855 0.989 0.5 0.471		10.0	0.232	0.644	0.504	0.572	0.983	0.972	0.765	0.982
0.0 0.528 0.052 0.754 0.229 0.075 0.108 0.089 0.109 0.5 0.307 0.672 0.598 0.433 0.782 0.683 0.540 0.711 1.0 0.285 0.820 0.639 0.559 0.915 0.874 0.685 0.908 2.5 0.284 0.910 0.776 0.738 0.967 0.943 0.740 0.974 5.0 0.284 0.910 0.776 0.738 0.976 0.740 0.974 7.5 0.324 0.927 0.770 0.743 0.977 0.961 0.815 0.989 10.0 0.354 0.927 0.770 0.750 0.977 0.961 0.815 0.989 10.0 0.354 0.927 0.750 0.977 0.961 0.786 0.989 10.0 0.103 0.047 0.663 0.949 0.855 0.119 0.666 0.607 0.50 0.047 0.383		bA	GR1	GR2	SGR1	SGR2	DSW1	DSW2	TLSW	TLUD
0.5 0.307 0.672 0.598 0.433 0.782 0.683 0.540 0.711 1.0 0.285 0.820 0.639 0.559 0.915 0.874 0.685 0.908 2.5 0.283 0.892 0.710 0.672 0.967 0.943 0.740 0.974 5.0 0.284 0.910 0.776 0.738 0.977 0.961 0.815 0.989 10.0 0.354 0.927 0.770 0.743 0.977 0.961 0.815 0.989 10.0 0.354 0.927 0.770 0.750 0.977 0.961 0.815 0.989 10.0 0.354 0.924 0.791 0.750 0.977 0.961 0.786 0.989 0.0 0.103 0.047 0.063 0.049 0.085 0.119 0.066 0.080 0.5 0.047 0.383 0.160 0.182 0.786 0.692 0.485 0.673 0.92		0.0	0.528	0.052	0.754	0.229	0.075	0.108	0.089	0.109
E 1.0 0.285 0.820 0.639 0.559 0.915 0.874 0.685 0.908 2.5 0.283 0.892 0.710 0.672 0.967 0.943 0.740 0.974 5.0 0.284 0.910 0.776 0.738 0.978 0.966 0.770 0.974 7.5 0.324 0.927 0.770 0.743 0.977 0.961 0.815 0.989 10.0 0.354 0.927 0.770 0.750 0.977 0.961 0.815 0.989 10.0 0.354 0.924 0.791 0.750 0.977 0.961 0.786 0.989 0.0 0.103 0.047 0.063 0.049 0.085 0.119 0.066 0.607 0.55 0.047 0.383 0.160 0.182 0.786 0.692 0.485 0.673 1.0 0.606 0.501 0.257 0.978 0.961 0.675 0.885 2.5	0	0.5	0.307	0.672	0.598	0.433	0.782	0.683	0.540	0.711
2 2.5 0.283 0.892 0.710 0.672 0.967 0.943 0.770 0.974 5.0 0.284 0.910 0.776 0.738 0.978 0.956 0.770 0.974 7.5 0.324 0.927 0.770 0.743 0.977 0.961 0.815 0.989 10.0 0.354 0.924 0.791 0.750 0.977 0.961 0.786 0.989 bA GR1 GR2 SGR1 SGR2 DSW1 DSW2 TLSW TLUD 0.0 0.103 0.047 0.063 0.049 0.085 0.119 0.066 0.080 9 0.5 0.047 0.383 0.160 0.182 0.786 0.692 0.485 0.673 1.0 0.660 0.501 0.253 0.292 0.940 0.885 0.615 0.885 2.5 0.070 0.592 0.301 0.357 0.978 0.961 0.675 0.963	III	1.0	0.285	0.820	0.639	0.559	0.915	0.874	0.685	0.908
5.0 0.284 0.910 0.778 0.738 0.978 0.956 0.770 0.974 7.5 0.324 0.927 0.770 0.743 0.977 0.961 0.815 0.989 10.0 0.354 0.924 0.791 0.750 0.977 0.961 0.786 0.989 bA GR1 GR2 SGR1 SGR2 DSW1 DSW2 TLSW TLUD 0.0 0.103 0.047 0.063 0.049 0.085 0.119 0.066 0.080 0.5 0.047 0.383 0.160 0.182 0.786 0.692 0.485 0.673 1.0 0.660 0.501 0.253 0.292 0.940 0.885 0.615 0.885 2.5 0.070 0.592 0.301 0.357 0.978 0.961 0.675 0.963 2.5 0.067 0.662 0.350 0.416 0.989 0.973 0.696 0.967 5.0	2	2.5	0.283	0.892	0.710	0.672	0.967	0.943	0.740	0.974
1.5 0.324 0.927 0.770 0.743 0.977 0.961 0.786 0.989 10.0 0.354 0.924 0.791 0.750 0.977 0.961 0.786 0.989 bA GR1 GR2 SGR1 SGR2 DSW1 DSW2 TLSW TLUD 0.0 0.103 0.047 0.063 0.049 0.085 0.119 0.066 0.080 0.5 0.047 0.383 0.160 0.182 0.786 0.692 0.485 0.673 1.0 0.660 0.501 0.253 0.292 0.940 0.885 0.615 0.885 2.5 0.070 0.592 0.301 0.357 0.978 0.961 0.675 0.963 5.0 0.067 0.662 0.350 0.416 0.989 0.973 0.696 0.967 7.5 0.065 0.637 0.346 0.392 0.988 0.975 0.712 0.983 10.0		5.0	0.284	0.910	0.776	0.738	0.978	0.956	0.770	0.974
bA GR1 GR2 SGR1 SGR2 DSW1 DSW2 TLUD 0.0 0.103 0.047 0.063 0.049 0.085 0.119 0.066 0.089 0.5 0.047 0.333 0.160 0.182 0.786 0.692 0.485 0.613 0.5 0.047 0.383 0.160 0.182 0.786 0.692 0.485 0.673 1.0 0.600 0.501 0.253 0.292 0.940 0.885 0.615 0.885 2.5 0.070 0.592 0.301 0.357 0.978 0.961 0.675 0.963 5.0 0.067 0.662 0.350 0.416 0.989 0.973 0.696 0.967 7.5 0.065 0.637 0.346 0.392 0.988 0.978 0.739 0.982 10.0 0.064 0.640 0.362 0.406 0.975 0.712 0.983		1 2	/ \ ' J' J A	0 007		U /4.5	0.977	0.901	0.015	0.969
bA GR1 GR2 SGR1 GGR1 SGR2 DSW1 DSW2 LSW1 DSW2 LSW1 LSW1 0.0 0.103 0.047 0.063 0.049 0.085 0.119 0.066 0.080 0.5 0.047 0.383 0.160 0.182 0.786 0.692 0.485 0.673 1.0 0.060 0.592 0.301 0.253 0.292 0.940 0.885 0.615 0.885 2.5 0.070 0.592 0.301 0.357 0.978 0.961 0.675 0.963 5.0 0.067 0.662 0.350 0.416 0.989 0.973 0.696 0.967 7.5 0.065 0.637 0.346 0.392 0.988 0.978 0.739 0.982 10.0 0.064 0.640 0.362 0.406 0.975 0.712 0.983		10.0	0.324	0.927	0.701	0.750	0 077	0.061	0 796	0 0 0 0
9 0.103 0.1047 0.1083 0.1047 0.083 0.1045 0.0456 0.085 0.1119 0.085 0.1139 0.085 0.0113 0.085 0.0113 0.0855 0.0113 0.0855 0.0113 0.0855 0.0113 0.0855 0.0113 0.0855 0.0113 0.0855 0.0113 0.0855 0.0113 0.0855 0.0113		10.0	0.324 0.354	0.927 0.924	0.791	0.750	0.977	0.961	0.786	0.989
5 0.5 0.647 0.535 0.160 0.162 0.760 0.532 0.465 0.675 0.675 0.675 0.685 0.665 0.885 0.615 0.885 0.615 0.885 0.615 0.885 0.615 0.885 0.615 0.885 0.615 0.885 0.615 0.885 0.615 0.963 0.961 0.675 0.963 0.967 0.662 0.350 0.416 0.989 0.973 0.696 0.967 0.965 0.667 0.362 0.446 0.392 0.988 0.978 0.739 0.982 10.0 0.064 0.640 0.362 0.406 0.985 0.975 0.712 0.983		10.0 bA	0.324 0.354 GR1	0.927 0.924 GR2	0.791 SGR1	0.750 SGR2	0.977 DSW1	0.961 DSW2	0.786 TLSW	0.989 TLUD
25 0.000 0.	Ø	10.0 bA 0.0	0.324 0.354 GR1 0.103	0.927 0.924 GR2 0.047 0.383	0.791 SGR1 0.063 0.160	0.750 SGR2 0.049 0.182	0.977 DSW1 0.085 0.786	0.961 DSW2 0.119	0.786 TLSW 0.066	0.989 TLUD 0.080 0.673
9 1.0 0.067 0.662 0.364 0.101	sive	10.0 bA 0.0 0.5 1.0	0.324 0.354 GR1 0.103 0.047 0.060	0.927 0.924 GR2 0.047 0.383 0.501	0.791 0.791 SGR1 0.063 0.160 0.253	0.750 SGR2 0.049 0.182 0.292	0.977 DSW1 0.085 0.786 0.940	0.961 DSW2 0.119 0.692 0.885	0.786 TLSW 0.066 0.485 0.615	0.989 TLUD 0.080 0.673 0.885
7.5 0.065 0.637 0.346 0.392 0.988 0.978 0.739 0.982 10.0 0.064 0.640 0.362 0.406 0.985 0.975 0.712 0.983	cursive	10.0 bA 0.0 0.5 1.0 2.5	0.324 0.354 GR1 0.103 0.047 0.060 0.070	0.927 0.924 GR2 0.047 0.383 0.501 0.592	0.791 SGR1 0.063 0.160 0.253 0.301	0.750 SGR2 0.049 0.182 0.292 0.357	0.977 DSW1 0.085 0.786 0.940 0.978	0.961 DSW2 0.119 0.692 0.885 0.961	0.786 TLSW 0.066 0.485 0.615 0.675	0.989 TLUD 0.080 0.673 0.885 0.963
10.0 0.064 0.640 0.362 0.406 0.985 0.975 0.712 0.983	recursive	10.0 bA 0.0 0.5 1.0 2.5 5.0	0.324 0.354 GR1 0.103 0.047 0.060 0.070 0.067	0.927 0.924 GR2 0.047 0.383 0.501 0.592 0.662	0.791 SGR1 0.063 0.160 0.253 0.301 0.350	0.750 SGR2 0.049 0.182 0.292 0.357 0.416	0.977 DSW1 0.085 0.786 0.940 0.978 0.989	0.961 DSW2 0.119 0.692 0.885 0.961 0.973	0.786 TLSW 0.066 0.485 0.615 0.675 0.696	0.989 TLUD 0.080 0.673 0.885 0.963 0.963
	recursive	10.0 bA 0.0 0.5 1.0 2.5 5.0 7.5	0.324 0.354 GR1 0.103 0.047 0.060 0.070 0.067 0.065	0.927 0.924 GR2 0.047 0.383 0.501 0.592 0.662 0.637	0.791 SGR1 0.063 0.160 0.253 0.301 0.350 0.346	0.750 SGR2 0.049 0.182 0.292 0.357 0.416 0.392	0.977 DSW1 0.085 0.786 0.940 0.978 0.989 0.988	0.961 DSW2 0.119 0.692 0.885 0.961 0.973 0.978	0.786 TLSW 0.066 0.485 0.615 0.675 0.696 0.739	0.989 TLUD 0.080 0.673 0.885 0.963 0.967 0.982

Table 4-3: Power comparison under DGP3 (5% level)

a) st	tatic, no	on-robu	st						
	bA	GR1	GR2	SGR1	SGR2	DSW1	DSW2	TLSW	TLUD
	0.0	0.091	0.063	0.127	0.089	0.047	0.071	0.062	0.064
	0.5	0.189	0.073	0.264	0.219	0.059	0.073	0.229	0.245
eq	1.0	0.681	0.218	0.839	0.828	0.303	0.247	0.868	0.863
fix	2.5	1.000	0.963	1.000	1.000	1.000	1.000	1.000	1.000
	5.0	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	7.5	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	10.0	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	cause	-	-	-	-	-	-	-	-
	bA	GR1	GR2	SGR1	SGR2	DSW1	DSW2	TLSW	TLUD
	0.0	0.238	0.058	0.364	0.105	0.052	0.069	0.064	0.072
	0.5	0.323	0.053	0.478	0.168	0.048	0.097	0.082	0.107
ng	1.0	0.580	0.055	0.724	0.481	0.038	0.216	0.132	0.284
illo	2.5	0.998	0.099	1.000	0.999	0.649	0.961	1.000	1.000
-	5.0	1.000	0.179	1.000	1.000	1.000	1.000	1.000	1.000
	7.5	1.000	0.240	1.000	1.000	1.000	1.000	1.000	1.000
	10.0	1.000	0.246	1.000	1.000	1.000	1.000	1.000	1.000
	cause	-	W	-	-	-	-	-	-
	bA	GR1	GR2	SGR1	SGR2	DSW1	DSW2	TLSW	TLUD
	0.0	0.072	0.060	0.074	0.058	0.055	0.075	0.051	0.057
e	0.5	0.117	0.058	0.085	0.081	0.042	0.076	0.072	0.084
si<	1.0	0.392	0.081	0.335	0.336	0.023	0.116	0.229	0.288
cur	2.5	1.000	0.548	1.000	1.000	0.995	0.993	1.000	1.000
ē	5.0	1.000	0.987	1.000	1.000	1.000	1.000	1.000	1.000
	7.5	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	10.0	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	cause	-	-	-	-	-	-	-	-
b)sl	tatic, ro	bust							
b) si	t atic, ro bA	bust GR1	GR2	SGR1	SGR2	DSW1	DSW2	TLSW	TLUD
b) s	t atic, ro bA 0.0	bust GR1 0.090	GR2 0.061	SGR1 0.111	SGR2 0.096	DSW1 0.083	DSW2 0.109	TLSW 0.069	TLUD 0.081
b) s	t atic, ro bA 0.0 0.5	GR1 0.090 0.209	GR2 0.061 0.067	SGR1 0.111 0.268	SGR2 0.096 0.236	DSW1 0.083 0.079	DSW2 0.109 0.106	TLSW 0.069 0.250	TLUD 0.081 0.269
b) s	t atic, ro bA 0.0 0.5 1.0	GR1 0.090 0.209 0.672	GR2 0.061 0.067 0.237	SGR1 0.111 0.268 0.835	SGR2 0.096 0.236 0.845	DSW1 0.083 0.079 0.325	DSW2 0.109 0.106 0.288	TLSW 0.069 0.250 0.866	TLUD 0.081 0.269 0.866
fixed (q	tatic, ro bA 0.0 0.5 1.0 2.5	GR1 0.090 0.209 0.672 1.000	GR2 0.061 0.067 0.237 0.944	SGR1 0.111 0.268 0.835 1.000	SGR2 0.096 0.236 0.845 1.000	DSW1 0.083 0.079 0.325 1.000	DSW2 0.109 0.106 0.288 1.000	TLSW 0.069 0.250 0.866 1.000	TLUD 0.081 0.269 0.866 1.000
fixed (q	tatic, ro bA 0.0 0.5 1.0 2.5 5.0	GR1 0.090 0.209 0.672 1.000 1.000	GR2 0.061 0.067 0.237 0.944 1.000	SGR1 0.111 0.268 0.835 1.000 1.000	SGR2 0.096 0.236 0.845 1.000 1.000	DSW1 0.083 0.079 0.325 1.000 1.000	DSW2 0.109 0.106 0.288 1.000 1.000	TLSW 0.069 0.250 0.866 1.000 1.000	TLUD 0.081 0.269 0.866 1.000 1.000
fixed a (q	tatic, ro bA 0.0 0.5 1.0 2.5 5.0 7.5	GR1 0.090 0.209 0.672 1.000 1.000 0.944	GR2 0.061 0.237 0.944 1.000 1.000	SGR1 0.111 0.268 0.835 1.000 1.000 1.000	SGR2 0.096 0.236 0.845 1.000 1.000 1.000	DSW1 0.083 0.079 0.325 1.000 1.000 1.000	DSW2 0.109 0.106 0.288 1.000 1.000 1.000	TLSW 0.069 0.250 0.866 1.000 1.000 1.000	TLUD 0.081 0.269 0.866 1.000 1.000 1.000
fixed g	tatic, ro bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0	GR1 0.090 0.209 0.672 1.000 1.000 0.944 0.860	GR2 0.061 0.067 0.237 0.944 1.000 1.000 1.000	SGR1 0.111 0.268 0.835 1.000 1.000 1.000 1.000	SGR2 0.096 0.236 0.845 1.000 1.000 1.000 1.000	DSW1 0.083 0.079 0.325 1.000 1.000 1.000 1.000	DSW2 0.109 0.106 0.288 1.000 1.000 1.000 1.000	TLSW 0.069 0.250 0.866 1.000 1.000 1.000 1.000	TLUD 0.081 0.269 0.866 1.000 1.000 1.000 1.000
fixed g	tatic, ro bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause	GR1 0.090 0.209 0.672 1.000 1.000 0.944 0.860 R	GR2 0.061 0.237 0.944 1.000 1.000	SGR1 0.111 0.268 0.835 1.000 1.000 1.000 -	SGR2 0.096 0.236 0.845 1.000 1.000 1.000 -	DSW1 0.083 0.079 0.325 1.000 1.000 1.000 -	DSW2 0.109 0.106 0.288 1.000 1.000 1.000 1.000	TLSW 0.069 0.250 0.866 1.000 1.000 1.000 1.000	TLUD 0.081 0.269 0.866 1.000 1.000 1.000 1.000
fixed g	tatic, ro bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA	GR1 0.090 0.209 0.672 1.000 0.944 0.860 R GR1	GR2 0.061 0.237 0.944 1.000 1.000 1.000 - GR2	SGR1 0.111 0.268 0.835 1.000 1.000 1.000 1.000 - SGR1	SGR2 0.096 0.236 0.845 1.000 1.000 1.000 - SGR2	DSW1 0.083 0.079 0.325 1.000 1.000 1.000 - DSW1	DSW2 0.109 0.106 0.288 1.000 1.000 1.000 1.000 - DSW2	TLSW 0.069 0.250 0.866 1.000 1.000 1.000 1.000 - TLSW	TLUD 0.081 0.269 0.866 1.000 1.000 1.000 1.000 - TLUD
fixed g	tatic, ro bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0	GR1 0.090 0.209 0.672 1.000 0.944 0.860 R GR1 0.261	GR2 0.061 0.237 0.944 1.000 1.000 1.000 - GR2 0.054	SGR1 0.111 0.268 0.835 1.000 1.000 1.000 1.000 - SGR1 0.367	SGR2 0.096 0.236 0.845 1.000 1.000 1.000 1.000 - SGR2 0.129	DSW1 0.083 0.079 0.325 1.000 1.000 1.000 1.000 - DSW1 0.077	DSW2 0.109 0.106 0.288 1.000 1.000 1.000 1.000 - DSW2 0.103	TLSW 0.069 0.250 0.866 1.000 1.000 1.000 1.000 TLSW 0.072	TLUD 0.081 0.269 0.866 1.000 1.000 1.000 1.000 - TLUD 0.088
fixed fixed	tatic, ro bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5	GR1 0.090 0.209 0.672 1.000 1.000 0.944 0.860 R GR1 0.261 0.330	GR2 0.061 0.237 0.944 1.000 1.000 - GR2 0.054 0.048	SGR1 0.111 0.268 0.835 1.000 1.000 1.000 - - SGR1 0.367 0.425	SGR2 0.096 0.236 0.845 1.000 1.000 1.000 - - SGR2 0.129 0.180	DSW1 0.083 0.079 0.325 1.000 1.000 1.000 - DSW1 0.077 0.071	DSW2 0.109 0.106 0.288 1.000 1.000 1.000 - - DSW2 0.103 0.133	TLSW 0.069 0.250 0.866 1.000 1.000 1.000 1.000 - TLSW 0.072 0.102	TLUD 0.081 0.269 0.866 1.000 1.000 1.000 - TLUD 0.088 0.135
ing fixed g	tatic, ro bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 1.0	GR1 0.090 0.209 0.672 1.000 0.944 0.860 R GR1 0.201 0.000 0.944 0.860 R GR1 0.261 0.330 0.604	GR2 0.061 0.237 0.944 1.000 1.000 - GR2 0.054 0.054 0.054	SGR1 0.111 0.268 0.835 1.000 1.000 1.000 1.000 - SGR1 0.367 0.425 0.708	SGR2 0.096 0.236 0.845 1.000 1.000 1.000 - SGR2 0.129 0.180 0.465	DSW1 0.083 0.079 0.325 1.000 1.000 1.000 - DSW1 0.077 0.071 0.049	DSW2 0.109 0.106 0.288 1.000 1.000 1.000 - DSW2 0.103 0.133 0.277	TLSW 0.069 0.250 0.866 1.000 1.000 1.000 1.000 - TLSW 0.072 0.102 0.135	TLUD 0.081 0.269 0.866 1.000 1.000 1.000 - TLUD 0.088 0.135 0.312
rolling fixed (d	tatic, ro bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 1.0 2.5	Bust GR1 0.090 0.672 1.000 1.000 0.944 0.860 R GR1 0.261 0.330 0.604 0.999	GR2 0.061 0.237 0.944 1.000 1.000 1.000 - GR2 0.054 0.048 0.054 0.054	SGR1 0.111 0.268 0.835 1.000 1.000 1.000 1.000 - SGR1 0.367 0.425 0.708 1.000	SGR2 0.096 0.236 0.845 1.000 1.000 1.000 - SGR2 0.129 0.180 0.465 1.000	DSW1 0.083 0.079 0.325 1.000 1.000 1.000 - DSW1 0.077 0.071 0.049 0.300	DSW2 0.109 0.106 0.288 1.000 1.000 1.000 1.000 - DSW2 0.103 0.133 0.277 0.965	TLSW 0.069 0.250 0.866 1.000 1.000 1.000 TLSW 0.072 0.102 0.135 0.970	TLUD 0.081 0.269 0.866 1.000 1.000 1.000 1.000 - TLUD 0.088 0.135 0.312 1.000
rolling fixed (d	tatic, ro bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 1.0 2.5 5.0	Bust GR1 0.090 0.209 0.672 1.000 1.000 0.944 0.860 R GR1 0.261 0.330 0.604 0.999 1.000	GR2 0.061 0.067 0.237 0.944 1.000 1.000 1.000 - GR2 0.054 0.054 0.054 0.054 0.054 0.069 0.012	SGR1 0.111 0.268 0.835 1.000 1.000 1.000 - SGR1 0.367 0.425 0.708 1.000 1.000	SGR2 0.096 0.236 0.845 1.000 1.000 1.000 - SGR2 0.129 0.180 0.465 1.000 1.000	DSW1 0.083 0.079 0.325 1.000 1.000 1.000 1.000 - DSW1 0.077 0.071 0.071 0.049 0.300 0.047	DSW2 0.109 0.106 0.288 1.000 1.000 1.000 1.000 - DSW2 0.103 0.133 0.277 0.965 1.000	TLSW 0.069 0.250 0.866 1.000 1.000 1.000 - TLSW 0.072 0.102 0.135 0.970 1.000	TLUD 0.081 0.269 0.866 1.000 1.000 1.000 - TLUD 0.088 0.135 0.312 1.000 1.000
rolling fixed g	tatic, ro bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 1.0 2.5 5.0 7.5	bust GR1 0.209 0.672 1.000 1.000 0.944 0.860 R GR1 0.261 0.261 0.330 0.604 0.999 1.000	GR2 0.061 0.237 0.244 1.000 1.000 1.000 - GR2 0.054 0.054 0.054 0.054 0.054 0.054 0.069 0.012 0.000	SGR1 0.111 0.268 0.835 1.000 1.000 1.000 1.000 - SGR1 0.367 0.425 0.708 1.000 1.000	SGR2 0.096 0.236 0.845 1.000 1.000 1.000 1.000 - SGR2 0.129 0.180 0.465 1.000 1.000	DSW1 0.083 0.079 0.325 1.000 1.000 1.000 1.000 1.000 - DSW1 0.077 0.071 0.071 0.049 0.300 0.047 0.000	DSW2 0.109 0.106 0.288 1.000 1.000 1.000 1.000 - DSW2 0.103 0.103 0.277 0.965 1.000 1.000	TLSW 0.069 0.250 1.000 1.000 1.000 TLSW 0.072 0.102 0.135 0.970 1.000	TLUD 0.081 0.269 0.866 1.000 1.000 1.000 - TLUD 0.088 0.135 0.312 1.000 1.000
rolling fixed g	tatic, ro bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 2.5 5.0 7.5	Bust GR1 0.090 0.209 0.672 1.000 1.000 0.944 0.860 R GR1 0.261 0.330 0.604 0.999 1.000 1.000 1.000	GR2 0.061 0.237 0.944 1.000 1.000 1.000 - GR2 0.054 0.054 0.048 0.054 0.069 0.012 0.000	SGR1 0.111 0.268 0.835 1.000 1.000 1.000 1.000 - SGR1 0.367 0.425 0.708 1.000 1.000 1.000	SGR2 0.096 0.236 0.845 1.000 1.000 1.000 1.000 	DSW1 0.083 0.079 0.325 1.000 1.000 1.000 1.000 - - - - - - - - - - - - - - - - - -	DSW2 0.109 0.106 0.288 1.000 1.000 1.000 - - - - - - - - - - - - - - - - - -	TLSW 0.069 0.250 1.000 1.000 1.000 TLSW 0.072 0.102 0.102 0.970 1.000 1.000	TLUD 0.081 0.269 0.866 1.000 1.000 1.000 - TLUD 0.088 0.135 0.312 1.000 1.000 1.000
rolling fixed g	tatic, ro bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 2.5 5.0 7.5 10.0 cause	Bust GR1 0.209 0.672 1.000 1.000 0.944 0.860 R GR1 0.261 0.330 0.604 0.999 1.000 1.000 1.000	GR2 0.061 0.237 0.944 1.000 1.000 1.000 - GR2 0.054 0.048 0.054 0.054 0.069 0.012 0.000 R,W	SGR1 0.111 0.268 0.835 1.000 1.000 1.000 1.000 	SGR2 0.236 0.236 1.000 1.000 1.000 1.000 	DSW1 0.083 0.079 0.325 1.000 1.000 1.000 1.000 - - DSW1 0.077 0.071 0.071 0.049 0.300 0.047 0.000 R,W	DSW2 0.109 0.106 0.288 1.000 1.000 1.000 - DSW2 0.103 0.133 0.277 0.965 1.000 1.000 1.000	TLSW 0.069 0.250 1.000 1.000 1.000 TLSW 0.072 0.102 0.102 0.102 0.970 1.000 1.000 1.000	TLUD 0.081 0.269 0.866 1.000 1.000 1.000 - TLUD 0.088 0.135 0.312 1.000 1.000 1.000
rolling fixed g	tatic, ro bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.5 1.0 0.5 1.0 0.5 1.0 0.5 1.0 0.5 1.0 0.5 1.0 0.5 1.0 0.5 1.0 0.0 0.5 1.0 0.0 5 1.0 2.5 5.0 7.5 1.0 0 5 1.0 7.5 1.0 0 5 1.0 7.5 1.0 0 5 1.0 7.5 1.0 7.5 1.0 7.5 1.0 0 5 1.0 7.5 1.0 7.5 1.0 0 5 1.0 7.5 1.0 7.5 1.0 0 5 1.0 7.5 1.0 7.5 1.0 0 5 5 1.0 7.5 1.0 7.5 1.0 0 5 5 1.0 7.5 1.0 7.5 1.0 0 5 5 1.0 7.5 1.0 7.5 1.0 0 5 5 1.0 7.5 1.0 0 5 5 1.0 0 5 5 1.0 7.5 1.0 0 5 5 1.0 7.5 1.0 7.5 1.0 0 5 5 1.0 0 5 5 1.0 7.5 1.0 0 5 5 1.0 5 5 1.0 5 5 5 1.0 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Bust GR1 0.090 0.209 0.672 1.000 0.944 0.860 R GR1 0.261 0.330 0.604 0.999 1.000 1.000 1.000 1.000 GR1	GR2 0.061 0.237 0.944 1.000 1.000 1.000 - GR2 0.054 0.054 0.054 0.054 0.054 0.054 0.054 0.054 0.054 0.012 0.000 0.000 R,W GR2	SGR1 0.111 0.268 0.835 1.000 1.000 1.000 1.000 - - SGR1 0.425 0.708 1.000 1.000 1.000 1.000 1.000 - SGR1	SGR2 0.096 0.236 0.845 1.000 1.000 1.000 1.000 0.465 1.000 1.000 1.000 1.000 1.000	DSW1 0.083 0.079 0.325 1.000 1.000 1.000 1.000 - DSW1 0.077 0.071 0.049 0.300 0.047 0.000 0.047 0.000 0.000 R,W DSW1	DSW2 0.109 0.288 1.000 1.000 1.000 1.000 - DSW2 0.103 0.133 0.277 0.965 1.000 1.000 1.000 - -	TLSW 0.069 0.250 0.866 1.000 1.000 1.000 - TLSW 0.072 0.102 0.135 0.970 1.000 1.000 1.000 - TLSW	TLUD 0.081 0.269 0.866 1.000 1.000 1.000 - TLUD 0.088 0.135 0.312 1.000 1.000 1.000 1.000 - TLUD
rolling fixed g	bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 2.5 5.0 7.5 1.0 2.5 5.0 7.5 1.0 0.5 1.0 0.5 1.0 0.5 1.0 2.5 5.0 7.5 1.0 0.5 1.0 2.5 5.0 7.5 1.0 0.5 1.0 2.5 5.0 7.5 1.0 0.5 1.0 0.5 1.0 0 2.5 5.0 7.5 1.0 0.5 1.0 0 5 1.0 0 5 1.0 0 5 1.0 0 5 5 5 5 5 1.0 0 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	bust GR1 0.090 0.209 0.672 1.000 0.944 0.860 R GR1 0.261 0.330 0.604 0.999 1.000 1.000 1.000 1.000 - GR1 0.085	GR2 0.061 0.237 0.944 1.000 1.000 1.000 - GR2 0.054 0.054 0.054 0.069 0.012 0.000 0.000 R,W GR2 0.060	SGR1 0.111 0.268 0.835 1.000 1.000 1.000 1.000 - SGR1 0.425 0.708 1.000 1.000 1.000 1.000 1.000 - SGR1 0.069	SGR2 0.096 0.236 0.845 1.000 1.000 1.000 1.000 0.465 1.000 1.000 1.000 1.000 1.000 1.000	DSW1 0.083 0.079 0.325 1.000 1.000 1.000 - DSW1 0.077 0.071 0.049 0.300 0.047 0.000 0.000 R,W DSW1 0.079	DSW2 0.109 0.106 0.288 1.000 1.000 1.000 - DSW2 0.103 0.133 0.277 0.965 1.000 1.000 1.000 1.000 1.000	TLSW 0.069 0.250 0.866 1.000 1.000 1.000 - TLSW 0.072 0.102 0.135 0.970 1.000 1.000 1.000 1.000 - TLSW 0.061	TLUD 0.269 0.866 1.000 1.000 1.000 - TLUD 0.088 0.135 0.312 1.000 1.000 1.000 1.000 1.000 - TLUD 0.071
e rolling fixed g	tatic, ro bA 0.0 2.5 5.0 7.5 10.0 2.5 5.0 7.5 10.0 2.5 5.0 7.5 10.0 2.5 5.0 7.5 10.0 2.5 5.0 7.5 10.0 2.5 5.0 7.5 10.0 0.5 5.0 7.5 5.0 7.5 5.0 7.5 10.0 0 5.5 10.0 0.5 5.0 7.5 5.0 7.5 10.0 0 5.5 10.0 2.5 5.0 7.5 10.0 2.5 5.0 7.5 10.0 2.5 5.0 7.5 10.0 2.5 5.0 7.5 10.0 2.5 5.0 7.5 10.0 7.5 7.5 10.0 7.5 7.5 10.0 7.5 10.0 7.5 10.0 7.5 10.0 7.5 10.0 7.5 10.0 7.5 10.0 7.5 10.0 7.5 10.0 7.5 10.5 10.0 7.5 10.0 10.0 7.5 10.0 7.5 10.0 7.5 10.0 7.5 10.0 7.5 10.0 7.5 10.0 7.	Bust GR1 0.0209 0.672 1.000 0.944 0.860 R GR1 0.330 0.604 0.999 1.000 1.000 1.000 1.000 1.000 1.000 1.000 0.604 0.999 1.000 1.000 1.000	GR2 0.061 0.237 0.944 1.000 1.000 1.000 - GR2 0.054 0.054 0.054 0.054 0.054 0.054 0.069 0.012 0.000 R,W GR2 0.060 0.048	SGR1 0.111 0.268 0.835 1.000 1.000 1.000 - SGR1 0.367 0.425 0.708 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000	SGR2 0.096 0.236 0.845 1.000 1.000 1.000 - SGR2 0.129 0.180 0.465 1.000 1.000 1.000 1.000 1.000 - SGR2 0.064	DSW1 0.083 0.079 0.325 1.000 1.000 1.000 - DSW1 0.077 0.071 0.049 0.300 0.047 0.000 0.047 0.000 R,W DSW1 0.079	DSW2 0.109 0.106 0.288 1.000 1.000 1.000 - DSW2 0.103 0.277 0.965 1.000 1.000 1.000 1.000 1.000 1.000	TLSW 0.069 0.250 0.866 1.000 1.000 1.000 - TLSW 0.072 0.102 0.102 0.135 0.970 1.000 1.000 1.000 1.000 1.000	TLUD 0.081 0.866 1.000 1.000 1.000 - TLUD 0.088 0.135 0.312 1.000 1.000 1.000 1.000 1.000 1.000 1.000
sive rolling fixed a	tatic, ro bA 0.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 7.5 10.0 cause bA 0.5 1.0 0 0.5 1.0 0 0.5 1.0 0 0.5 1.0 0 0.5 1.0 0 0.5 1.0 0 0.5 1.0 0 0.5 1.0 0 0.5 1.0 0 0.5 1.0 0 0.5 1.0 0 0.5 1.0 0 0.5 1.0 0 0.5 1.0 0 0.5 1.0 0 0.5 1.0 0.5 1.0 0 0 0.5 1.0 0 0 0.5 1.0 0 0 0.5 1.0 0 0 0.5 1.0 0 0.5 1.0 0 0 0.5 1.0 0 0 0.5 1.0 0 0 0.5 1.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	bust GR1 0.209 0.672 1.000 1.000 0.944 0.860 R GR1 0.330 0.604 0.999 1.000 1.000 1.000 1.000 1.000 1.000 0.672 0.72 0.672 0.672 0.672 0.672 0.672 0.672 0.672 0.672 0.672 0.672 0.672 0.944 0.860 0.604 0.999 1.000 0.604 0.999 1.000 0.604 0.999 1.000 0.604 0.999 1.000 0.604 0.999 1.000 0.604 0.999 1.000 0.604 0.999 1.000 0.604 0.999 1.000 0.604 0.999 1.000 0.604 0.999 1.000 0.604 0.999 1.000 0.604 0.999 1.000 0.604 0.999 1.000 0.604 0.999 1.000 0.604 0.999 1.000 0.000 0.604 0.999 0.000 0.000 0.000 0.604 0.999 0.000 0.1200 0.1226 0.1256 0.1256 0.1256 0.1256 0.1256 0.1256 0.1256 0.1256 0.1256 0.1256 0.1256 0.1256 0.12566 0.12567 0.1256 0	GR2 0.061 0.237 0.944 1.000 1.000 1.000 - GR2 0.054 0.054 0.069 0.012 0.000 0.000 R,W GR2 0.060 0.048	SGR1 0.111 0.268 0.835 1.000 1.000 1.000 - SGR1 0.425 0.708 1.000 1.000 1.000 1.000 1.000 1.000 2. SGR1 0.095 0.326	SGR2 0.096 0.236 0.845 1.000 1.000 1.000 - SGR2 0.180 0.465 1.000 1.000 1.000 1.000 1.000 1.000 2.0064 0.090 0.336	DSW1 0.083 0.079 0.325 1.000 1.000 1.000 - DSW1 0.077 0.071 0.047 0.000 0.047 0.000 0.047 0.000 R,W DSW1 0.079 0.056 0.034	DSW2 0.109 0.288 1.000 1.000 1.000 - DSW2 0.103 0.133 0.277 0.965 1.000 1.000 1.000 1.000 1.000 1.000 1.000 2.277 0.150 0.122 0.157	TLSW 0.069 0.250 1.000 1.000 1.000 - TLSW 0.072 0.102 0.102 0.102 0.102 0.100 1.000 1.000 1.000 1.000 1.000 1.000 1.000	TLUD 0.081 0.269 0.866 1.000 1.000 1.000 1.000 - TLUD 0.085 0.312 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000
cursive rolling fixed d	tatic, ro bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 5.0 7.5 10.0 cause bA 0.0 5.0 7.5 1.0 2.5 5.0 7.5 1.0 2.5 1.0 2.5 5.0 7.5 5.0 7.5 5.0 7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5	bust GR1 0.090 0.209 0.672 1.000 1.000 0.944 0.860 R GR1 0.261 0.330 0.604 0.999 1.000 1.000 1.000 1.000 1.000 0.604 0.330 0.604 0.300 0.609 1.000 1.000 0.604 0.300 0.604 0.300 0.604 0.300 0.604 0.300 0.604 0.605 0.100 0.604 0.605 0.60	GR2 0.061 0.237 0.944 1.000 1.000 1.000 - GR2 0.054 0.054 0.054 0.054 0.054 0.069 0.012 0.000 0.000 R,W GR2 0.060 0.048 0.060 0.064 0.060	SGR1 0.111 0.268 0.835 1.000 1.000 1.000 - SGR1 0.425 0.708 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000	SGR2 0.096 0.236 0.845 1.000 1.000 1.000 - SGR2 0.129 0.129 0.140 0.465 1.000 1.000 1.000 1.000 1.000 1.000 - SGR2 0.064 0.0366 0.336 0.336	DSW1 0.083 0.079 0.325 1.000 1.000 1.000 1.000 0.000 0.077 0.071 0.049 0.300 0.047 0.000 0.047 0.000 0.047 0.000 0.047 0.000 0.047 0.000 0.056 0.034	DSW2 0.109 0.106 0.288 1.000 1.000 1.000 - DSW2 0.103 0.277 0.965 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000	TLSW 0.069 0.250 1.000 1.000 1.000 TLSW 0.072 0.102 0.102 0.135 0.970 1.000 1.000 1.000 1.000 TLSW 0.061 0.024 0.224 1.000	TLUD 0.081 0.269 0.866 1.000 1.000 1.000 - TLUD 0.088 0.135 0.312 1.000 1.000 1.000 1.000 1.000 1.000 1.000
recursive rolling fixed d	tatic, ro bA 0.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 2.5 5.0 7.5	Bust GR1 0.090 0.209 0.672 1.000 1.000 0.944 0.860 R GR1 0.261 0.604 0.604 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000	GR2 0.061 0.237 0.244 1.000 1.000 1.000 - - - - - - - - - - - - - - - - - -	SGR1 0.111 0.268 0.835 1.000 1.000 1.000 - SGR1 0.367 0.425 0.708 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000	SGR2 0.096 0.236 0.845 1.000 1.000 1.000 - SGR2 0.129 0.180 0.465 1.000 1.000 1.000 1.000 1.000 1.000 - SGR2 0.064 0.090 0.336 1.000	DSW1 0.083 0.079 0.325 1.000 1.000 1.000 1.000 1.000 0.077 0.071 0.071 0.049 0.300 0.047 0.000 0.047 0.000 0.047 0.000 0.047 0.000 0.056 0.034 0.079	DSW2 0.109 0.106 0.288 1.000 1.000 1.000 - DSW2 0.103 0.277 0.965 1.000 1.000 1.000 1.000 - DSW2 0.115 0.122 0.157 0.984 1.000	TLSW 0.069 0.250 1.000 1.000 1.000 TLSW 0.072 0.102 0.135 0.970 1.000 1.000 1.000 1.000 1.000 1.000 1.000	TLUD 0.081 0.269 0.866 1.000 1.000 1.000 - TLUD 0.088 0.312 1.000 1.000 1.000 1.000 1.000 1.000 1.000 - TLUD 0.071 0.107 0.303 1.000
recursive rolling fixed a	tatic, ro bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 2.5 5.0 7.5	Bust GR1 0.090 0.209 0.672 1.000 1.000 0.944 0.860 R GR1 0.261 0.300 1.000 1.000 1.000 1.000 1.000 1.000 1.000 - GR1 0.085 0.122 0.426 1.000 1.000	GR2 0.061 0.237 0.244 1.000 1.000 1.000 - GR2 0.054 0.048 0.054 0.069 0.012 0.000 R,W GR2 0.000 R,W GR2 0.060 0.048 0.074 0.060 0.048 0.074	SGR1 0.111 0.268 0.835 1.000 1.000 1.000 - SGR1 0.367 0.425 0.708 1.000 1.000 1.000 1.000 1.000 1.000 5 0.326 1.000 1.000	SGR2 0.096 0.236 0.845 1.000 1.000 1.000 - SGR2 0.129 0.180 0.465 1.000 1.000 1.000 1.000 1.000 - SGR2 0.064 0.036 1.000 0.336 1.000	DSW1 0.083 0.079 0.325 1.000 1.000 1.000 1.000 - DSW1 0.077 0.071 0.071 0.071 0.049 0.300 0.047 0.000 R,W DSW1 0.079 0.056 0.034 0.034 0.034 0.034 0.034 0.034 0.034	DSW2 0.109 0.288 1.000 1.000 1.000 - DSW2 0.103 0.277 0.965 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000	TLSW 0.069 0.250 1.000 1.000 1.000 - TLSW 0.072 0.102 0.102 0.102 0.970 1.000 1.000 1.000 - TLSW 0.061 0.085 0.224 1.000 1.000	TLUD 0.081 0.269 0.866 1.000 1.000 1.000 - TLUD 0.088 0.135 0.312 1.000 1.000 1.000 1.000 1.000 - TLUD 0.071 0.303 1.000 1.000
recursive rolling fixed a	tatic, ro bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 2.5 5 10.0 5 5.0 7.5 10 2.5 5 5.0 7.5 5 10.0 5 5.0 7.5 5 10.0	Bust GR1 0.090 0.209 0.672 1.000 1.000 0.944 0.860 R GR1 0.261 0.330 0.604 0.999 1.000 1.000 1.000 1.000 - GR1 0.085 0.122 0.426 1.000 1.000 1.000	GR2 0.061 0.237 0.944 1.000 1.000 1.000 - GR2 0.054 0.054 0.054 0.054 0.054 0.054 0.054 0.000 R,W GR2 0.000 R,W GR2 0.000 0.000 R,W GR2 0.060 0.048 0.074 0.048 0.074 0.048 0.074 0.237 0.048 0.054 0.050 0.054 0.054 0.054 0.050 0.054 0.050 0.054 0.050 0.050 0.050 0.050 0.050 0.054 0.050 0.050 0.050 0.054 0.050 0.050 0.050 0.050 0.054 0.050 0.050 0.050 0.050 0.050 0.054 0.050 0.050 0.050 0.054 0.050 0.050 0.050 0.050 0.050 0.054 0.0500 0.0500000000	SGR1 0.111 0.268 0.835 1.000 1.000 1.000 	SGR2 0.096 0.236 0.845 1.000 1.000 1.000 - SGR2 0.129 0.180 0.465 1.000 1.000 1.000 1.000 1.000 - SGR2 0.064 0.0366 1.000 1.000 1.000	DSW1 0.083 0.079 0.325 1.000 1.000 1.000 1.000 0.077 0.071 0.077 0.071 0.049 0.049 0.049 0.049 0.049 0.049 0.049 0.000 R.W DSW1 0.079 0.056 0.034 0.034 0.034 0.034 0.034 0.034 0.034 0.034 0.034 0.034 0.034 0.034 0.034 0.034 0.034 0.0000 0.000 0.000 0.000 0.0000 0.000 0.000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.000000	DSW2 0.109 0.288 1.000 1.000 1.000 - DSW2 0.103 0.133 0.277 0.965 1.000 1.000 1.000 - DSW2 0.115 0.122 0.157 0.984 1.000 1.000	TLSW 0.069 0.250 1.000 1.000 1.000 - TLSW 0.072 0.102 0.135 0.970 1.000 1.000 1.000 - TLSW 0.061 0.085 0.224 1.000 1.000	TLUD 0.861 0.269 0.866 1.000 1.000 1.000 - TLUD 0.088 0.135 0.312 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000

c) a	ynamic	, non-re	obust						
	bA	GR1	GR2	SGR1	SGR2	DSW1	DSW2	TLSW	TLUD
	0.0	0.128	0.059	0.177	0.117	0.074	0.090	0.093	0.114
	0.5	0.286	0.084	0.348	0.293	0.087	0.093	0.333	0.358
BQ	1.0	0.693	0.154	0.834	0.834	0.382	0.338	0.879	0.880
fix	2.5	1.000	0.149	1.000	1.000	1.000	0.999	1.000	1.000
	5.0	1.000	0.022	1.000	1.000	1.000	1.000	1.000	1.000
	7.5	1.000	0.023	1.000	1.000	1.000	1.000	1.000	1.000
	10.0	1 000	0.011	1 000	1 000	1 000	1 000	1 000	1 000
	cause	-	D	-	-	-	-	-	-
-	hΔ	GR1	GR2	SGR1	SGR2	DSW1	DSW2	TLSW	
	0.0	0.511	0.047	0 734	0 240	0.064	0.080	0.082	0.096
	0.5	0.601	0.066	0.800	0.364	0.056	0 104	0.002	0.139
Ð	1.0	0.771	0.064	0.901	0.590	0.038	0.172	0.100	0.100
i	2.5	0.985	0.001	1 000	0.988	0.126	0.738	0.602	0.916
2	5.0	0.000	0.051	1.000	1 000	0.120	0.986	0.679	0.993
	7.5	1 000	0.001	1.000	1.000	0.046	0.000	0.073	0.000
	10.0	1.000	0.040	1.000	1.000	0.040	0.000	0.174	0.504
	0.01	1.000	0.012	1.000	1.000	0.010	0.995	0.012	0.007
<u> </u>	Lause		0	-	-				
	DA	0 102		5GR1	5GRZ	0.069	0.097	0.055	1LUD
	0.0	0.102	0.050	0.090	0.073	0.000	0.007	0.055	0.005
i <e< th=""><th>0.5</th><td>0.179</td><td>0.007</td><td>0.133</td><td>0.114</td><td>0.051</td><td>0.069</td><td>0.079</td><td>0.095</td></e<>	0.5	0.179	0.007	0.133	0.114	0.051	0.069	0.079	0.095
sın	1.0	0.370	0.070	0.312	0.265	0.015	0.100	0.170	0.237
rec	2.5	0.919	0.054	0.920	0.926	0.130	0.571	0.030	0.940
_	5.0	0.991	0.045	0.993	0.995	0.107	0.981	0.856	0.995
	7.5	0.994	0.044	0.997	0.996	0.039	0.999	0.300	0.944
	10.0	0.999	0.017	0.995	0.999	0.012	0.996	0.017	0.609
	cause	D	D	D	D	D	D	D	D
d) d	vnamio	. robus	ł						
d) d	ynamic bA	, robus	t GR2	SGR1	SGR2	DSW1	DSW2	TLSW	TLUD
d) d	bA 0.0	, robus GR1 0 129	t GR2 0.049	SGR1 0 138	SGR2 0.096	DSW1	DSW2 0 119	TLSW	TLUD 0 111
d) d	bA 0.0 0.5	GR1 0.129 0.276	t GR2 0.049 0.072	SGR1 0.138 0.320	SGR2 0.096 0.294	DSW1 0.085 0.086	DSW2 0.119 0.107	TLSW 0.088 0.304	TLUD 0.111 0.336
d) d	bA 0.0 0.5 1.0	GR1 0.129 0.276 0.681	t GR2 0.049 0.072 0.173	SGR1 0.138 0.320 0.834	SGR2 0.096 0.294 0.837	DSW1 0.085 0.086 0.355	DSW2 0.119 0.107 0.315	TLSW 0.088 0.304 0.880	TLUD 0.111 0.336 0.881
d) d	bA 0.0 0.5 1.0 2.5	GR1 0.129 0.276 0.681 1 000	GR2 0.049 0.072 0.173 0.214	SGR1 0.138 0.320 0.834 1.000	SGR2 0.096 0.294 0.837 1.000	DSW1 0.085 0.086 0.355 1.000	DSW2 0.119 0.107 0.315 1.000	TLSW 0.088 0.304 0.880 1.000	TLUD 0.111 0.336 0.881 1.000
d) d	ynamic bA 0.0 0.5 1.0 2.5 5.0	GR1 0.129 0.276 0.681 1.000 0.988	t GR2 0.049 0.072 0.173 0.214 0.025	SGR1 0.138 0.320 0.834 1.000	SGR2 0.096 0.294 0.837 1.000	DSW1 0.085 0.086 0.355 1.000	DSW2 0.119 0.107 0.315 1.000 1.000	TLSW 0.088 0.304 0.880 1.000	TLUD 0.111 0.336 0.881 1.000
d) d	ynamic bA 0.0 0.5 1.0 2.5 5.0 7.5	GR1 0.129 0.276 0.681 1.000 0.988 0.878	GR2 0.049 0.072 0.173 0.214 0.025 0.020	SGR1 0.138 0.320 0.834 1.000 1.000	SGR2 0.096 0.294 0.837 1.000 1.000	DSW1 0.085 0.086 0.355 1.000 1.000	DSW2 0.119 0.107 0.315 1.000 1.000	TLSW 0.088 0.304 0.880 1.000 1.000	TLUD 0.111 0.336 0.881 1.000 1.000
d) d	ynamic bA 0.0 0.5 1.0 2.5 5.0 7.5	GR1 0.129 0.276 0.681 1.000 0.988 0.878 0.844	GR2 0.049 0.072 0.173 0.214 0.025 0.020	SGR1 0.138 0.320 0.834 1.000 1.000 1.000	SGR2 0.096 0.294 0.837 1.000 1.000 1.000	DSW1 0.085 0.086 0.355 1.000 1.000 1.000	DSW2 0.119 0.107 0.315 1.000 1.000 1.000	TLSW 0.088 0.304 0.880 1.000 1.000 1.000	TLUD 0.111 0.336 0.881 1.000 1.000 1.000
d) d	bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0	GR1 0.129 0.276 0.681 1.000 0.988 0.878 0.944	t GR2 0.049 0.072 0.173 0.214 0.025 0.020 0.005	SGR1 0.138 0.320 0.834 1.000 1.000 1.000	SGR2 0.096 0.294 0.837 1.000 1.000 1.000	DSW1 0.085 0.086 0.355 1.000 1.000 1.000	DSW2 0.119 0.315 1.000 1.000 1.000 1.000	TLSW 0.088 0.304 0.880 1.000 1.000 1.000	TLUD 0.111 0.336 0.881 1.000 1.000 1.000
d) d	ynamic bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause	GR1 0.129 0.276 0.681 1.000 0.988 0.878 0.944 R CP1	t GR2 0.049 0.072 0.173 0.214 0.025 0.020 0.005 R,D CP2	SGR1 0.138 0.320 0.834 1.000 1.000 1.000 - -	SGR2 0.096 0.294 0.837 1.000 1.000 1.000 -	DSW1 0.085 0.086 0.355 1.000 1.000 1.000 - -	DSW2 0.119 0.107 0.315 1.000 1.000 1.000 -	TLSW 0.088 0.304 0.880 1.000 1.000 1.000 1.000 -	TLUD 0.111 0.336 0.881 1.000 1.000 1.000 -
d) d	ynamic bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0	, robus GR1 0.129 0.276 0.681 1.000 0.988 0.878 0.944 R GR1 0.528	t GR2 0.049 0.072 0.173 0.214 0.025 0.020 0.005 R,D GR2 0.052	SGR1 0.138 0.320 0.834 1.000 1.000 1.000 1.000 - SGR1 0.754	SGR2 0.096 0.294 0.837 1.000 1.000 1.000 - SGR2 0.220	DSW1 0.085 0.086 0.355 1.000 1.000 1.000 1.000 - DSW1 0.075	DSW2 0.119 0.107 0.315 1.000 1.000 1.000 1.000 - DSW2 0.108	TLSW 0.088 0.304 0.880 1.000 1.000 1.000 1.000 1.000 TLSW 0.089	TLUD 0.111 0.336 0.881 1.000 1.000 1.000 - TLUD 0.100
d) d	ynamic bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0	, robus GR1 0.129 0.276 0.681 1.000 0.988 0.878 0.944 R GR1 0.528 0.615	t GR2 0.049 0.072 0.173 0.214 0.025 0.020 0.005 R,D GR2 0.052 0.040	SGR1 0.138 0.320 0.834 1.000 1.000 1.000 1.000 - SGR1 0.754 0.706	SGR2 0.096 0.294 0.837 1.000 1.000 1.000 1.000 - SGR2 0.229 0.244	DSW1 0.085 0.086 0.355 1.000 1.000 1.000 1.000 - DSW1 0.075 0.075	DSW2 0.119 0.107 0.315 1.000 1.000 1.000 1.000 - DSW2 0.108 0.121	TLSW 0.088 0.304 0.880 1.000 1.000 1.000 1.000 TLSW 0.089 0.117	TLUD 0.111 0.336 0.881 1.000 1.000 1.000 1.000 - TLUD 0.109 0.158
g fixed p (p	ynamic bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5	robus GR1 0.129 0.276 0.681 1.000 0.988 0.944 R GR1 0.528 0.615 0.628	t GR2 0.049 0.072 0.173 0.214 0.025 0.020 0.005 R,D GR2 0.052 0.052 0.059	SGR1 0.138 0.320 0.834 1.000 1.000 1.000 	SGR2 0.096 0.294 0.837 1.000 1.000 1.000 1.000 - SGR2 0.229 0.344 0.505	DSW1 0.085 0.086 0.355 1.000 1.000 1.000 - - DSW1 0.075 0.072 0.072	DSW2 0.119 0.107 0.315 1.000 1.000 1.000 1.000 - - DSW2 0.108 0.131	TLSW 0.088 0.304 0.880 1.000 1.000 1.000 1.000 - TLSW 0.089 0.117 0.123	TLUD 0.111 0.336 0.881 1.000 1.000 1.000 1.000 - TLUD 0.109 0.158 0.271
Illing fixed p (p	ynamic bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 1.0 2.5	GR1 0.129 0.276 0.681 1.000 0.988 0.988 0.944 R GR1 0.528 0.615 0.772	t GR2 0.049 0.072 0.173 0.214 0.025 0.020 0.005 R,D GR2 0.052 0.049 0.058	SGR1 0.138 0.320 0.834 1.000 1.000 1.000 - SGR1 0.754 0.796 0.904	SGR2 0.096 0.294 0.837 1.000 1.000 1.000 - SGR2 0.229 0.344 0.595	DSW1 0.085 0.086 0.355 1.000 1.000 1.000 - DSW1 0.075 0.072 0.050	DSW2 0.119 0.315 1.000 1.000 1.000 1.000 - DSW2 0.108 0.131 0.230	TLSW 0.088 0.304 0.880 1.000 1.000 1.000 - TLSW 0.089 0.117 0.123	TLUD 0.111 0.336 0.881 1.000 1.000 1.000 - TLUD 0.109 0.158 0.271
rolling fixed p	ynamic bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 1.0 2.5 1.0 2.5	GR1 0.129 0.276 0.681 1.000 0.988 0.878 0.944 R GR1 0.528 0.615 0.772 0.984 1.002	t GR2 0.049 0.072 0.173 0.214 0.025 0.020 0.005 R,D GR2 0.052 0.049 0.058 0.040	SGR1 0.138 0.320 0.834 1.000 1.000 1.000 	SGR2 0.096 0.294 0.837 1.000 1.000 1.000 - SGR2 0.229 0.344 0.595 0.979	DSW1 0.085 0.086 0.355 1.000 1.000 1.000 - - DSW1 0.075 0.072 0.050 0.094 0.094	DSW2 0.119 0.107 0.315 1.000 1.000 1.000 - - - - - - - - - - - - - - - - - -	TLSW 0.088 0.304 0.880 1.000 1.000 1.000 - TLSW 0.089 0.117 0.123 0.489 0.241	TLUD 0.111 0.336 0.881 1.000 1.000 1.000 - TLUD 0.109 0.158 0.271 0.897 0.897
rolling fixed p (p	ynamic bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 1.0 2.5 5.0 7.5	GR1 0.129 0.276 0.681 1.000 0.988 0.878 0.944 R GR1 0.528 0.615 0.772 0.984 1.000	GR2 0.049 0.072 0.173 0.214 0.025 0.020 0.005 R,D GR2 0.052 0.049 0.058 0.040 0.044	SGR1 0.138 0.320 0.834 1.000 1.000 1.000 - - SGR1 0.754 0.796 0.904 0.999 1.000	SGR2 0.096 0.294 0.837 1.000 1.000 1.000 - SGR2 0.229 0.344 0.595 0.979 1.000	DSW1 0.085 0.365 1.000 1.000 1.000 1.000 - DSW1 0.075 0.072 0.050 0.094 0.007	DSW2 0.119 0.315 1.000 1.000 1.000 1.000 - DSW2 0.108 0.131 0.230 0.779 0.965	TLSW 0.088 0.304 0.880 1.000 1.000 1.000 - TLSW 0.089 0.117 0.123 0.489 0.243 0.243	TLUD 0.111 0.336 0.881 1.000 1.000 1.000 - TLUD 0.109 0.158 0.271 0.897 0.853
rolling fixed p (p	ynamic bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 1.0 2.5 5.0 7.5	c, robus GR1 0.129 0.276 0.681 1.000 0.988 0.878 0.944 R GR1 0.528 0.615 0.772 0.984 1.000 1.000	GR2 0.049 0.072 0.173 0.214 0.025 0.020 0.005 R,D GR2 0.052 0.049 0.058 0.040 0.044 0.030	SGR1 0.138 0.320 0.834 1.000 1.000 1.000 	SGR2 0.096 0.294 0.837 1.000 1.000 1.000 - - SGR2 0.229 0.344 0.595 0.379 1.000 1.000	DSW1 0.085 0.086 0.355 1.000 1.000 1.000 - DSW1 0.075 0.072 0.050 0.094 0.007 0.000	DSW2 0.119 0.107 0.315 1.000 1.000 1.000 - - DSW2 0.108 0.131 0.230 0.779 0.965 0.992	TLSW 0.088 0.304 0.880 1.000 1.000 1.000 1.000 TLSW 0.089 0.117 0.123 0.489 0.243 0.243 0.020	TLUD 0.111 0.336 0.881 1.000 1.000 1.000 1.000 - TLUD 0.109 0.158 0.271 0.897 0.853 0.461
rolling fixed p (p	ynamic bA 0.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0	c, robus GR1 0.276 0.681 1.000 0.988 0.944 R GR1 0.528 0.615 0.772 0.984 1.000 1.000 1.000	GR2 0.049 0.072 0.173 0.214 0.025 0.020 0.005 R,D GR2 0.052 0.049 0.058 0.040 0.058 0.040 0.044 0.030	SGR1 0.138 0.320 0.834 1.000 1.000 1.000 - - SGR1 0.754 0.994 0.999 1.000 1.000 1.000	SGR2 0.096 0.294 0.837 1.000 1.000 1.000 - SGR2 0.229 0.344 0.595 0.979 1.000 1.000 0.999	DSW1 0.085 0.086 0.355 1.000 1.000 1.000 - - DSW1 0.075 0.072 0.050 0.094 0.007 0.000 0.000	DSW2 0.119 0.107 0.315 1.000 1.000 1.000 - - DSW2 0.108 0.131 0.230 0.779 0.965 0.992 0.992	TLSW 0.088 0.304 0.880 1.000 1.000 1.000 TLSW 0.089 0.117 0.123 0.489 0.243 0.2243 0.020 0.000	TLUD 0.111 0.336 0.881 1.000 1.000 1.000 - TLUD 0.109 0.158 0.271 0.897 0.853 0.461 0.19
rolling fixed (p	ynamic bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause	c, robus GR1 0.129 0.276 0.681 1.000 0.988 0.878 0.944 R GR1 0.528 0.615 0.772 0.984 1.000 1.000 1.000	GR2 0.049 0.072 0.173 0.214 0.025 0.020 0.005 R,D GR2 0.052 0.052 0.058 0.040 0.058 0.040 0.058 0.044 0.030 0.004 R,D	SGR1 0.138 0.320 0.834 1.000 1.000 1.000 - SGR1 0.754 0.999 1.000 1.000 1.000	SGR2 0.096 0.294 0.837 1.000 1.000 1.000 1.000 0.229 0.344 0.595 0.979 1.000 1.000 0.999 R,D	DSW1 0.085 0.086 0.355 1.000 1.000 1.000 1.000 - DSW1 0.075 0.072 0.050 0.094 0.007 0.000 0.000 R,D	DSW2 0.119 0.107 0.315 1.000 1.000 1.000 1.000 1.000 1.000 0.108 0.108 0.131 0.230 0.779 0.965 0.992 0.991 R,D	TLSW 0.088 0.304 0.880 1.000 1.000 1.000 TLSW 0.089 0.117 0.123 0.489 0.243 0.243 0.200 0.000 R,D	TLUD 0.111 0.336 0.881 1.000 1.000 1.000 - TLUD 0.109 0.158 0.271 0.897 0.853 0.461 0.119 R,D
rolling fixed p (p	ynamic bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.5 1.0 2.5 5.0 7.5 10.0 cause bA	r robus GR1 0.129 0.276 0.681 1.000 0.988 0.878 0.944 R GR1 0.528 0.615 0.772 0.984 1.000 1.000 1.000 1.000 - GR1 0.420	GR2 0.049 0.072 0.173 0.214 0.025 0.020 0.005 R,D GR2 0.052 0.052 0.058 0.040 0.058 0.040 0.058 0.040 0.004 R,D GR2 0.004 R,D	SGR1 0.138 0.320 0.834 1.000 1.000 1.000 - SGR1 0.754 0.999 1.000 1.000 1.000 1.000 - SGR1 2.001	SGR2 0.096 0.294 0.837 1.000 1.000 1.000 1.000 0.229 0.344 0.595 0.979 1.000 1.000 0.999 R,D SGR2 0.21	DSW1 0.085 0.086 0.355 1.000 1.000 1.000 - DSW1 0.075 0.072 0.050 0.094 0.007 0.000 0.000 R,D DSW1 0.001	DSW2 0.119 0.107 0.315 1.000 1.000 1.000 1.000 1.000 1.000 1.000 0.108 0.131 0.230 0.779 0.965 0.992 0.991 R,D DSW2 0.412	TLSW 0.088 0.304 0.880 1.000 1.000 1.000 TLSW 0.089 0.117 0.123 0.489 0.243 0.243 0.200 0.000 R,D TLSW	TLUD 0.111 0.336 0.881 1.000 1.000 1.000 1.000 1.000 0.108 0.271 0.897 0.853 0.461 0.119 R,D TLUD 0.009 TLUD
rolling fixed p (p	ynamic bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 cause bA	s, robus GR1 0.129 0.276 0.681 1.000 0.988 0.878 0.944 R GR1 0.528 0.615 0.772 0.984 1.000 1.000 1.000 1.000	GR2 0.049 0.072 0.173 0.214 0.025 0.020 0.005 R,D GR2 0.049 0.052 0.049 0.054 0.040 0.044 0.030 0.004 R,D GR2 0.047 0.047	SGR1 0.138 0.320 0.834 1.000 1.000 1.000 - SGR1 0.796 0.904 0.999 1.000 1.000 1.000 1.000 1.000	SGR2 0.096 0.294 0.837 1.000 1.000 1.000 - SGR2 0.299 0.344 0.595 0.379 1.000 1.000 0.999 R,D SGR2 0.49 0.49	DSW1 0.085 0.086 0.355 1.000 1.000 1.000 1.000 - DSW1 0.075 0.072 0.050 0.094 0.007 0.000 0.094 0.007 0.000 0.000 R,D DSW1 0.085	DSW2 0.119 0.107 0.315 1.000 1.000 1.000 1.000 - DSW2 0.108 0.131 0.230 0.779 0.965 0.992 0.991 R,D DSW2 0.119 0.502 0.119	TLSW 0.088 0.304 0.880 1.000 1.000 1.000 TLSW 0.089 0.117 0.123 0.489 0.243 0.243 0.220 0.000 R,D TLSW 0.066 0.005	TLUD 0.111 0.336 0.881 1.000 1.000 1.000 1.000 1.000 0.158 0.271 0.853 0.461 0.119 R,D TLUD 0.080 0.461
ive rolling fixed p (p	ynamic bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5	 robus GR1 0.276 0.681 1.000 0.988 0.944 R GR1 0.528 0.615 0.772 0.984 1.000 1.000 1.000 1.000 - GR1 0.103 0.186 	GR2 0.049 0.072 0.173 0.214 0.025 0.020 0.005 R,D GR2 0.052 0.049 0.058 0.049 0.058 0.040 0.044 0.030 0.004 R,D GR2 0.047 0.052	SGR1 0.138 0.320 0.834 1.000 1.000 1.000 - SGR1 0.796 0.904 0.999 1.000 1.000 1.000 1.000 1.000 - SGR1 0.063 0.130	SGR2 0.096 0.294 0.837 1.000 1.000 1.000 - SGR2 0.229 0.344 0.595 0.979 1.000 1.000 0.999 R,D SGR2 0.049 0.128	DSW1 0.085 0.086 0.355 1.000 1.000 1.000 1.000 0.075 0.072 0.050 0.094 0.007 0.000 0.094 0.007 0.000 0.000 R,D DSW1 0.085 0.063	DSW2 0.119 0.107 0.315 1.000 1.000 1.000 1.000 - DSW2 0.108 0.779 0.965 0.992 0.991 R,D DSW2 0.119 0.116	TLSW 0.088 0.304 0.880 1.000 1.000 1.000 TLSW 0.089 0.117 0.123 0.489 0.243 0.020 0.000 R,D TLSW 0.066 0.095	TLUD 0.111 0.336 0.881 1.000 1.000 1.000 1.000 1.000 0.109 0.158 0.271 0.853 0.461 0.119 R,D TLUD 0.080 0.118
Jursive rolling fixed p	ynamic bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 7.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 1.0 0.5 1.0 2.5 5.0 7.5 10.0 0.5 1.0 2.5 5.0 7.5 1.0 0.5 1.0 2.5 5.0 0.5 1.0 2.5 5.0 0.5 1.0 0.5 1.0 2.5 5.0 0.5 1.0 0.5 5.0 0.5 1.0 0.5 5.0 0.5 1.0 0.5 5.0 0.0 0.5 1.0 0.5 5.0 0.0 0.5 1.0 0.5 5.0 0.5 1.0 0.5 5.0 0.0 0.5 5.0 0.0 0.5 5.0 0.0 0	 robus GR1 0.129 0.276 0.681 1.000 0.988 0.944 R GR1 0.528 0.615 0.772 0.984 1.000 1.000 1.000 1.000 - GR1 0.103 0.186 0.399 	GR2 0.049 0.072 0.173 0.214 0.025 0.020 0.005 R,D GR2 0.052 0.049 0.058 0.049 0.058 0.049 0.058 0.044 0.030 0.004 R,D GR2 0.047 0.052 0.047 0.052 0.047	SGR1 0.138 0.320 0.834 1.000 1.000 1.000 - SGR1 0.754 0.904 0.909 1.000 1.000 1.000 1.000 1.000 1.000 0.326	SGR2 0.096 0.294 0.837 1.000 1.000 1.000 - SGR2 0.229 0.344 0.595 0.979 1.000 0.999 R,D SGR2 0.049 0.128 0.329	DSW1 0.085 0.086 0.355 1.000 1.000 1.000 1.000 0.075 0.072 0.050 0.094 0.007 0.000 R,D DSW1 0.085 0.063 0.023 0.023	DSW2 0.119 0.107 0.315 1.000 1.000 1.000 1.000 1.000 0.108 0.108 0.230 0.779 0.965 0.992 0.991 R,D DSW2 0.119 0.116 0.161	TLSW 0.088 0.304 0.880 1.000 1.000 1.000 TLSW 0.089 0.117 0.123 0.489 0.243 0.020 R,D TLSW 0.066 0.095 0.188	TLUD 0.111 0.336 0.881 1.000 1.000 1.000 1.000 1.000 0.109 0.109 0.109 0.109 0.271 0.853 0.461 0.119 R,D TLUD 0.080 0.118 0.277
ecursive rolling fixed p	ynamic bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 1.0 2.5 5.0 7.5 1.0 0 0.5 1.0 0 0.5 1.0 0 0.5 1.0 0 0.5 1.0 0 0.5 1.0 0 0.5 1.0 0 0.5 1.0 0 0.5 1.0 0 0.5 1.0 0 0.5 1.0 0 0.5 1.0 0 0.5 1.0 0 0.5 1.0 0 0.5 1.0 0 0.5 1.0 0 0.5 1.0 0 0.0 0.5 1.0 0 0.5 1.0 0 0.5 1.0 0 0.5 1.0 0 0.5 1.0 0 0.5 1.0 0 0.5 1.0 0 0.5 1.0 0 0.5 1.0 0 0.5 1.0 0 0.5 1.0 0 0.5 1.0 0 0.5 1.0 0 0.5 1.0 0 2.5 1.0 0 0.5 1.0 0 2.5 1.0 0 0.5 1.0 0 2.5 1.0 0 0.5 1.0 0 0.5 1.0 0 0.5 1.0 0 0.5 1.0 0 0.5 1.0 0 0.5 1.0 0 0.5 1.0 0 0.5 1.0 0 0.5 1.0 0 0.5 1.0 0 0 0.5 1.0 0 0 0.5 1.0 0 0.5 1.0 0 0 0.5 1.0 0 0 0 0 0.5 1.0 0 0.5 1.0 0 0 0.5 1.0 0 0 0.5 1.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	s, robus GR1 0.129 0.276 0.681 1.000 0.988 0.944 R GR1 0.528 0.615 0.772 0.984 1.000 1.000 1.000 1.000 1.000 1.000 0.984 0.103 0.186 0.399 0.923	GR2 0.049 0.072 0.173 0.214 0.025 0.020 0.005 R,D GR2 0.052 0.049 0.058 0.049 0.058 0.040 0.044 0.030 0.044 0.030 0.044 0.030 0.044 0.030 0.044 0.030 0.044 0.030 0.045 0.045 0.045 0.049 0.055 0.049 0.025 0.020 0.055 0.049 0.025 0.020 0.052 0.020 0.052 0.020 0.052 0.020 0.052 0.020 0.052 0.020 0.052 0.020 0.052 0.020 0.052 0.020 0.052 0.020 0.052 0.052 0.020 0.052 0.020 0.052 0.055	SGR1 0.138 0.320 0.834 1.000 1.000 1.000 0.754 0.796 0.904 0.999 1.000 1.000 1.000 1.000 1.000 1.000 1.000 0.326 0.326 0.896	SGR2 0.096 0.294 0.837 1.000 1.000 1.000 	DSW1 0.085 0.086 0.355 1.000 1.000 1.000 1.000 1.000 0.075 0.072 0.050 0.094 0.007 0.000 0.000 R,D DSW1 0.085 0.063 0.023 0.033 0.134	DSW2 0.119 0.107 0.315 1.000 1.000 1.000 0.100 0.108 0.131 0.230 0.779 0.965 0.992 0.992 0.992 0.992 0.992 0.119 0.116 0.161 0.161 0.670	TLSW 0.088 0.304 0.880 1.000 1.000 1.000 1.000 1.000 7.009 0.117 0.123 0.489 0.243 0.243 0.243 0.220 0.000 R,D TLSW 0.066 0.095 0.188 0.793	TLUD 0.111 0.336 0.881 1.000 1.000 1.000 0.109 0.158 0.271 0.853 0.461 0.119 R,D TLUD 0.080 0.118 0.280 0.118 0.277 0.938
recursive rolling fixed p	ynamic bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.5 1.0 2.5 5.0 7.5 10.0 2.5 5.0 7.5 10.0 0.5 1.0 2.5 5.0 7.5 5.0 7.5 5.0 7.5 5.0 7.5 5.0 7.5 5.0 7.5 5.0 7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5	 robus GR1 0.129 0.276 0.681 1.000 0.988 0.878 0.944 R GR1 0.528 0.615 0.772 0.984 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 0.984 0.984 1.000 1.000 1.000 1.000 0.984 0.971 0.971 	GR2 0.049 0.072 0.173 0.214 0.025 0.020 0.005 R,D GR2 0.052 0.049 0.058 0.040 0.044 0.030 0.044 0.030 0.044 0.030 0.044 0.030 0.044 0.052 0.045 0.057 0.052	SGR1 0.138 0.320 0.834 1.000 1.000 1.000 - - SGR1 0.754 0.994 0.999 1.000 1.000 1.000 1.000 - - SGR1 0.063 0.130 0.326 0.896 0.866	SGR2 0.096 0.294 0.837 1.000 1.000 1.000 - - SGR2 0.229 0.344 0.595 0.979 1.000 1.000 1.000 0.999 R,D SGR2 0.049 0.128 0.329 0.329 0.329 0.329	DSW1 0.085 0.086 0.355 1.000 1.000 1.000 - - - - - - - - - - - - - - - - - -	DSW2 0.119 0.107 0.315 1.000 1.000 1.000 1.000 1.000 0.108 0.131 0.230 0.779 0.965 0.992 0.991 R,D DSW2 0.116 0.116 0.670 0.953	TLSW 0.088 0.304 0.880 1.000 1.000 1.000 1.000 TLSW 0.089 0.117 0.123 0.489 0.243 0.243 0.200 0.000 R,D TLSW 0.066 0.095 0.188 0.793 0.427	TLUD 0.111 0.336 0.881 1.000 1.000 1.000 - - TLUD 0.109 0.158 0.271 0.853 0.461 0.119 R,D TLUD 0.080 0.118 0.277 0.0883 0.461 0.119 R,D TLUD 0.080 0.118 0.277 0.938 0.885
recursive rolling fixed p	ynamic bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 7.5 10.0 2.5 5.0 7.5 10.0 cause bA 0.5 1.0 2.5 5.0 7.5 10.0 2.5 5.0 7.5 1.0 2.5 5.0 7.5 1.0 2.5 5.0 7.5 1.0 2.5 5.0 7.5 1.0 2.5 5.0 7.5 1.0 2.5 5.0 7.5 1.0 2.5 5.0 7.5 1.0 2.5 5.0 7.5 1.0 2.5 5.0 7.5 1.0 2.5 5.0 7.5 1.0 2.5 5.0 7.5 1.0 7.5 1.0 2.5 5.0 7.5 1.0 7.5 5.0 7.5 1.0 7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5	c, robus GR1 0.276 0.681 1.000 0.988 0.944 R GR1 0.528 0.615 0.772 0.984 1.000 1.000 1.000 1.000 1.000 0.923 0.923 0.971 0.905	GR2 0.049 0.072 0.173 0.214 0.025 0.020 0.005 R,D GR2 0.052 0.049 0.058 0.040 0.058 0.040 0.044 0.030 0.004 R,D GR2 0.047 0.052 0.078 0.057 0.057 0.043 0.036	SGR1 0.138 0.320 0.834 1.000 1.000 1.000 - - SGR1 0.754 0.999 1.000 1.000 1.000 1.000 1.000 1.000 0.326 0.896 0.866 0.534	SGR2 0.096 0.294 0.837 1.000 1.000 1.000 1.000 0.229 0.344 0.595 0.979 1.000 1.000 0.999 R,D SGR2 0.049 0.128 0.329 0.049 0.128 0.329 0.909 0.911 0.636	DSW1 0.085 0.086 0.355 1.000 1.000 1.000 - DSW1 0.075 0.072 0.050 0.094 0.007 0.000 R,D DSW1 0.085 0.063 0.023 0.023 0.134 0.005 0.000	DSW2 0.119 0.107 0.315 1.000 1.000 1.000 1.000 1.000 0.108 0.131 0.230 0.779 0.965 0.992 0.991 R,D DSW2 0.116 0.161 0.670 0.953 0.989	TLSW 0.088 0.304 0.880 1.000 1.000 1.000 TLSW 0.089 0.117 0.123 0.243 0.243 0.220 0.000 R,D TLSW 0.066 0.095 0.188 0.793 0.427 0.041	TLUD 0.111 0.336 0.881 1.000 1.000 1.000 1.000 1.000 0.109 0.158 0.271 0.853 0.461 0.119 R,D TLUD 0.080 0.118 0.277 0.938 0.277
recursive rolling fixed p	ynamic bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 2.5 5.0 7.5 10.0 2.5 5.0 7.5 10.0 2.5 5.0 7.5 10.0 2.5 5.0 7.5 10.0 2.5 5.0 7.5 10.0 0 5 1.0 2.5 5.0 7.5 10.0 0 5 1.0 2.5 5 10.0 0 5 1.0 2.5 5 10.0 0 5 1.0 2.5 5 10.0 0 5 1.0 2.5 5 10.0 0 5 1.0 2.5 5 10.0 0 5 1.0 2.5 5 10.0 0 5 1.0 2.5 5 10.0 0 2.5 5 10.0 0 5 1.0 2.5 5 10.0 0 2.5 5 10.0 0 2.5 10.0 2.5 10.0 0 2.5 10.0 2.5 10.0 0 2.5 10.0 2.5 10.0 2.5 10.0 0 0.5 1.0 2.5 10.0 0 2.5 10.0 0 2.5 10.0 0 2.5 10.0 2.5 5 5.0 2.5 10.0 2.5 10.0 2.5 5 5.0 7.5 10.0 2.5 10.0 2.5 5 5.0 7.5 10.0 2.5 10.5 10.0 2.5 10.0 2.5 10.0 2.5 10.0 2.5 2.5 10.0 2.5 10.0 2.5 10.0 2.5 10.5 10.5 10.0 2.5 10.5 10.0 2.5 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10	<pre>c, robus GR1 0.129 0.276 0.681 1.000 0.988 0.878 0.944 R GR1 0.528 0.615 0.772 0.984 1.000 1.000 1.000 1.000 1.000 - GR1 0.103 0.186 0.399 0.923 0.971 0.905 0.793</pre>	GR2 0.049 0.072 0.173 0.214 0.025 0.020 0.005 R,D GR2 0.052 0.049 0.058 0.040 0.044 0.030 0.044 0.030 0.004 R,D GR2 0.047 0.052 0.047 0.052 0.073 0.057 0.043 0.036 0.031	SGR1 0.138 0.320 0.834 1.000 1.000 1.000 - SGR1 0.754 0.796 0.904 0.999 1.000 1.000 1.000 1.000 1.000 1.000 0.326 0.896 0.896 0.896 0.896 0.896	SGR2 0.096 0.294 0.837 1.000 1.000 1.000 1.000 0.229 0.344 0.595 0.979 1.000 1.000 0.999 R,D SGR2 0.049 0.329 0.349 0.329 0.349 0.329 0.309 0.911 0.636 0.309	DSW1 0.085 0.086 0.355 1.000 1.000 1.000 - DSW1 0.075 0.072 0.055 0.094 0.007 0.000 0.094 0.007 0.000 0.000 R,D DSW1 0.085 0.063 0.023 0.134 0.005 0.000 0.000	DSW2 0.119 0.107 0.315 1.000 1.000 1.000 1.000 - DSW2 0.108 0.131 0.230 0.779 0.965 0.992 0.991 R,D DSW2 0.119 0.116 0.161 0.670 0.953 0.989 0.988	TLSW 0.088 0.304 0.880 1.000 1.000 1.000 TLSW 0.089 0.117 0.123 0.489 0.243 0.243 0.220 0.000 R,D TLSW 0.066 0.095 0.188 0.793 0.427 0.041 0.002	TLUD 0.111 0.336 0.881 1.000 1.000 1.000 1.000 1.000 0.109 0.158 0.271 0.897 0.853 0.461 0.119 R,D TLUD 0.080 0.118 0.277 0.938 0.885 0.476 0.476 0.120

Table 4-4: Power comparison under DGP4 (5% level)

a) s	tatic, no	on-robu	st						
	bA	GR1	GR2	SGR1	SGR2	DSW1	DSW2	TLSW	TLUD
	0.0	0.091	0.063	0.127	0.089	0.047	0.071	0.062	0.064
	0.5	0.502	0.075	0.510	0.453	0.418	0.397	0.241	0.639
eq	1.0	0.989	0.071	0.989	0.989	0.999	0.999	0.993	1.000
fix	2.5	1.000	0.103	1.000	1.000	1.000	1.000	1.000	1.000
	5.0	1.000	0.103	1.000	1.000	1.000	1.000	1.000	1.000
	7.5	1.000	0.132	1.000	1.000	1.000	1.000	1.000	1.000
	10.0	1.000	0.155	1.000	1.000	1.000	1.000	1.000	1.000
	cause	-	W	-	-	-	-	-	-
	hA	GR1	GR2	SGR1	SGR2	DSW1	DSW2	TISW	TI UD
	0.0	0 238	0.058	0 364	0 105	0 052	0.069	0.064	0 072
	0.5	0.821	0.044	0.898	0 723	0.084	0 115	0.099	0 229
Ð	1.0	0.997	0.031	1 000	0.999	0.024	0.048	0.731	0.937
li	2.5	1 000	0.025	1 000	1 000	0.000	0.009	1 000	1 000
2	5.0	1 000	0.045	1 000	1 000	0.000	0.000	1 000	1 000
	7.5	1 000	0.084	1 000	1 000	0.000	0 187	1 000	1 000
	10.0	1 000	0.001	1 000	1 000	0.000	0.350	1 000	1 000
	10.0	1.000	0.100	1.000	1.000	0.000	0.000	1.000	1.000
-	cause	-	VV OD0	-	-	VV	VV	-	-
	bA	GR1	GR2	SGRI	SGRZ	DSWT	DSW2	TLSVV	ILUD
	0.0	0.072	0.060	0.074	0.058	0.055	0.075	0.051	0.057
ive.	0.5	0.256	0.082	0.204	0.163	0.159	0.218	0.062	0.193
urs	1.0	0.791	0.160	0.722	0.698	0.2/4	0.316	0.709	0.921
ID9.	2.5	1.000	0.706	1.000	1.000	0.998	0.997	1.000	1.000
-	5.0	1.000	0.998	1.000	1.000	1.000	1.000	1.000	1.000
	1.5	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	10.0	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	cause	-	-	-	-	-	-	-	-
h) e	atic ro	buet							
b) s	tatic, ro	bust	GR2	SGR1	SGR2	DSW1	DSW2	TISW	חו וד
b) sl	bA 0 0	bust GR1 0.090	GR2 0.061	SGR1 0 111	SGR2 0 096	DSW1 0.083	DSW2 0 109	TLSW 0.069	TLUD 0 081
b) si	tatic, ro bA 0.0 0.5	bust GR1 0.090 0.476	GR2 0.061 0.067	SGR1 0.111 0.438	SGR2 0.096 0.394	DSW1 0.083 0.439	DSW2 0.109 0.445	TLSW 0.069 0 193	TLUD 0.081 0.672
b) s	tatic, ro bA 0.0 0.5 1 0	GR1 0.090 0.476 0.987	GR2 0.061 0.067 0.081	SGR1 0.111 0.438 0.955	SGR2 0.096 0.394 0.967	DSW1 0.083 0.439	DSW2 0.109 0.445 0.999	TLSW 0.069 0.193 0.663	TLUD 0.081 0.672 1.000
p) a	tatic, ro bA 0.0 0.5 1.0 2.5	GR1 0.090 0.476 0.987 0.376	GR2 0.061 0.067 0.081 0.096	SGR1 0.111 0.438 0.955 0.282	SGR2 0.096 0.394 0.967 0.288	DSW1 0.083 0.439 0.999 1.000	DSW2 0.109 0.445 0.999 1.000	TLSW 0.069 0.193 0.663 0.721	TLUD 0.081 0.672 1.000
fixed (q	tatic, ro bA 0.0 0.5 1.0 2.5 5.0	GR1 0.090 0.476 0.987 0.376 0.000	GR2 0.061 0.067 0.081 0.096 0.112	SGR1 0.111 0.438 0.955 0.282 0.441	SGR2 0.096 0.394 0.967 0.288 0.171	DSW1 0.083 0.439 0.999 1.000	DSW2 0.109 0.445 0.999 1.000	TLSW 0.069 0.193 0.663 0.721 0.762	TLUD 0.081 0.672 1.000 1.000
fixed g	tatic, ro bA 0.0 0.5 1.0 2.5 5.0	GR1 0.090 0.476 0.987 0.376 0.000	GR2 0.061 0.067 0.081 0.096 0.112	SGR1 0.111 0.438 0.955 0.282 0.441	SGR2 0.096 0.394 0.967 0.288 0.171	DSW1 0.083 0.439 0.999 1.000 1.000	DSW2 0.109 0.445 0.999 1.000 1.000	TLSW 0.069 0.193 0.663 0.721 0.762	TLUD 0.081 0.672 1.000 1.000 1.000
fixed g	tatic, ro bA 0.0 0.5 1.0 2.5 5.0 7.5	GR1 0.090 0.476 0.987 0.376 0.000 0.000	GR2 0.061 0.067 0.081 0.096 0.112 0.131	SGR1 0.111 0.438 0.955 0.282 0.441 0.562	SGR2 0.096 0.394 0.967 0.288 0.171 0.199	DSW1 0.083 0.439 0.999 1.000 1.000 1.000	DSW2 0.109 0.445 0.999 1.000 1.000 1.000	TLSW 0.069 0.193 0.663 0.721 0.762 0.784	TLUD 0.081 0.672 1.000 1.000 1.000 1.000
fixed a	tatic, ro bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0	GR1 0.090 0.476 0.987 0.376 0.000 0.000	GR2 0.061 0.067 0.081 0.096 0.112 0.131 0.166	SGR1 0.111 0.438 0.955 0.282 0.441 0.562 0.645	SGR2 0.096 0.394 0.967 0.288 0.171 0.199 0.295	DSW1 0.083 0.439 0.999 1.000 1.000 1.000 1.000	DSW2 0.109 0.445 0.999 1.000 1.000 1.000 1.000	TLSW 0.069 0.193 0.663 0.721 0.762 0.784 0.781	TLUD 0.081 0.672 1.000 1.000 1.000 1.000 1.000
fixed d	tatic, ro bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause	bust GR1 0.090 0.476 0.987 0.376 0.000 0.000 0.000 R	GR2 0.061 0.067 0.081 0.096 0.112 0.131 0.166 R,W	SGR1 0.111 0.438 0.955 0.282 0.441 0.562 0.645 R	SGR2 0.096 0.394 0.967 0.288 0.171 0.199 0.295 R	DSW1 0.083 0.439 0.999 1.000 1.000 1.000 -	DSW2 0.109 0.445 0.999 1.000 1.000 1.000 -	TLSW 0.069 0.193 0.663 0.721 0.762 0.784 0.781 R	TLUD 0.081 0.672 1.000 1.000 1.000 1.000 -
fixed d	tatic, ro bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA	bust GR1 0.090 0.476 0.987 0.376 0.000 0.000 0.000 R GR1 0.200	GR2 0.061 0.067 0.081 0.096 0.112 0.131 0.166 R,W GR2 0.051	SGR1 0.111 0.438 0.955 0.282 0.441 0.562 0.645 R SGR1 SGR1	SGR2 0.096 0.394 0.967 0.288 0.171 0.199 0.295 R SGR2	DSW1 0.083 0.439 0.999 1.000 1.000 1.000 - DSW1 2.000	DSW2 0.109 0.445 0.999 1.000 1.000 1.000 - - DSW2 2.000	TLSW 0.069 0.193 0.663 0.721 0.762 0.784 0.781 R TLSW	TLUD 0.081 0.672 1.000 1.000 1.000 1.000 - TLUD
fixed q	tatic, ro bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0	bust GR1 0.090 0.476 0.987 0.376 0.000 0.000 0.000 R GR1 0.261 0.261	GR2 0.061 0.067 0.081 0.096 0.112 0.131 0.166 R,W GR2 0.054	SGR1 0.111 0.438 0.955 0.282 0.441 0.562 0.645 R SGR1 0.367 2.367	SGR2 0.096 0.394 0.967 0.288 0.171 0.199 0.295 R SGR2 0.129	DSW1 0.083 0.439 0.999 1.000 1.000 1.000 - DSW1 0.077 2.007	DSW2 0.109 0.445 0.999 1.000 1.000 1.000 - - DSW2 0.103 2.401	TLSW 0.069 0.193 0.663 0.721 0.762 0.784 0.781 R TLSW 0.072	TLUD 0.081 0.672 1.000 1.000 1.000 1.000 - TLUD 0.088 2.008
p) a	tatic, ro bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5	bust GR1 0.090 0.476 0.987 0.376 0.000 0.000 0.000 R GR1 0.261 0.261 0.822	GR2 0.061 0.067 0.081 0.112 0.131 0.166 R,W GR2 0.054 0.054	SGR1 0.111 0.438 0.955 0.282 0.441 0.562 0.645 R SGR1 0.367 0.367	SGR2 0.096 0.394 0.967 0.288 0.171 0.199 0.295 R SGR2 0.129 0.675	DSW1 0.083 0.439 0.999 1.000 1.000 1.000 - DSW1 0.077 0.088	DSW2 0.109 0.445 0.999 1.000 1.000 1.000 1.000 - DSW2 0.103 0.131 0.35	TLSW 0.069 0.193 0.663 0.721 0.762 0.784 0.781 R TLSW 0.072 0.100	TLUD 0.081 0.672 1.000 1.000 1.000 1.000 - TLUD 0.088 0.269
ling fixed g (q	tatic, ro bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 1.0	Bust GR1 0.090 0.476 0.987 0.376 0.000 0.000 0.000 R GR1 0.261 0.822 1.000	GR2 0.061 0.067 0.081 0.112 0.131 0.166 R,W GR2 0.054 0.041 0.033	SGR1 0.111 0.438 0.955 0.282 0.441 0.562 0.645 R SGR1 0.367 0.850 1.000	SGR2 0.096 0.394 0.967 0.288 0.171 0.199 0.295 R SGR2 0.129 0.675 0.999	DSW1 0.083 0.439 0.999 1.000 1.000 1.000 - DSW1 0.077 0.088 0.017	DSW2 0.109 0.445 0.999 1.000 1.000 1.000 1.000 - DSW2 0.103 0.131 0.059	TLSW 0.069 0.193 0.663 0.721 0.762 0.784 0.781 R TLSW 0.072 0.100 0.585	TLUD 0.081 0.672 1.000 1.000 1.000 1.000 1.000 TLUD 0.088 0.269 0.904
rolling fixed g	tatic, ro bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 1.0 2.5	Bust GR1 0.090 0.476 0.987 0.376 0.000 0.000 0.000 R GR1 0.261 0.822 1.000 1.000	GR2 0.061 0.081 0.096 0.112 0.131 0.166 R,W GR2 0.054 0.041 0.033 0.031	SGR1 0.111 0.438 0.955 0.282 0.441 0.562 0.645 R SGR1 0.367 0.850 1.000 1.000	SGR2 0.096 0.394 0.967 0.288 0.171 0.199 0.295 R SGR2 0.129 0.675 0.999 1.000	DSW1 0.083 0.999 1.000 1.000 1.000 - DSW1 0.077 0.088 0.017 0.000	DSW2 0.109 0.445 0.999 1.000 1.000 1.000 - DSW2 0.103 0.131 0.059 0.013	TLSW 0.069 0.193 0.663 0.721 0.762 0.784 0.781 R TLSW 0.072 0.100 0.585 1.000	TLUD 0.081 0.672 1.000 1.000 1.000 1.000 1.000 TLUD 0.088 0.269 0.904 1.000
rolling fixed g	tatic, ro bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 1.0 2.5 5.0	Bust GR1 0.090 0.476 0.987 0.376 0.000 0.000 0.000 R GR1 0.261 0.822 1.000 1.000	GR2 0.061 0.081 0.096 0.112 0.131 0.166 R,W GR2 0.054 0.054 0.033 0.031 0.066	SGR1 0.111 0.438 0.955 0.282 0.441 0.562 0.645 R SGR1 0.367 0.850 1.000 1.000 1.000	SGR2 0.096 0.394 0.967 0.288 0.171 0.199 0.295 R SGR2 0.129 0.675 0.999 1.000 1.000	DSW1 0.083 0.439 0.999 1.000 1.000 1.000 - DSW1 0.077 0.088 0.017 0.000 0.000	DSW2 0.109 0.445 0.999 1.000 1.000 1.000 - DSW2 0.103 0.131 0.059 0.013 0.010	TLSW 0.069 0.193 0.663 0.721 0.762 0.784 0.781 R TLSW 0.072 0.100 0.585 1.000 1.000	TLUD 0.081 0.672 1.000 1.000 1.000 1.000 - TLUD 0.088 0.269 0.904 1.000 1.000
rolling fixed g	tatic, ro bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 1.0 2.5 5.0 7.5	Bust GR1 0.090 0.476 0.987 0.376 0.000 0.000 0.000 R GR1 0.261 0.822 1.000 1.000 1.000	GR2 0.061 0.067 0.081 0.112 0.131 0.166 R,W GR2 0.054 0.041 0.033 0.031 0.066 0.095	SGR1 0.111 0.438 0.955 0.282 0.441 0.562 0.645 R SGR1 0.367 0.850 1.000 1.000 1.000 1.000	SGR2 0.096 0.394 0.288 0.171 0.199 0.295 R SGR2 0.129 0.675 0.999 1.000 1.000	DSW1 0.083 0.439 0.999 1.000 1.000 1.000 1.000 - DSW1 0.077 0.088 0.017 0.008 0.017 0.000 0.000	DSW2 0.109 0.445 0.999 1.000 1.000 1.000 1.000 - DSW2 0.103 0.131 0.059 0.013 0.010 0.018	TLSW 0.069 0.193 0.663 0.721 0.762 0.784 0.781 R TLSW 0.072 0.100 0.585 1.000 1.000 1.000	TLUD 0.081 0.672 1.000 1.000 1.000 1.000 1.000 - TLUD 0.088 0.269 0.904 1.000 1.000 1.000
rolling fixed g	tatic, ro bA 0.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 2.5 5.0 7.5 10.0	Bust GR1 0.090 0.476 0.987 0.376 0.000 0.000 0.000 0.000 R GR1 0.261 0.822 1.000 1.000 1.000 1.000	GR2 0.061 0.081 0.096 0.112 0.131 0.166 R,W GR2 0.054 0.041 0.033 0.031 0.066 0.095 0.150	SGR1 0.111 0.438 0.955 0.282 0.441 0.562 0.645 R SGR1 0.367 0.850 1.000 1.000 1.000 1.000	SGR2 0.096 0.394 0.288 0.171 0.299 0.295 R SGR2 0.129 0.675 0.999 1.000 1.000 1.000	DSW1 0.083 0.439 0.999 1.000 1.000 1.000 - DSW1 0.077 0.088 0.017 0.088 0.017 0.000 0.000 0.000	DSW2 0.109 0.445 0.999 1.000 1.000 1.000 1.000 0.103 0.131 0.059 0.013 0.013 0.010 0.018 0.014	TLSW 0.069 0.193 0.663 0.721 0.762 0.784 0.781 R TLSW 0.072 0.100 0.585 1.000 1.000 1.000	TLUD 0.081 0.672 1.000 1.000 1.000 1.000 - TLUD 0.088 0.269 0.904 1.000 1.000 1.000
rolling fixed g	tatic, ro bA 0.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 2.5 5.0 7.5 10.0 cause	bust GR1 0.090 0.476 0.987 0.376 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 R GR1 0.261 0.822 1.000 1.000 1.000 1.000	GR2 0.061 0.067 0.081 0.112 0.131 0.166 R,W GR2 0.054 0.054 0.033 0.031 0.066 0.095 0.150 R,W	SGR1 0.111 0.438 0.955 0.282 0.441 0.562 0.645 R SGR1 0.367 0.850 1.000 1.000 1.000 1.000	SGR2 0.096 0.394 0.967 0.288 0.171 0.199 0.295 R SGR2 0.129 0.675 0.999 1.000 1.000 1.000	DSW1 0.083 0.439 1.000 1.000 1.000 1.000 - DSW1 0.077 0.088 0.017 0.000 0.000 0.000 0.000 R,W	DSW2 0.109 0.445 0.999 1.000 1.000 1.000 1.000 2. DSW2 0.103 0.103 0.013 0.013 0.0118 0.014 R,W	TLSW 0.069 0.193 0.663 0.721 0.762 0.784 0.781 R TLSW 0.072 0.100 0.585 1.000 1.000 1.000	TLUD 0.081 0.672 1.000 1.000 1.000 1.000 TLUD 0.088 0.269 0.904 1.000 1.000 1.000
rolling fixed g	tatic, ro bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.5 1.0 2.5 5.0 7.5 10.0 cause bA	obust GR1 0.090 0.476 0.987 0.376 0.000 0.000 0.000 0.000 R GR1 0.261 0.822 1.000 1.000 1.000 - GR1	GR2 0.061 0.067 0.081 0.096 0.112 0.131 0.166 R,W GR2 0.054 0.041 0.041 0.033 0.031 0.066 0.095 0.150 R,W GR2	SGR1 0.111 0.438 0.955 0.282 0.441 0.562 0.645 R SGR1 0.367 0.850 1.000 1.000 1.000 1.000 1.000 1.000	SGR2 0.096 0.394 0.967 0.288 0.171 0.199 0.295 R SGR2 0.129 0.675 0.999 1.000 1.000 1.000 1.000 1.000	DSW1 0.083 0.439 1.000 1.000 1.000 1.000 - DSW1 0.077 0.088 0.017 0.000 0.000 0.000 0.000 R,W DSW1	DSW2 0.109 0.445 0.999 1.000 1.000 1.000 1.000 - DSW2 0.103 0.131 0.059 0.013 0.013 0.013 0.014 R,W DSW2	TLSW 0.069 0.193 0.721 0.762 0.784 0.781 R TLSW 0.072 0.100 0.585 1.000 1.000 1.000 1.000 1.000 - TLSW	TLUD 0.081 0.672 1.000 1.000 1.000 1.000 - TLUD 0.088 0.269 0.904 1.000 1.000 1.000 1.000 - TLUD
rolling fixed g	tatic, ro bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 1.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.0 0.5	Bust GR1 0.090 0.476 0.987 0.376 0.000 0.000 0.000 0.000 R GR1 0.261 0.822 1.000 1.000 1.000 1.000 1.000 1.000 1.000 0.085	GR2 0.061 0.067 0.081 0.112 0.131 0.166 R,W GR2 0.054 0.041 0.033 0.031 0.066 0.095 0.150 R,W GR2 0.060	SGR1 0.111 0.438 0.955 0.282 0.441 0.562 0.645 R SGR1 0.367 0.850 1.000 1.000 1.000 1.000 1.000 1.000 1.000	SGR2 0.096 0.394 0.967 0.288 0.171 0.199 0.295 R SGR2 0.129 0.675 0.999 1.000 1.000 1.000 1.000 1.000	DSW1 0.083 0.439 1.000 1.000 1.000 1.000 1.000 0.077 0.088 0.017 0.088 0.017 0.000 0.000 0.000 0.000 R,W DSW1 0.079	DSW2 0.109 0.445 0.999 1.000 1.000 1.000 1.000 1.000 0.103 0.131 0.059 0.013 0.010 0.018 0.014 R,W DSW2 0.115	TLSW 0.069 0.193 0.762 0.762 0.784 0.781 R TLSW 0.072 0.100 0.585 1.000 1.000 1.000 1.000 1.000 - TLSW 0.061	TLUD 0.081 0.672 1.000 1.000 1.000 1.000 1.000 - TLUD 0.088 0.269 0.904 1.000 1.000 1.000 1.000 1.000 1.000
e rolling fixed g	tatic, ro bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.5 1.0 0.5 1.0 0.5 1.0 0.5 1.0 0.5 1.0 0.5 1.0 0.5 5.0 7.5 10.0 0.5 1.0 0.5 1.0 0.5 5.0 0.5 1.0 0.5 5.0 7.5 1.0 0.5 5.0 7.5 1.0 0.5 5.0 7.5 1.0 0.5 5.0 7.5 1.0 0.5 5.0 7.5 1.0 0 5.0 7.5 1.0 0 5.0 7.5 1.0 0 5.0 7.5 1.0 0 5.0 7.5 1.0 0 5.0 7.5 1.0 0 5.0 7.5 1.0 0 5.0 7.5 1.0 0 5.5 1.0 0 5.0 7.5 1.0 0 5.5 1.5 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5	Bust GR1 0.090 0.476 0.987 0.376 0.000 0.000 R GR1 0.261 0.822 1.000 1.000 1.000 1.000 1.000 1.000 - GR1 0.085 0.218	GR2 0.061 0.067 0.081 0.196 0.112 0.131 0.166 R,W GR2 0.054 0.054 0.041 0.033 0.031 0.066 0.095 0.150 R,W GR2 0.060 0.060	SGR1 0.111 0.438 0.955 0.282 0.441 0.562 0.645 R SGR1 0.367 0.850 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000	SGR2 0.096 0.394 0.967 0.288 0.171 0.199 0.295 R SGR2 0.129 0.675 0.999 1.000 1.000 1.000 1.000 1.000 1.000	DSW1 0.083 0.439 0.999 1.000 1.000 1.000 - DSW1 0.077 0.088 0.017 0.088 0.017 0.000 0.000 0.000 0.000 R,W DSW1 0.079 0.179	DSW2 0.109 0.445 0.999 1.000 1.000 1.000 - DSW2 0.103 0.131 0.059 0.013 0.010 0.018 0.014 R,W DSW2 0.115 0.250	TLSW 0.069 0.193 0.721 0.762 0.784 0.781 R TLSW 0.072 0.100 0.585 1.000 1.000 1.000 1.000 1.000 1.000	TLUD 0.081 0.672 1.000 1.000 1.000 1.000 1.000 - TLUD 0.088 0.269 0.904 1.000 1.000 1.000 1.000 1.000 1.000 1.000
sive rolling fixed g	tatic, ro bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 5.0 7.5 10.0 2.5 5.0 7.5 10.0 2.5 5.0 7.5 10.0 0.5 1.5 0.5 1.0 0.5 1.0 0.5 1.0 0.5 1.5 0.5 1.5 0.5 1.5 0.5 1.5 0.5 1.5 0.5 1.5 0.5 1.5 0.5 1.5 0.5 1.5 0.5 1.5 1.5 0.5 1.5 0.5 1.5 0.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1	Bust GR1 0.090 0.476 0.987 0.376 0.000 0.000 0.000 R GR1 0.822 1.000 1.000 1.000 1.000 1.000 1.000 1.000 2.218 0.218 0.727	GR2 0.061 0.067 0.081 0.1096 0.112 0.131 0.166 R,W GR2 0.054 0.054 0.041 0.033 0.031 0.066 0.095 0.150 R,W GR2 0.060 0.0600 0.0600 0.141	SGR1 0.111 0.438 0.955 0.282 0.441 0.562 0.645 R SGR1 0.367 0.850 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000	SGR2 0.096 0.394 0.967 0.288 0.171 0.199 0.295 R SGR2 0.129 0.675 0.999 1.000 1.000 1.000 1.000 1.000 1.000 1.000	DSW1 0.083 0.999 1.000 1.000 1.000 - DSW1 0.077 0.088 0.017 0.088 0.017 0.000 0.000 0.000 R,W DSW1 0.079 0.179 0.275	DSW2 0.109 0.445 0.999 1.000 1.000 1.000 1.000 0.100 0.131 0.059 0.013 0.014 R,W DSW2 0.115 0.250 0.353	TLSW 0.069 0.193 0.663 0.721 0.762 0.784 0.781 R TLSW 0.072 0.100 0.585 1.000 1.000 1.000 1.000 1.000 1.000 1.000	TLUD 0.081 0.672 1.000 1.000 1.000 1.000 - TLUD 0.088 0.269 0.904 1.000 1.000 1.000 1.000 1.000 1.000 1.000
cursive rolling fixed a	tatic, ro bA 0.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.5 1.0 2.5 5.0 7.5 10.0 0.5 1.0 2.5 5.0 7.5 10.0 0.5 1.0 2.5 5.0 7.5 1.0 2.5 1.0 2.5 5.0 7.5 1.0 2.5 5.0 7.5 1.0 2.5 5.0 7.5 1.0 2.5 5.0 7.5 1.0 2.5 2.5 2.5 2.5 2.5 2.5 2.5 2.5 2.5 2.5	Bust GR1 0.090 0.476 0.987 0.376 0.000 0.000 R GR1 0.261 0.822 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 0.218 0.218 0.217 0.216 0.218 0.217 0.216 0.2170 0.21700000000000000000000000000000000000	GR2 0.061 0.081 0.096 0.112 0.131 0.166 R,W GR2 0.054 0.041 0.033 0.031 0.066 0.095 0.150 R,W GR2 0.060 0.060 0.060 0.141 0.652	SGR1 0.111 0.438 0.955 0.282 0.441 0.562 0.645 R SGR1 0.367 0.850 1.000	SGR2 0.096 0.394 0.285 0.171 0.295 R SGR2 0.129 0.675 0.999 1.000	DSW1 0.083 0.999 1.000 1.000 1.000 1.000 - DSW1 0.077 0.088 0.017 0.088 0.017 0.000 0.000 0.000 0.000 0.000 R,W DSW1 0.079 0.179 0.275 0.958	DSW2 0.109 0.445 0.999 1.000 1.000 1.000 1.000 - DSW2 0.103 0.131 0.059 0.013 0.014 R,W DSW2 0.115 0.250 0.353 0.949	TLSW 0.069 0.193 0.721 0.762 0.784 0.781 R TLSW 0.072 0.100 0.585 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000	TLUD 0.081 0.672 1.000 1.000 1.000 1.000 - TLUD 0.088 0.269 0.904 1.000 1.000 1.000 1.000 1.000 1.000 1.000 0.930 1.000
recursive rolling fixed g	tatic, ro bA 0.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 7.5 10.0 cause bA 0.0 5.0 7.5 10.0 2.5 5.0 7.5 1.0 2.5 5.0 7.5 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5	bust GR1 0.090 0.476 0.987 0.376 0.000 0.000 0.000 R GR1 0.261 0.822 1.000 1.000 1.000 1.000 1.000 1.000 1.000 - GR1 0.85 0.218 0.727 0.736 0.001	GR2 0.061 0.096 0.112 0.131 0.166 R,W GR2 0.054 0.041 0.033 0.031 0.066 0.095 0.150 R,W GR2 0.060 0.060 0.060 0.041 0.060	SGR1 0.111 0.438 0.955 0.282 0.441 0.562 0.645 R SGR1 0.367 0.850 1.000	SGR2 0.096 0.394 0.288 0.171 0.199 0.295 R SGR2 0.129 0.675 0.999 1.000	DSW1 0.083 0.439 1.000 1.000 1.000 1.000 1.000 0.000 0.007 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.00000 0.000000	DSW2 0.109 0.445 0.999 1.000 1.000 1.000 1.000 1.000 0.103 0.131 0.059 0.013 0.013 0.014 R,W DSW2 0.115 0.250 0.353 0.949 0.999	TLSW 0.069 0.193 0.663 0.721 0.762 0.784 0.781 R TLSW 0.072 0.100 0.585 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000	TLUD 0.081 0.672 1.000 1.000 1.000 1.000 - TLUD 0.088 0.269 0.904 1.000 1.000 1.000 1.000 - TLUD 0.071 0.240 0.930 1.000
recursive rolling fixed g	tatic, ro bA 0.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.5 1.0 2.5 5.0 7.5 10.0 2.5 5.0 7.5	bust GR1 0.090 0.476 0.987 0.376 0.000 0.000 0.000 0.000 0.000 0.000 0.000 R GR1 0.261 0.822 1.000 1.000 1.000 1.000 - GR1 0.085 0.218 0.727 0.736 0.001	GR2 0.061 0.067 0.081 0.12 0.131 0.166 R,W GR2 0.054 0.041 0.033 0.031 0.066 0.095 0.150 R,W GR2 0.060 0.141 0.060 0.141 0.652 0.992 1.000	SGR1 0.111 0.438 0.955 0.282 0.441 0.562 0.645 R SGR1 0.367 0.850 1.0000 1.0000 1.0000 1.0000 1.0000 1.00000000	SGR2 0.096 0.394 0.967 0.288 0.171 0.199 0.295 R SGR2 0.129 0.675 0.999 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.00000 1.00000000	DSW1 0.083 0.439 1.000 1.000 1.000 1.000 - DSW1 0.077 0.088 0.017 0.000 0.000 0.000 0.000 R,W DSW1 0.079 0.179 0.275 0.958 0.995	DSW2 0.109 0.445 0.999 1.000 1.000 1.000 1.000 1.000 - DSW2 0.103 0.013 0.013 0.013 0.013 0.013 0.014 R,W DSW2 0.115 0.250 0.353 0.999 0.999 1.000	TLSW 0.069 0.193 0.721 0.762 0.784 0.781 R TLSW 0.072 0.100 0.585 1.000 1.000 1.000 1.000 1.000 - TLSW 0.061 0.081 0.604 0.999 1.000	TLUD 0.081 0.672 1.000 1.000 1.000 1.000 - TLUD 0.088 0.904 1.000 1.000 1.000 1.000 - TLUD 0.071 0.240 0.930 1.000 1.000
recursive rolling fixed g	tatic, ro bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 2.5 5.0 7.5 10.0 2.5 5.0 7.5 10.0 0.5 1.0 2.5 5.0 7.5 10.0 0.5 1.0 2.5 5.0 7.5 10.0 0.5 1.0 2.5 5.0 7.5 10.0 0.5 1.0 2.5 5.0 7.5 10.0 0.5 1.0 2.5 5.0 7.5 10.0 0.5 1.0 2.5 5.0 7.5 10.0 0.5 1.0 2.5 5.0 7.5 1.0 0 0.5 1.0 0 0.5 1.0 0 0.5 1.0 0 0.5 1.0 0 0.5 1.0 0 0.5 1.0 0 0.5 1.0 0 0.5 1.0 0 0.5 1.0 0 0.5 1.0 0 0.5 1.0 0 0.5 1.0 0 0.5 1.0 0 0.5 1.0 0.5 1.0 0 0.5 1.0 0 0.5 1.0 0.0 0 0.5 1.0 0 0.0 0 0.0 0 0.5 1.0 0 0.0 0 0.5 1.0 0 0.0 0 0.5 1.0 0 0.0 0 0.0 0 0.5 1.0 0 0.0 0 0.5 1.0 0 0.0 0.0 0.5 1.0 0 0.0 0 0.5 1.0 0 0.0 0 0.5 1.0 0 0.0 0 0.5 1.0 0 0.0 0 0.0 0 0.5 0 0.0 0 0.0 0 0.5 0 0.0 0 0.5 0 0 0.0 0 0.0 0 0 0.0 0 0 0.0 0 0.0 0 0 0.0 0 0 0.0 0 0 0 0 0 0 0.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	bust GR1 0.090 0.476 0.987 0.376 0.000 0.000 0.000 0.000 0.000 0.000 R GR1 0.261 0.822 1.000 1.000 1.000 1.000 1.000 1.000 - GR1 0.085 0.218 0.727 0.736 0.000	GR2 0.061 0.067 0.081 0.112 0.131 0.166 R,W GR2 0.054 0.054 0.041 0.033 0.041 0.066 0.095 0.150 R,W GR2 0.060 0.141 0.060 0.141 0.652 0.992 1.000	SGR1 0.111 0.438 0.955 0.282 0.441 0.562 0.645 R SGR1 0.367 0.850 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 0.155 0.593 0.934 0.977 0.990	SGR2 0.096 0.394 0.967 0.288 0.171 0.199 0.295 R SGR2 0.129 0.675 0.999 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 0.139 0.662 0.949 0.949 0.996	DSW1 0.083 0.439 1.000 1.000 1.000 1.000 - DSW1 0.077 0.088 0.017 0.088 0.017 0.000 0.000 0.000 R.W DSW1 0.079 0.275 0.958 0.991	DSW2 0.109 0.445 0.999 1.000 1.000 1.000 1.000 1.000 0.103 0.131 0.059 0.013 0.010 0.018 0.014 R,W DSW2 0.115 0.250 0.353 0.949 0.999	TLSW 0.069 0.193 0.721 0.762 0.784 0.781 R TLSW 0.072 0.100 0.585 1.000 1.000 1.000 1.000 1.000 - TLSW 0.061 0.081 0.081 0.099 1.000 1.000	TLUD 0.081 0.672 1.000 1.000 1.000 1.000 1.000 - TLUD 0.088 0.269 0.904 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000

	c) a	ynamic	, non-ro	obust						
		bA	GR1	GR2	SGR1	SGR2	DSW1	DSW2	TLSW	TLUD
		0.0	0.128	0.059	0.177	0.117	0.074	0.090	0.093	0.114
		0.5	0.562	0.054	0.560	0.482	0.459	0.421	0.336	0.680
	ba	1.0	0.990	0.047	0.989	0.987	0.993	0.993	0.988	1.000
	fix	2.5	1.000	0.035	1.000	1.000	1.000	1.000	1.000	1.000
		5.0	1.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
		7.5	1.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
		10.0	1.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000
		cause	-	D	-	-	-	-	-	-
		hΔ	GR1	GR2	SGR1	SGR2	DSW1	DSW2	TLSW	םנו וד
		0.0	0.511	0.047	0 734	0 240	0.064	0.080	0.082	0.096
		0.0	0.011	0.046	0.704	0.240	0.004	0.000	0.002	0.000
	Ð	1.0	0.010	0.040	1 000	0.707	0.004	0.000	0.001	0.210
	llin	2.5	1 000	0.041	1.000	1 000	0.004	0.000	0.200	0.851
	5	5.0	1.000	0.000	1.000	1.000	0.004	0.002	0.224	0.239
		7.5	1.000	0.000	1.000	1.000	0.000	0.000	0.000	0.021
		10.0	1.000	0.000	1.000	1.000	0.000	0.000	0.000	0.000
		10.0	1.000	0.000	1.000	1.000	0.000	0.000	0.000	0.000
		cause	-	D	-	-	D	D		
		DA	GRI	GRZ	SGRI	SGR2	DSW1	0.007	ILSW 0.055	
		0.0	0.102	0.056	0.090	0.073	0.068	0.087	0.055	0.063
	ive	0.5	0.248	0.052	0.171	0.141	0.117	0.157	0.066	0.162
	urs	1.0	0.569	0.059	0.453	0.400	0.070	0.137	0.227	0.542
	ec.	2.5	0.930	0.047	0.849	0.844	0.024	0.063	0.150	0.804
	-	5.0	0.943	0.000	0.631	0.673	0.000	0.000	0.000	0.267
		7.5	0.851	0.000	0.470	0.526	0.000	0.000	0.000	0.014
		10.0	0.725	0.000	0.460	0.493	0.000	0.000	0.000	0.000
		cause	D	D	D	D	D	D	D	D
	لم (ام									
1	d) d	ynamic	, robus	t	SCP1	8002	DSW/1		TISW	
ĺ	d) d	bA	GR1	t GR2	SGR1	SGR2	DSW1	DSW2	TLSW	TLUD
ĺ	d) d	ynamic bA 0.0	, robus GR1 0.129	GR2 0.049	SGR1 0.138	SGR2 0.096	DSW1 0.085	DSW2 0.119	TLSW 0.088	TLUD 0.111
	d) d	ynamic bA 0.0 0.5	GR1 0.129 0.526	GR2 0.049 0.063	SGR1 0.138 0.481	SGR2 0.096 0.434	DSW1 0.085 0.453	DSW2 0.119 0.456	TLSW 0.088 0.222 0.762	TLUD 0.111 0.705
	d) d	ynamic bA 0.0 0.5 1.0 2.5	GR1 0.129 0.526 0.984 0.376	GR2 0.049 0.063 0.047 0.018	SGR1 0.138 0.481 0.945 0.723	SGR2 0.096 0.434 0.963 0.827	DSW1 0.085 0.453 0.995	DSW2 0.119 0.456 0.995	TLSW 0.088 0.222 0.762	TLUD 0.111 0.705 1.000
	fixed p (p	ynamic bA 0.0 0.5 1.0 2.5	GR1 0.129 0.526 0.984 0.376	GR2 0.049 0.063 0.047 0.018	SGR1 0.138 0.481 0.945 0.723 0.172	SGR2 0.096 0.434 0.963 0.827	DSW1 0.085 0.453 0.995 1.000	DSW2 0.119 0.456 0.995 1.000	TLSW 0.088 0.222 0.762 0.977	TLUD 0.111 0.705 1.000 1.000
	fixed (p	ynamic bA 0.0 0.5 1.0 2.5 5.0	GR1 0.129 0.526 0.984 0.376 0.017	GR2 0.049 0.063 0.047 0.018 0.000	SGR1 0.138 0.481 0.945 0.723 0.172	SGR2 0.096 0.434 0.963 0.827 0.237	DSW1 0.085 0.453 0.995 1.000 1.000	DSW2 0.119 0.456 0.995 1.000 1.000	TLSW 0.088 0.222 0.762 0.977 0.664	TLUD 0.111 0.705 1.000 1.000
	fixed (p	ynamic bA 0.0 0.5 1.0 2.5 5.0 7.5	GR1 0.129 0.526 0.984 0.376 0.017 0.001	t GR2 0.049 0.063 0.047 0.018 0.000 0.000	SGR1 0.138 0.481 0.945 0.723 0.172 0.105	SGR2 0.096 0.434 0.963 0.827 0.237 0.131	DSW1 0.085 0.453 0.995 1.000 1.000	DSW2 0.119 0.456 0.995 1.000 1.000	TLSW 0.088 0.222 0.762 0.977 0.664 0.142	TLUD 0.111 0.705 1.000 1.000 1.000
	fixed p (p	ynamic bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0	GR1 0.129 0.526 0.984 0.376 0.017 0.001 0.001	GR2 0.049 0.063 0.047 0.018 0.000 0.000 0.000	SGR1 0.138 0.481 0.945 0.723 0.172 0.105 0.105	SGR2 0.096 0.434 0.963 0.827 0.237 0.131 0.136	DSW1 0.085 0.453 0.995 1.000 1.000 1.000 1.000	DSW2 0.119 0.456 0.995 1.000 1.000 1.000 1.000	TLSW 0.088 0.222 0.762 0.977 0.664 0.142 0.050	TLUD 0.111 0.705 1.000 1.000 1.000 1.000
	fixed (p	ynamic bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause	GR1 0.129 0.526 0.984 0.376 0.017 0.001 0.000 R	t GR2 0.049 0.063 0.047 0.018 0.000 0.000 0.000 R,D	SGR1 0.138 0.481 0.945 0.723 0.172 0.105 0.109 R	SGR2 0.096 0.434 0.963 0.827 0.237 0.131 0.136 R	DSW1 0.085 0.453 0.995 1.000 1.000 1.000 1.000 -	DSW2 0.119 0.456 0.995 1.000 1.000 1.000 1.000 -	TLSW 0.088 0.222 0.762 0.977 0.664 0.142 0.050 R	TLUD 0.111 0.705 1.000 1.000 1.000 1.000 -
	p (p	ynamic bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA	GR1 0.129 0.526 0.984 0.376 0.017 0.001 0.000 R GR1 0.011	t GR2 0.049 0.063 0.047 0.018 0.000 0.000 0.000 R,D GR2	SGR1 0.138 0.481 0.945 0.723 0.172 0.105 0.109 R SGR1	SGR2 0.096 0.434 0.963 0.827 0.237 0.131 0.136 R SGR2	DSW1 0.085 0.453 0.995 1.000 1.000 1.000 - DSW1 0.001	DSW2 0.119 0.456 0.995 1.000 1.000 1.000 - DSW2 0.000	TLSW 0.088 0.222 0.762 0.977 0.664 0.142 0.050 R TLSW	TLUD 0.111 0.705 1.000 1.000 1.000 1.000 - TLUD
	fixed p (p	ynamic bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0	GR1 0.129 0.526 0.984 0.376 0.017 0.001 0.000 R GR1 0.528	t GR2 0.049 0.063 0.047 0.018 0.000 0.000 0.000 R,D GR2 0.052	SGR1 0.138 0.481 0.945 0.723 0.172 0.105 0.109 R SGR1 0.754	SGR2 0.096 0.434 0.963 0.237 0.237 0.131 0.136 R SGR2 0.229 0.229	DSW1 0.085 0.453 0.995 1.000 1.000 1.000 - DSW1 0.075	DSW2 0.119 0.456 0.995 1.000 1.000 1.000 - DSW2 0.108 0.108	TLSW 0.088 0.222 0.762 0.977 0.664 0.142 0.050 R TLSW 0.089	TLUD 0.111 0.705 1.000 1.000 1.000 1.000 - TLUD 0.109
	p (p	ynamic bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5	, robus GR1 0.129 0.526 0.984 0.376 0.017 0.001 0.000 R GR1 0.528 0.893 0.893	t GR2 0.049 0.063 0.047 0.018 0.000 0.000 R,D GR2 0.052 0.045	SGR1 0.138 0.481 0.945 0.723 0.172 0.105 0.109 R SGR1 0.754 0.957	SGR2 0.096 0.434 0.963 0.237 0.131 0.136 R SGR2 0.229 0.763	DSW1 0.085 0.453 0.995 1.000 1.000 1.000 - DSW1 0.075 0.070	DSW2 0.119 0.456 0.995 1.000 1.000 1.000 1.000 - DSW2 0.108 0.117 0.001	TLSW 0.088 0.222 0.762 0.977 0.664 0.142 0.050 R TLSW 0.089 0.098 0.098	TLUD 0.111 0.705 1.000 1.000 1.000 1.000 - TLUD 0.109 0.255
	ling fixed p	ynamic bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 1.0	GR1 0.129 0.526 0.984 0.376 0.017 0.001 0.000 R GR1 0.528 0.893 0.999	t GR2 0.049 0.063 0.047 0.018 0.000 0.000 0.000 R,D GR2 0.052 0.045 0.050	SGR1 0.138 0.481 0.945 0.723 0.172 0.105 0.109 R SGR1 0.754 0.957 1.000	SGR2 0.096 0.434 0.963 0.827 0.237 0.131 0.136 R SGR2 0.229 0.763 0.994	DSW1 0.085 0.453 0.995 1.000 1.000 1.000 1.000 - DSW1 0.075 0.070 0.022	DSW2 0.119 0.456 0.995 1.000 1.000 1.000 1.000 1.000 - DSW2 0.108 0.117 0.081	TLSW 0.088 0.222 0.762 0.977 0.664 0.142 0.050 R TLSW 0.089 0.098 0.256	TLUD 0.111 0.705 1.000 1.000 1.000 1.000 1.000 1.000 1.000 0.109 0.255 0.598
	rolling fixed p	ynamic bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 1.0 2.5	, robus GR1 0.129 0.526 0.984 0.376 0.017 0.001 0.000 R GR1 0.528 0.893 0.999 1.000	t GR2 0.049 0.063 0.047 0.018 0.000 0.000 0.000 R,D GR2 0.052 0.045 0.050 0.024	SGR1 0.138 0.481 0.945 0.723 0.172 0.105 0.109 R SGR1 0.754 0.957 1.000 1.000	SGR2 0.096 0.434 0.963 0.827 0.237 0.131 0.136 R SGR2 0.229 0.763 0.994 1.000	DSW1 0.085 0.453 0.995 1.000 1.000 1.000 - DSW1 0.075 0.070 0.022 0.004	DSW2 0.119 0.456 0.995 1.000 1.000 1.000 - DSW2 0.108 0.117 0.081 0.035	TLSW 0.088 0.222 0.977 0.664 0.142 0.050 R TLSW 0.089 0.098 0.256 0.043	TLUD 0.111 0.705 1.000 1.000 1.000 1.000 1.000 1.000 - TLUD 0.109 0.255 0.598 0.441
	rolling fixed p (p	ynamic bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 1.0 2.5 5.0	, robus GR1 0.129 0.526 0.984 0.376 0.017 0.001 0.000 R GR1 0.528 0.893 0.999 1.000 1.000	t GR2 0.049 0.063 0.047 0.018 0.000 0.000 0.000 R,D GR2 0.052 0.052 0.045 0.050 0.024 0.000	SGR1 0.138 0.481 0.945 0.723 0.172 0.105 0.109 R SGR1 0.754 0.957 1.000 1.000 1.000	SGR2 0.096 0.434 0.963 0.237 0.131 0.136 R SGR2 0.229 0.763 0.994 1.000 0.994	DSW1 0.085 0.453 0.995 1.000 1.000 1.000 - DSW1 0.075 0.070 0.022 0.004 0.000	DSW2 0.119 0.456 0.995 1.000 1.000 1.000 - DSW2 0.108 0.117 0.081 0.035 0.001	TLSW 0.088 0.222 0.977 0.664 0.142 0.050 R TLSW 0.089 0.098 0.256 0.043 0.000	TLUD 0.111 0.705 1.000 1.000 1.000 1.000 - TLUD 0.109 0.255 0.598 0.441 0.032
	rolling fixed p (p	ynamic bA 0.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 1.0 2.5 5.0 7.5	GR1 0.129 0.526 0.984 0.376 0.017 0.001 0.000 R GR1 0.528 0.893 0.999 1.000 1.000 0.996	t GR2 0.049 0.063 0.047 0.018 0.000 0.000 R,D GR2 0.052 0.045 0.050 0.024 0.050 0.024 0.000 0.000	SGR1 0.138 0.481 0.945 0.723 0.172 0.105 0.109 R SGR1 0.754 0.957 1.000 1.000 1.000 0.991	SGR2 0.096 0.434 0.963 0.827 0.237 0.131 0.136 R SGR2 0.229 0.763 0.294 1.000 0.994 0.900	DSW1 0.085 0.453 0.995 1.000 1.000 1.000 - DSW1 0.075 0.070 0.022 0.004 0.000 0.000	DSW2 0.119 0.456 0.995 1.000 1.000 1.000 - DSW2 0.108 0.117 0.081 0.035 0.001 0.000	TLSW 0.088 0.222 0.977 0.664 0.142 0.050 R TLSW 0.089 0.098 0.256 0.043 0.000 0.000	TLUD 0.111 0.705 1.000 1.000 1.000 1.000 - TLUD 0.109 0.255 0.598 0.441 0.032 0.000
	rolling fixed p	ynamic bA 0.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 7.5 10.0	GR1 0.129 0.526 0.984 0.376 0.017 0.001 0.000 R GR1 0.528 0.893 0.999 1.000 1.000 0.996 0.967	t GR2 0.049 0.063 0.047 0.018 0.000 0.000 R,D GR2 0.045 0.052 0.045 0.050 0.024 0.000 0.000 0.000	SGR1 0.138 0.481 0.945 0.723 0.172 0.105 0.109 R SGR1 0.754 0.957 1.000 1.000 1.000 0.991 0.958	SGR2 0.096 0.434 0.963 0.827 0.237 0.131 0.136 R SGR2 0.229 0.763 0.994 1.000 0.994 0.900 0.779	DSW1 0.085 0.453 0.995 1.000 1.000 1.000 1.000 - DSW1 0.075 0.070 0.022 0.004 0.000 0.000 0.000	DSW2 0.119 0.456 0.995 1.000 1.000 1.000 - DSW2 0.108 0.117 0.081 0.035 0.001 0.000 0.000	TLSW 0.088 0.222 0.762 0.762 0.0977 0.664 0.142 0.050 R TLSW 0.098 0.256 0.043 0.256 0.043 0.000 0.000 0.000	TLUD 0.111 0.705 1.000 1.000 1.000 1.000 - TLUD 0.109 0.255 0.598 0.441 0.032 0.000 0.000
	rolling fixed p	ynamic bA 0.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause	GR1 0.129 0.526 0.984 0.376 0.017 0.001 0.000 R GR1 0.528 0.893 0.999 1.000 1.000 0.996 0.967 -	t GR2 0.049 0.063 0.047 0.018 0.000 0.000 R,D GR2 0.045 0.052 0.045 0.050 0.024 0.000 0.000 0.000 0.000 R,D	SGR1 0.138 0.481 0.945 0.723 0.172 0.105 0.109 R SGR1 0.754 0.957 1.000 1.000 1.000 1.000 0.991 0.958 R,D	SGR2 0.096 0.434 0.963 0.827 0.237 0.131 0.136 R SGR2 0.229 0.763 0.994 1.000 0.994 0.900 0.779 R,D	DSW1 0.085 0.453 0.995 1.000 1.000 1.000 1.000 - DSW1 0.075 0.070 0.022 0.004 0.000 0.000 0.000 R,D	DSW2 0.119 0.456 0.995 1.000 1.000 1.000 - DSW2 0.108 0.117 0.081 0.035 0.001 0.000 0.000 R,D	TLSW 0.088 0.222 0.762 0.977 0.664 0.142 0.050 R TLSW 0.089 0.098 0.256 0.043 0.000 0.000 0.000 0.000 0.000 R,D	TLUD 0.111 0.705 1.000 1.000 1.000 1.000 - TLUD 0.109 0.255 0.598 0.441 0.032 0.000 0.000 R,D
	rolling fixed p (p	ynamic bA 0.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA	GR1 0.129 0.526 0.984 0.376 0.017 0.001 0.000 R GR1 0.528 0.893 0.999 1.000 1.000 0.996 0.996 - GR1	t GR2 0.049 0.063 0.047 0.018 0.000 0.000 R,D GR2 0.045 0.052 0.045 0.052 0.045 0.052 0.045 0.024 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.024 0.052 0.049 0.0000 0.000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.0000 0.000000	SGR1 0.138 0.481 0.945 0.723 0.172 0.105 0.109 R SGR1 0.957 1.000 1.000 1.000 1.000 0.991 0.958 R,D SGR1	SGR2 0.096 0.434 0.963 0.827 0.237 0.131 0.136 R SGR2 0.229 0.763 0.994 1.000 0.994 0.900 0.779 R,D SGR2	DSW1 0.085 0.453 0.995 1.000 1.000 1.000 1.000 0.000 0.022 0.004 0.000 0.000 0.000 0.000 R,D DSW1	DSW2 0.119 0.456 0.995 1.000 1.000 1.000 1.000 0.000 0.001 0.001 0.000 0.000 R,D DSW2	TLSW 0.088 0.222 0.762 0.762 0.0977 0.664 0.142 0.050 R TLSW 0.089 0.098 0.256 0.043 0.000 0.000 0.000 0.000 0.000 R,D TLSW	TLUD 0.111 0.705 1.000 1.000 1.000 1.000 1.000 0.255 0.598 0.441 0.032 0.000 0.000 R,D TLUD
	rolling fixed p (p	ynamic bA 0.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5	, robus GR1 0.129 0.526 0.984 0.376 0.017 0.001 0.000 R GR1 0.528 0.999 1.000 1.000 0.996 0.996 0.996 0.996 1.000	t GR2 0.049 0.063 0.047 0.018 0.000 0.000 R,D GR2 0.052 0.052 0.052 0.052 0.052 0.050 0.024 0.000 0.000 0.000 R,D GR2 0.047	SGR1 0.138 0.481 0.945 0.723 0.172 0.105 0.109 R SGR1 0.754 0.957 1.000 1.000 1.000 0.991 0.958 R,D SGR1 0.063	SGR2 0.096 0.434 0.963 0.827 0.237 0.131 0.136 R SGR2 0.229 0.763 0.994 1.000 0.994 0.904 0.909 0.779 R,D SGR2 0.049	DSW1 0.085 0.453 0.995 1.000 1.000 1.000 1.000 0.075 0.070 0.022 0.004 0.000 0.000 R,D DSW1 0.085	DSW2 0.119 0.456 0.995 1.000 1.000 1.000 1.000 0.108 0.117 0.081 0.035 0.001 0.000 R,D DSW2 0.119	TLSW 0.088 0.222 0.762 0.977 0.664 0.142 0.050 R TLSW 0.089 0.256 0.043 0.000 0.000 0.000 0.000 R,D TLSW 0.066	TLUD 0.111 0.705 1.000 1.000 1.000 1.000 1.000 - TLUD 0.109 0.255 0.598 0.441 0.032 0.000 R,D TLUD 0.080
	ve rolling fixed p (p	ynamic bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 10.0 cause	robus GR1 0.129 0.526 0.984 0.376 0.017 0.001 0.000 R GR1 0.528 0.893 0.999 1.000 0.967 - GR1 0.103 0.257	t GR2 0.049 0.063 0.047 0.018 0.000 0.000 R,D GR2 0.052 0.052 0.050 0.024 0.050 0.024 0.000 0.000 R,D GR2 0.047 0.058	SGR1 0.138 0.481 0.945 0.723 0.172 0.105 0.109 R SGR1 0.754 0.957 1.000 1.000 1.000 1.000 1.000 1.000 1.000 0.991 0.958 R,D SGR1 0.063 0.178	SGR2 0.096 0.434 0.963 0.827 0.237 0.131 0.136 R SGR2 0.229 0.763 0.994 1.000 0.994 0.900 0.779 R,D SGR2 0.049 0.163	DSW1 0.085 0.453 0.995 1.000 1.000 1.000 1.000 0.075 0.070 0.022 0.004 0.000 0.000 R,D DSW1 0.085 0.137	DSW2 0.119 0.456 0.995 1.000 1.000 1.000 1.000 0.108 0.117 0.081 0.001 0.000 R,D DSW2 0.119 0.206	TLSW 0.088 0.222 0.762 0.977 0.664 0.142 0.050 R TLSW 0.089 0.098 0.256 0.043 0.000 0.000 0.000 R,D TLSW 0.066 0.090	TLUD 0.111 0.705 1.000 1.000 1.000 1.000 1.000 1.000 0.109 0.255 0.598 0.441 0.032 0.000 R,D TLUD 0.080 0.221
	Irsive rolling fixed p	ynamic bA 0.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 10.0 cause bA 0.0 0.5 1.0 0.5 1.0 2.5 5.0 7.5 1.0 0 5 1.0 2.5 5.0 7.5 1.0 0 5 1.0 2.5 5.0 7.5 1.0 0 5 1.0 2.5 5.0 7.5 1.0 0 5 5.0 7.5 1.0 0 5 1.0 0 5 5.0 7.5 1.0 0 5 5.0 7.5 1.0 0 5 5.0 7.5 1.0 0 5 5 1.0 0 5 5 1.0 5 5 1.0 0 5 5 1.0 5 5 1.0 5 5 1.0 5 5 1.0 5 5 1.0 5 5 1.0 5 5 1.0 5 5 5 1.0 5 5 1.0 5 5 1.0 5 5 1.0 5 5 1.0 5 5 1.0 5 5 1.0 5 5 1.0 5 5 1.0 5 5 5 1.0 5 5 1.0 5 5 1.0 5 5 5 1.0 5 5 1.0 5 5 1.0 5 5 5 1.0 5 5 1.0 7.5 5 1.0 5 5 1.0 7.5 5 1.0 7.5 5 1.0 7.5 5 1.0 7.5 5 1.0 7.5 5 1.0 7.5 5 1.0 7.5 5 1.0 7.5 1.0 7.5 1.0 7.5 1.0 7.5 1.0 0 7.5 1.0 7.5 7.5 1.0 7.5 1.0 7.5 1.0 7.5 1.0 7.5 1.0 7.5 1.0 7.5 1.0 7.5 1.0 7.5 1.0 7.5 1.0 7.5 1.0 7.5 1.0 7.5 1.0 7.5 1.0 7.5 1.0 7.5 1.0 7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5	, robus GR1 0.129 0.526 0.984 0.376 0.017 0.001 0.000 R GR1 0.528 0.893 0.999 1.000 1.000 0.9967 - GR1 0.103 0.257 0.542	t GR2 0.049 0.063 0.047 0.018 0.000 0.000 R,D GR2 0.052 0.052 0.052 0.052 0.052 0.050 0.024 0.000 0.000 R,D GR2 0.047 0.058 0.056	SGR1 0.138 0.481 0.945 0.723 0.172 0.105 0.109 R SGR1 0.754 0.957 1.000 1.000 1.000 1.000 0.991 0.958 R,D SGR1 0.063 0.178 0.367	SGR2 0.096 0.434 0.827 0.237 0.131 0.136 R SGR2 0.229 0.763 0.994 1.000 0.994 0.904 0.907 0.779 R,D SGR2 0.049 0.163 0.358	DSW1 0.085 0.453 0.995 1.000 1.000 1.000 - DSW1 0.075 0.070 0.022 0.004 0.000 0.000 0.000 R,D DSW1 0.085 0.137 0.087	DSW2 0.119 0.456 0.995 1.000 1.000 1.000 1.000 1.000 0.108 0.117 0.081 0.035 0.001 0.000 R,D DSW2 0.119 0.206 0.175	TLSW 0.088 0.222 0.762 0.977 0.664 0.142 0.050 R TLSW 0.089 0.098 0.256 0.043 0.000 0.000 0.000 R,D TLSW 0.066 0.090 0.224	TLUD 0.111 0.705 1.000 1.000 1.000 1.000 1.000 1.000
	ecursive rolling fixed p	ynamic bA 0.0 2.5 5.0 7.5 10.0 cause bA 0.0 7.5 10.0 2.5 5.0 7.5 10.0 2.5 5.0 7.5 10.0 cause bA 0.5 1.0 2.5 5.0 7.5 10.0 2.5 5.0 7.5 1.0 2.5 1.0 2.5 5.0 7.5 1.0 2.5 5.0 7.5 1.0 2.5 5.0 7.5 1.0 2.5 5.0 7.5 1.0 2.5 5.0 7.5 1.0 2.5 5.0 7.5 1.0 2.5 5.0 7.5 1.0 2.5 5.0 7.5 1.0 2.5 5.0 7.5 1.0 2.5 5.0 7.5 1.0 2.5 5.0 7.5 1.0 2.5 5.0 7.5 1.0 2.5 5.0 7.5 5.0 7.5 1.0 2.5 5.0 7.5 5.0 7.5 5.0 7.5 5.0 7.5 5.0 7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5	, robus GR1 0.129 0.526 0.984 0.376 0.017 0.001 0.000 R GR1 0.528 0.893 0.999 1.000 1.000 0.9967 - GR1 0.103 0.257 0.542 0.827	t GR2 0.049 0.063 0.047 0.018 0.000 0.000 R,D GR2 0.052 0.045 0.052 0.024 0.050 0.024 0.000 0.000 R,D GR2 0.047 0.058 0.056 0.025	SGR1 0.138 0.481 0.945 0.723 0.172 0.105 0.109 R SGR1 0.754 0.957 1.000 1.000 1.000 1.000 0.991 0.958 R,D SGR1 0.663 0.178 0.367 0.563	SGR2 0.096 0.434 0.827 0.237 0.131 0.136 R SGR2 0.229 0.763 0.994 1.000 0.994 0.994 0.994 0.779 R,D SGR2 0.049 0.163 0.358 0.603	DSW1 0.085 0.453 0.995 1.000 1.000 1.000 1.000 0.075 0.070 0.022 0.004 0.000 0.000 0.000 0.000 R,D DSW1 0.085 0.137 0.087 0.020	DSW2 0.119 0.456 0.995 1.000 1.000 1.000 1.000 0.108 0.117 0.081 0.035 0.001 0.000 0.000 R,D DSW2 0.119 0.206 0.175 0.057	TLSW 0.088 0.222 0.762 0.977 0.664 0.142 0.050 R TLSW 0.089 0.098 0.256 0.043 0.000 0.000 0.000 R,D TLSW 0.066 0.090 0.224 0.043	TLUD 0.111 0.705 1.000 1.000 1.000 1.000 1.000 1.000 0.255 0.598 0.441 0.032 0.000 0.000 0.000 R,D TLUD 0.080 0.221 0.591 0.575
	recursive rolling fixed p	ynamic bA 0.0 2.5 5.0 7.5 10.0 cause bA 0.0 2.5 5.0 7.5 10.0 2.5 5.0 7.5 10.0 cause bA 0.0 5.10 2.5 5.0 7.5 10.0 2.5 5.0 7.5 10.0 2.5 5.0 5.0 5.0 7.5 1.0 2.5 5.0 5.0 5.0 7.5 1.0 2.5 5.0 7.5 5.0 7.5 1.0 2.5 5.0 7.5 5.5 5.0 7.5 5.0 7.5 5.0 7.5 5.5 5.0 7.5 5.0 7.5 5.5 5.0 5.5 5.0 5.5 5.5 5.0 5.5 5.5 5	GR1 0.129 0.526 0.984 0.376 0.017 0.001 0.000 R GR1 0.528 0.893 0.999 1.000 1.000 0.996 0.967 - GR1 0.103 0.257 0.542 0.827 0.542	GR2 0.049 0.063 0.047 0.018 0.000 0.000 R,D GR2 0.052 0.045 0.050 0.024 0.050 0.024 0.000 0.000 R,D GR2 0.047 0.058 0.056 0.025 0.000	SGR1 0.138 0.481 0.945 0.723 0.172 0.105 0.109 R SGR1 0.754 0.957 1.000 1.000 1.000 0.991 0.958 R,D SGR1 0.063 0.178 0.367 0.563 0.426	SGR2 0.096 0.434 0.963 0.827 0.237 0.131 0.136 R SGR2 0.229 0.763 0.994 1.000 0.994 0.900 0.779 R,D SGR2 0.049 0.163 0.358 0.603 0.528	DSW1 0.085 0.453 0.995 1.000 1.000 1.000 1.000 0.075 0.070 0.022 0.004 0.000 0.000 0.000 R,D DSW1 0.085 0.137 0.087 0.087 0.087	DSW2 0.119 0.456 0.995 1.000 1.000 1.000 0.100 0.108 0.117 0.081 0.035 0.001 0.000 R,D DSW2 0.119 0.206 0.175 0.057 0.001	TLSW 0.088 0.222 0.762 0.977 0.664 0.142 0.050 R TLSW 0.089 0.098 0.256 0.043 0.000 0.000 R,D TLSW 0.066 0.090 0.224 0.043 0.000	TLUD 0.111 0.705 1.000 1.000 1.000 1.000 - TLUD 0.109 0.255 0.598 0.441 0.032 0.000 0.200 R,D TLUD 0.080 0.221 0.591 0.575 0.026
	recursive rolling fixed p	ynamic bA 0.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 2.5 10.0 2.5 5.0 7.5 10.0 2.5 1.0 2.5 1.0 2.5 5.0 7.5 1.0 2.5 5.0 7.5 1.0 2.5 5.0 7.5 1.0 2.5 5.0 7.5 1.0 2.5 5.0 7.5 1.0 2.5 5.0 7.5 1.0 2.5 5.0 7.5 1.0 2.5 5.0 7.5 1.0 2.5 5.0 7.5 1.0 2.5 5.0 7.5 1.0 2.5 5.0 7.5 1.0 2.5 5.0 7.5 1.0 2.5 5.0 7.5 1.0 2.5 5.0 7.5 1.0 7.5 7.5 1.0 7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5	GR1 0.129 0.526 0.984 0.376 0.017 0.001 0.000 R GR1 0.528 0.893 1.000 1.000 1.000 0.996 0.967 - GR1 0.103 0.257 0.542 0.827 0.542 0.827	t GR2 0.049 0.063 0.047 0.018 0.000 0.000 R,D GR2 0.045 0.050 0.024 0.045 0.050 0.024 0.000 0.000 R,D GR2 0.047 0.058 0.058 0.058 0.055 0.025 0.000 0.000	SGR1 0.138 0.481 0.945 0.723 0.172 0.105 0.109 R SGR1 0.754 0.957 1.000 1.000 1.000 1.000 1.000 0.991 0.958 R,D SGR1 0.063 0.178 0.367 0.563 0.426 0.385	SGR2 0.096 0.434 0.963 0.827 0.237 0.131 0.136 R SGR2 0.229 0.763 0.994 1.000 0.994 0.900 0.779 R,D SGR2 0.049 0.163 0.358 0.603 0.528 0.444	DSW1 0.085 0.453 0.995 1.000 1.000 1.000 - DSW1 0.075 0.070 0.022 0.004 0.000 0.000 0.000 R,D DSW1 0.085 0.137 0.085 0.137 0.085	DSW2 0.119 0.456 0.995 1.000 1.000 1.000 1.000 - DSW2 0.108 0.017 0.081 0.000 0.000 R,D DSW2 0.119 0.206 0.175 0.057 0.001 0.000	TLSW 0.088 0.222 0.762 0.762 0.977 0.664 0.142 0.050 R TLSW 0.089 0.256 0.043 0.256 0.043 0.000 0.000 R,D TLSW 0.066 0.090 0.224 0.043 0.000 0.224	TLUD 0.111 0.705 1.000 1.000 1.000 1.000 1.000 0.255 0.598 0.441 0.032 0.000 0.000 R,D TLUD 0.080 0.221 0.595 0.221 0.575 0.026 0.000
	recursive rolling fixed p	ynamic bA 0.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 2.5 5.0 7.5 10.0 0 5.0 7.5 10.0 0 5.0 7.5 10.0 0 5.0 7.5 10.0 0 5 1.0 2.5 5.0 7.5 10.0 0 5 1.0 2.5 5.0 7.5 10.0 0 5 1.0 2.5 5.0 7.5 10.0 0 5 1.0 2.5 5.0 7.5 10.0 0 5 1.0 2.5 5 5 1.0 2.5 5 5 5 1.0 2.5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	GR1 0.129 0.526 0.984 0.376 0.017 0.001 0.000 R GR1 0.528 0.893 0.999 1.000 1.000 0.996 0.997 0.996 0.996 0.996 0.997 0.996 0.997 0.996 0.996 0.996 0.997 0.996 0.996 0.996 0.997 0.996 0.996 0.996 0.996 0.997 0.996 0.996 0.996 0.996 0.997 0.996 0.997 0.000 0.996 0.996 0.997 0.000 0.996 0.996 0.997 0.996 0.997 0.997 0.996 0.997 0.996 0.997 0.997 0.997 0.996 0.997 0.997 0.996 0.996 0.997 0.997 0.997 0.997 0.996 0.997 0.997 0.997 0.996 0.997 0.	t GR2 0.049 0.063 0.047 0.018 0.000 0.000 R,D GR2 0.045 0.052 0.045 0.052 0.045 0.045 0.024 0.000 0.000 0.000 R,D GR2 0.047 0.058 0.056 0.025 0.000 0.020 0.025	SGR1 0.138 0.481 0.945 0.723 0.172 0.105 0.109 R SGR1 0.957 1.000 1.000 1.000 1.000 1.000 0.991 0.958 R,D SGR1 0.063 0.178 0.367 0.563 0.426 0.385 0.396	SGR2 0.096 0.434 0.963 0.237 0.131 0.136 R SGR2 0.229 0.763 0.994 1.000 0.994 0.900 0.779 R ,D SGR2 0.049 0.163 0.358 0.603 0.528 0.644 0.433	DSW1 0.085 0.453 0.995 1.000 1.000 1.000 1.000 0.000 0.022 0.004 0.000 0.000 0.000 R,D DSW1 0.085 0.137 0.087 0.020 0.000 0.000 0.000 0.000	DSW2 0.119 0.456 0.995 1.000 1.000 1.000 1.000 0.000 0.001 0.001 0.000 0.000 R,D DSW2 0.119 0.206 0.175 0.057 0.001 0.000 0.000 0.000	TLSW 0.088 0.222 0.762 0.762 0.0977 0.664 0.142 0.050 R TLSW 0.089 0.256 0.043 0.008 0.256 0.043 0.000 0.000 R,D TLSW 0.066 0.090 0.224 0.024 0.024 0.000 0.200 0.000 0.000	TLUD 0.111 0.705 1.000 1.000 1.000 1.000 1.000 0.255 0.598 0.441 0.032 0.000 0.000 R,D TLUD 0.080 0.221 0.591 0.575 0.026 0.000 0.000

Table 4-5: Power comparison under DGP5 (5% level)

TLSW TLUD

0.093 0.114

1.000 1.000

0.996

1.000

1.000

1.000

1.000

-

TLUD

0.096

0.412

0.762

0.062

0.000

0.000

0.000

D

TLUD

0.063

0.450

0.640

0.020

0.000

0.000

0.000

D

TLUD

0.130

1.000

1.000

1.000

1.000

1.000

TLUD

0.135

0.425

0.560

0.005

0.000

0.000

0.000

R,D

TLUD

0.100

0.445 0.410

0.000

0.000

0.000

0.000

R,D

0.955

1.000

1.000

1.000

1.000

-

TLSW

0.082

0.202

0.349

0.008

0.000

0.000

0.000

D

TLSW

0.055

0.161

0.173

0.000

0.000

0.000

0.000

D

TLSW

0.095

0.745

0.980

0.620

0.145

0.115

R

TLSW

0.095

0.210

0.315

0.000

0.000

0.000

0.000

R,D

TLSW

0.065

0.150

0.115

0.000

0.000

0.000

0.000

R,D

0.165 1.000

a) st	atic, no	on-robu	st							 c) dy	ynamic	, non-ro	bust	,			
	bA	GR1	GR2	SGR1	SGR2	DSW1	DSW2	TLSW	TLUD		bA	GR1	GR2	SGR1	SGR2	DSW1	DSW2
	0.0	0.091	0.063	0.127	0.089	0.047	0.071	0.062	0.064		0.0	0.128	0.059	0.177	0.117	0.074	0.090
	0.5	0.598	0.528	0.956	0.606	0.997	0.996	0.968	0.997		0.5	0.512	0.145	0.948	0.180	0.993	0.989
ed	1.0	0.960	1.000	1.000	1.000	1.000	1.000	1.000	1.000	ed	1.0	0.408	0.198	1.000	0.201	1.000	1.000
fix	2.5	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	fix	2.5	0.000	0.085	1.000	0.012	1.000	1.000
	5.0	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		5.0	0.000	0.000	1.000	0.000	1.000	1.000
	7.5	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		7.5	0.000	0.000	1.000	0.000	1.000	1.000
	10.0	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		10.0	0.000	0.000	1.000	0.000	1.000	1.000
	cause	-	-	-	-	-	-	-	-		cause	D	D	-	D	-	-
	bA	GR1	GR2	SGR1	SGR2	DSW1	DSW2	TLSW	TLUD		bA	GR1	GR2	SGR1	SGR2	DSW1	DSW2
	0.0	0.238	0.058	0.364	0.105	0.052	0.069	0.064	0.072		0.0	0.511	0.047	0.734	0.240	0.064	0.080
	0.5	0.893	0.303	0.995	0.601	0.835	0.791	0.632	0.820		0.5	0.883	0.101	0.997	0.483	0.462	0.431
bu	1.0	0.996	0.957	1.000	0.993	1.000	1.000	1.000	1.000	ng	1.0	0.686	0.149	1.000	0.248	0.786	0.759
10	2.5	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	10	2.5	0.008	0.063	1.000	0.009	0.556	0.529
	5.0	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		5.0	0.000	0.000	1.000	0.000	0.308	0.237
	7.5	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		7.5	0.000	0.000	1.000	0.000	0.265	0.196
	10.0	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		10.0	0.000	0.000	1.000	0.000	0.228	0.167
	cause	-	-	-	-	-	-	-	-		cause	D	D	-	D	D	D
	bA	GR1	GR2	SGR1	SGR2	DSW1	DSW2	TLSW	TLUD		bA	GR1	GR2	SGR1	SGR2	DSW1	DSW2
	0.0	0.072	0.060	0.074	0.058	0.055	0.075	0.051	0.057		0.0	0.102	0.056	0.090	0.073	0.068	0.087
ive	0.5	0.031	0.592	0.603	0.618	0.944	0.927	0.646	0.940	ive	0.5	0.068	0.155	0.221	0.145	0.548	0.529
sın	1.0	0.007	1.000	1.000	1.000	1.000	1.000	1.000	1.000	sın	1.0	0.023	0.212	0.339	0.181	0.781	0.776
leci	2.5	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	loe	2.5	0.000	0.086	0.032	0.013	0.772	0.732
_	5.0	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	_	5.0	0.000	0.000	0.000	0.000	0.627	0.507
	7.5	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		1.5	0.000	0.000	0.000	0.000	0.526	0.444
	10.0	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		10.0	0.000	0.000	0.016	0.000	0.477	0.366
	cause	VV	-	-	-	-	-	-	-		cause	U	D	U	U	U	U
b) st	atic. ro	bust								d) d	vnamic	. robus	t				
b) st	atic, ro bA	bust GR1	GR2	SGR1	SGR2	DSW1	DSW2	TLSW	TLUD	d) d	ynamic bA	, robus GR1	t GR2	SGR1	SGR2	DSW1	DSW2
b) st	atic, ro bA 0.0	bust GR1 0.090	GR2 0.061	SGR1 0.111	SGR2 0.096	DSW1 0.083	DSW2 0.109	TLSW 0.069	TLUD 0.081	d) d	ynamic bA 0.0	, robus GR1 0.129	t GR2 0.049	SGR1 0.138	SGR2 0.096	DSW1 0.095	DSW2 0.110
b) st	atic, ro bA 0.0 0.5	GR1 0.090 0.458	GR2 0.061 0.452	SGR1 0.111 0.776	SGR2 0.096 0.519	DSW1 0.083 0.997	DSW2 0.109 0.996	TLSW 0.069 0.831	TLUD 0.081 0.997	d) d	ynamic bA 0.0 0.5	, robus GR1 0.129 0.411	t GR2 0.049 0.152	SGR1 0.138 0.612	SGR2 0.096 0.170	DSW1 0.095 0.995	DSW2 0.110 1.000
b) st	atic, ro bA 0.0 0.5 1.0	GR1 0.090 0.458 0.073	GR2 0.061 0.452 0.992	SGR1 0.111 0.776 0.997	SGR2 0.096 0.519 0.998	DSW1 0.083 0.997 1.000	DSW2 0.109 0.996 1.000	TLSW 0.069 0.831 1.000	TLUD 0.081 0.997 1.000	d) d	ynamic bA 0.0 0.5 1.0	GR1 0.129 0.411 0.228	t GR2 0.049 0.152 0.167	SGR1 0.138 0.612 0.246	SGR2 0.096 0.170 0.156	DSW1 0.095 0.995 1.000	DSW2 0.110 1.000 1.000
fixed (q	atic, ro bA 0.0 0.5 1.0 2.5	GR1 0.090 0.458 0.073 0.000	GR2 0.061 0.452 0.992 1.000	SGR1 0.111 0.776 0.997 1.000	SGR2 0.096 0.519 0.998 1.000	DSW1 0.083 0.997 1.000 1.000	DSW2 0.109 0.996 1.000 1.000	TLSW 0.069 0.831 1.000 1.000	TLUD 0.081 0.997 1.000 1.000	fixed (p	ynamic bA 0.0 0.5 1.0 2.5	GR1 0.129 0.411 0.228 0.000	t GR2 0.049 0.152 0.167 0.090	SGR1 0.138 0.612 0.246 0.015	SGR2 0.096 0.170 0.156 0.014	DSW1 0.095 0.995 1.000 1.000	DSW2 0.110 1.000 1.000 1.000
fixed a	atic, ro bA 0.0 0.5 1.0 2.5 5.0	GR1 0.090 0.458 0.073 0.000 0.000	GR2 0.061 0.452 0.992 1.000 1.000	SGR1 0.111 0.776 0.997 1.000 1.000	SGR2 0.096 0.519 0.998 1.000 1.000	DSW1 0.083 0.997 1.000 1.000 1.000	DSW2 0.109 0.996 1.000 1.000 1.000	TLSW 0.069 0.831 1.000 1.000 1.000	TLUD 0.081 0.997 1.000 1.000 1.000	fixed (p	ynamic bA 0.0 0.5 1.0 2.5 5.0	GR1 0.129 0.411 0.228 0.000 0.000	GR2 0.049 0.152 0.167 0.090 0.000	SGR1 0.138 0.612 0.246 0.015 0.001	SGR2 0.096 0.170 0.156 0.014 0.000	DSW1 0.095 0.995 1.000 1.000 1.000	DSW2 0.110 1.000 1.000 1.000 1.000
fixed (q	atic, ro bA 0.0 0.5 1.0 2.5 5.0 7.5	GR1 0.090 0.458 0.073 0.000 0.000 0.000	GR2 0.061 0.452 0.992 1.000 1.000 1.000	SGR1 0.111 0.776 0.997 1.000 1.000 1.000	SGR2 0.096 0.519 0.998 1.000 1.000 1.000	DSW1 0.083 0.997 1.000 1.000 1.000 1.000	DSW2 0.109 0.996 1.000 1.000 1.000 1.000	TLSW 0.069 0.831 1.000 1.000 1.000 1.000	TLUD 0.081 0.997 1.000 1.000 1.000 1.000	fixed (p	ynamic bA 0.0 0.5 1.0 2.5 5.0 7.5	GR1 0.129 0.411 0.228 0.000 0.000 0.000	GR2 0.049 0.152 0.167 0.090 0.000 0.000	SGR1 0.138 0.612 0.246 0.015 0.001 0.000	SGR2 0.096 0.170 0.156 0.014 0.000 0.000	DSW1 0.095 0.995 1.000 1.000 1.000 1.000	DSW2 0.110 1.000 1.000 1.000 1.000 1.000
fixed a	atic, ro bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0	GR1 0.090 0.458 0.073 0.000 0.000 0.000 0.000	GR2 0.061 0.452 0.992 1.000 1.000 1.000 1.000	SGR1 0.111 0.776 0.997 1.000 1.000 1.000 1.000	SGR2 0.096 0.519 0.998 1.000 1.000 1.000 1.000	DSW1 0.083 0.997 1.000 1.000 1.000 1.000 1.000	DSW2 0.109 0.996 1.000 1.000 1.000 1.000 1.000	TLSW 0.069 0.831 1.000 1.000 1.000 1.000 1.000	TLUD 0.081 0.997 1.000 1.000 1.000 1.000 1.000	fixed (p	ynamic bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0	GR1 0.129 0.411 0.228 0.000 0.000 0.000 0.000	t GR2 0.049 0.152 0.167 0.090 0.000 0.000 0.000	SGR1 0.138 0.612 0.246 0.015 0.001 0.000 0.001	SGR2 0.096 0.170 0.156 0.014 0.000 0.000 0.000	DSW1 0.095 0.995 1.000 1.000 1.000 1.000 1.000	DSW2 0.110 1.000 1.000 1.000 1.000 1.000 1.000
fixed (q	atic, ro bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause	bust GR1 0.090 0.458 0.073 0.000 0.000 0.000 0.000 R	GR2 0.061 0.452 0.992 1.000 1.000 1.000 -	SGR1 0.111 0.776 0.997 1.000 1.000 1.000 -	SGR2 0.096 0.519 0.998 1.000 1.000 1.000 -	DSW1 0.083 0.997 1.000 1.000 1.000 1.000 -	DSW2 0.109 0.996 1.000 1.000 1.000 1.000 -	TLSW 0.069 0.831 1.000 1.000 1.000 1.000 -	TLUD 0.081 0.997 1.000 1.000 1.000 1.000 1.000	fixed (p	ynamic bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause	, robust GR1 0.129 0.411 0.228 0.000 0.000 0.000 0.000 R,D	t GR2 0.049 0.152 0.167 0.090 0.000 0.000 0.000 R,D	SGR1 0.138 0.612 0.246 0.015 0.001 0.000 0.001 R	SGR2 0.096 0.170 0.156 0.014 0.000 0.000 0.000 R,D	DSW1 0.095 0.995 1.000 1.000 1.000 1.000 -	DSW2 0.110 1.000 1.000 1.000 1.000 1.000 -
fixed q	atic, ro bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA	bust GR1 0.090 0.458 0.073 0.000 0.000 0.000 0.000 R GR1	GR2 0.061 0.452 0.992 1.000 1.000 1.000 1.000 - GR2	SGR1 0.111 0.776 0.997 1.000 1.000 1.000 1.000 - SGR1	SGR2 0.096 0.519 0.998 1.000 1.000 1.000 - SGR2	DSW1 0.083 0.997 1.000 1.000 1.000 1.000 - DSW1	DSW2 0.109 0.996 1.000 1.000 1.000 1.000 1.000 - DSW2	TLSW 0.069 0.831 1.000 1.000 1.000 1.000 - TLSW	TLUD 0.081 0.997 1.000 1.000 1.000 1.000 1.000 - TLUD	fixed p (p	ynamic bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA	GR1 0.129 0.411 0.228 0.000 0.000 0.000 0.000 R,D GR1	t GR2 0.049 0.152 0.167 0.090 0.000 0.000 0.000 R,D GR2	SGR1 0.138 0.612 0.246 0.015 0.001 0.000 0.001 R SGR1	SGR2 0.096 0.170 0.156 0.014 0.000 0.000 0.000 R,D SGR2	DSW1 0.095 0.995 1.000 1.000 1.000 1.000 - DSW1	DSW2 0.110 1.000 1.000 1.000 1.000 1.000 - DSW2
fixed q	atic, ro bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0	bust GR1 0.090 0.458 0.073 0.000 0.000 0.000 0.000 R GR1 0.261	GR2 0.061 0.452 0.992 1.000 1.000 1.000 1.000 - GR2 0.054	SGR1 0.111 0.776 0.997 1.000 1.000 1.000 1.000 - SGR1 0.367	SGR2 0.096 0.519 0.998 1.000 1.000 1.000 1.000 - SGR2 0.129	DSW1 0.083 0.997 1.000 1.000 1.000 1.000 - DSW1 0.077	DSW2 0.109 0.996 1.000 1.000 1.000 1.000 - DSW2 0.103	TLSW 0.069 0.831 1.000 1.000 1.000 1.000 - TLSW 0.072	TLUD 0.081 0.997 1.000 1.000 1.000 1.000 1.000 - TLUD 0.088	fixed (p	ynamic bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0	GR1 0.129 0.411 0.228 0.000 0.000 0.000 0.000 R,D GR1 0.528	t GR2 0.049 0.152 0.167 0.090 0.000 0.000 0.000 R,D GR2 0.052	SGR1 0.138 0.612 0.246 0.015 0.001 0.000 0.001 R SGR1 0.754	SGR2 0.096 0.170 0.156 0.014 0.000 0.000 0.000 R,D SGR2 0.229	DSW1 0.095 0.995 1.000 1.000 1.000 1.000 - DSW1 0.110	DSW2 0.110 1.000 1.000 1.000 1.000 1.000 - DSW2 0.110
b) st	atic, ro bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5	bust GR1 0.090 0.458 0.073 0.000 0.000 0.000 0.000 R GR1 0.261 0.848	GR2 0.061 0.452 0.992 1.000 1.000 1.000 - - GR2 0.054 0.240	SGR1 0.111 0.776 0.997 1.000 1.000 1.000 1.000 - SGR1 0.367 0.999	SGR2 0.096 0.519 0.998 1.000 1.000 1.000 - SGR2 0.129 0.528	DSW1 0.083 0.997 1.000 1.000 1.000 1.000 - DSW1 0.077 0.836	DSW2 0.109 0.996 1.000 1.000 1.000 1.000 - DSW2 0.103 0.804	TLSW 0.069 0.831 1.000 1.000 1.000 1.000 - TLSW 0.072 0.607	TLUD 0.081 0.997 1.000 1.000 1.000 1.000 - TLUD 0.088 0.815	fixed (p	ynamic bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5	, robus GR1 0.129 0.411 0.228 0.000 0.000 0.000 0.000 R,D GR1 0.528 0.835	t GR2 0.049 0.152 0.167 0.090 0.000 0.000 0.000 R,D GR2 0.052 0.095	SGR1 0.138 0.612 0.246 0.015 0.001 0.000 0.001 R SGR1 0.754 0.998	SGR2 0.096 0.170 0.156 0.014 0.000 0.000 0.000 R,D SGR2 0.229 0.470	DSW1 0.095 0.995 1.000 1.000 1.000 1.000 - DSW1 0.110 0.430	DSW2 0.110 1.000 1.000 1.000 1.000 1.000 - - DSW2 0.110 0.405
ing fixed fixed fixed	atic, ro bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 1.0	bust GR1 0.090 0.458 0.073 0.000 0.000 0.000 0.000 R GR1 0.261 0.848 0.968	GR2 0.061 0.452 0.992 1.000 1.000 1.000 - GR2 0.054 0.240 0.899	SGR1 0.111 0.776 0.997 1.000 1.000 1.000 - - SGR1 0.367 0.999 1.000	SGR2 0.096 0.519 0.998 1.000 1.000 1.000 - SGR2 0.129 0.528 0.899	DSW1 0.083 0.997 1.000 1.000 1.000 1.000 - DSW1 0.077 0.836 1.000	DSW2 0.109 0.996 1.000 1.000 1.000 1.000 - DSW2 0.103 0.804 1.000	TLSW 0.069 0.831 1.000 1.000 1.000 1.000 - TLSW 0.072 0.607 1.000	TLUD 0.081 0.997 1.000 1.000 1.000 1.000 - TLUD 0.088 0.815 1.000	ing fixed (p	ynamic bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 1.0	, robus GR1 0.129 0.411 0.228 0.000 0.000 0.000 0.000 R,D GR1 0.528 0.835 0.603	t GR2 0.049 0.152 0.167 0.090 0.000 0.000 0.000 R,D GR2 0.052 0.095 0.126	SGR1 0.138 0.612 0.246 0.015 0.001 0.000 0.001 R SGR1 0.754 0.998 1.000	SGR2 0.096 0.170 0.156 0.014 0.000 0.000 R,D SGR2 0.229 0.470 0.253	DSW1 0.095 0.995 1.000 1.000 1.000 1.000 - DSW1 0.110 0.430 0.595	DSW2 0.110 1.000 1.000 1.000 1.000 1.000 - DSW2 0.110 0.405 0.615
rolling fixed a	atic, ro bA 0.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 1.0 2.5	bust GR1 0.090 0.458 0.073 0.000 0.000 0.000 0.000 R GR1 0.261 0.848 0.968 1.000	GR2 0.061 0.452 0.992 1.000 1.000 1.000 1.000 - GR2 0.054 0.240 0.899 0.998	SGR1 0.111 0.776 0.997 1.000 1.000 1.000 1.000 - SGR1 0.367 0.999 1.000 1.000	SGR2 0.096 0.519 0.998 1.000 1.000 1.000 1.000 - SGR2 0.129 0.528 0.899 0.998	DSW1 0.083 0.997 1.000 1.000 1.000 1.000 - DSW1 0.077 0.836 1.000 1.000	DSW2 0.109 0.996 1.000 1.000 1.000 1.000 - DSW2 0.103 0.804 1.000 1.000	TLSW 0.069 0.831 1.000 1.000 1.000 1.000 - TLSW 0.072 0.607 1.000 1.000	TLUD 0.081 0.997 1.000 1.000 1.000 1.000 - TLUD 0.088 0.815 1.000 1.000	rolling fixed (p	ynamic bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 1.0 2.5	, robust GR1 0.129 0.411 0.228 0.000 0.000 0.000 R,D GR1 0.528 0.835 0.603 0.005	t GR2 0.049 0.152 0.060 0.000 0.000 0.000 R,D GR2 0.052 0.095 0.126 0.066	SGR1 0.138 0.612 0.246 0.015 0.001 0.000 0.001 R SGR1 0.754 0.998 1.000 1.000	SGR2 0.096 0.170 0.156 0.014 0.000 0.000 R,D SGR2 0.229 0.470 0.253 0.010	DSW1 0.095 0.995 1.000 1.000 1.000 1.000 - DSW1 0.110 0.430 0.595 0.260	DSW2 0.110 1.000 1.000 1.000 1.000 1.000 - DSW2 0.110 0.405 0.615 0.315
rolling fixed a	atic, ro bA 0.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 1.0 2.5 5.0	bust GR1 0.090 0.458 0.073 0.000 0.000 0.000 0.000 R GR1 0.261 0.848 0.968 1.000 1.000	GR2 0.061 0.452 0.992 1.000 1.000 1.000 1.000 - GR2 0.054 0.240 0.899 0.998 0.713	SGR1 0.111 0.776 0.997 1.000 1.000 1.000 1.000 - SGR1 0.367 0.999 1.000 1.000 1.000	SGR2 0.096 0.519 0.998 1.000 1.000 1.000 1.000 - SGR2 0.129 0.528 0.899 0.998 0.993	DSW1 0.083 0.997 1.000 1.000 1.000 1.000 - DSW1 0.077 0.836 1.000 1.000 1.000	DSW2 0.109 0.996 1.000 1.000 1.000 1.000 1.000 - DSW2 0.103 0.804 1.000 1.000 1.000	TLSW 0.069 0.831 1.000 1.000 1.000 1.000 - TLSW 0.072 0.607 1.000 1.000 1.000	TLUD 0.081 0.997 1.000 1.000 1.000 1.000 1.000 - TLUD 0.088 0.815 1.000 1.000 1.000	rolling fixed p	ynamic bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 1.0 2.5 5.0	, robust GR1 0.129 0.411 0.228 0.000 0.000 0.000 R,D GR1 0.528 0.835 0.603 0.005 0.000	t GR2 0.049 0.152 0.090 0.000 0.000 0.000 R,D GR2 0.052 0.055 0.126 0.066 0.000	SGR1 0.138 0.612 0.246 0.015 0.001 0.000 0.001 R SGR1 0.754 0.998 1.000 1.000 0.964	SGR2 0.096 0.170 0.156 0.014 0.000 0.000 R,D SGR2 0.229 0.470 0.253 0.010 0.000	DSW1 0.095 0.995 1.000 1.000 1.000 1.000 1.000 - DSW1 0.110 0.430 0.595 0.260 0.075	DSW2 0.110 1.000 1.000 1.000 1.000 1.000 1.000 0.100 0.405 0.615 0.315 0.105
rolling fixed f	atic, ro bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 1.0 2.5 5.0 7.5 1.0 0.5 1.0 2.5 5.0 7.5	bust GR1 0.090 0.458 0.073 0.000 0.000 0.000 0.000 0.000 R GR1 0.261 0.261 0.848 0.968 1.000 1.000	GR2 0.061 0.452 0.992 1.000 1.000 1.000 1.000 - GR2 0.054 0.240 0.899 0.998 0.713 0.712	SGR1 0.111 0.776 0.997 1.000 1.000 1.000 	SGR2 0.096 0.519 0.998 1.000 1.000 1.000 - SGR2 0.129 0.528 0.899 0.998 0.993 0.974	DSW1 0.083 0.997 1.000 1.000 1.000 1.000 - DSW1 0.077 0.836 1.000 1.000 1.000	DSW2 0.109 0.996 1.000 1.000 1.000 1.000 - DSW2 0.103 0.804 1.000 1.000 1.000	TLSW 0.069 0.831 1.000 1.000 1.000 1.000 TLSW 0.072 0.607 1.000 1.000 1.000	TLUD 0.081 0.997 1.000 1.000 1.000 1.000 1.000 TLUD 0.088 0.815 1.000 1.000 1.000	rolling fixed (p	ynamic bA 0.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 1.0 2.5 5.0 7.5	, robust GR1 0.129 0.411 0.228 0.000 0.000 0.000 R,D GR1 0.528 0.603 0.005 0.000 0.000	t GR2 0.049 0.152 0.167 0.090 0.000 0.000 R,D GR2 0.052 0.025 0.126 0.065 0.126 0.000 0.000	SGR1 0.138 0.612 0.246 0.015 0.001 0.000 0.001 R SGR1 0.754 0.998 1.000 1.000 0.964 0.963	SGR2 0.096 0.170 0.156 0.014 0.000 0.000 R,D SGR2 0.229 0.470 0.253 0.010 0.000 0.000	DSW1 0.095 1.000 1.000 1.000 1.000 1.000 1.000 - DSW1 0.110 0.430 0.595 0.260 0.075 0.330	DSW2 0.110 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 0.405 0.615 0.315 0.105 0.060
rolling fixed f	atic, ro bA 0.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 2.5 5.0 7.5 10.0	bust GR1 0.090 0.458 0.073 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.261 0.261 0.261 0.268 1.000 1.000 1.000	GR2 0.061 0.452 0.992 1.000 1.000 1.000 1.000 - GR2 0.054 0.240 0.899 0.998 0.713 0.712 0.996	SGR1 0.111 0.776 0.997 1.000 1.000 1.000 	SGR2 0.096 0.519 0.998 1.000 1.000 1.000 1.000 - SGR2 0.129 0.528 0.899 0.993 0.993 0.974 0.993	DSW1 0.083 0.997 1.000 1.000 1.000 1.000 - DSW1 0.077 0.836 1.000 1.000 1.000 1.000	DSW2 0.109 0.996 1.000 1.000 1.000 1.000 1.000 - DSW2 0.103 0.804 1.000 1.000 1.000	TLSW 0.069 0.831 1.000 1.000 1.000 1.000 TLSW 0.072 0.607 1.000 1.000 1.000	TLUD 0.081 0.997 1.000 1.000 1.000 1.000 TLUD 0.088 0.815 1.000 1.000 1.000 1.000	rolling fixed p	ynamic bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0	, robust GR1 0.129 0.411 0.228 0.000 0.000 0.000 R,D GR1 0.528 0.603 0.005 0.005 0.000 0.000 0.000	t GR2 0.049 0.152 0.167 0.090 0.000 0.000 0.000 R,D GR2 0.052 0.126 0.066 0.000 0.000 0.000	SGR1 0.138 0.612 0.246 0.015 0.001 0.000 0.001 R SGR1 0.754 0.998 1.000 1.000 0.964 0.963 0.990	SGR2 0.096 0.170 0.156 0.014 0.000 0.000 R,D SGR2 0.229 0.470 0.253 0.470 0.253 0.010 0.000 0.000	DSW1 0.095 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 0.110 0.430 0.595 0.260 0.075 0.330 0.030	DSW2 0.110 1.000 1.000 1.000 1.000 1.000 1.000 1.000 0.100 0.405 0.615 0.315 0.315 0.600 0.070
rolling fixed (atic, ro bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 2.5 5.0 7.5 10.0 cause	bust GR1 0.090 0.458 0.073 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.261 0.261 0.268 1.000 1.000 1.000 1.000 -	GR2 0.061 0.452 0.992 1.000 1.000 1.000 1.000 - GR2 0.054 0.240 0.899 0.998 0.713 0.712 0.996 R	SGR1 0.111 0.776 0.997 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000	SGR2 0.096 0.519 0.998 1.000 1.000 1.000 - SGR2 0.129 0.528 0.899 0.993 0.993 0.993 0.993 0.993 R	DSW1 0.083 0.997 1.000 1.000 1.000 1.000 - DSW1 0.077 0.836 1.000 1.000 1.000 1.000 1.000	DSW2 0.109 0.996 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000	TLSW 0.069 0.831 1.000 1.000 1.000 1.000 TLSW 0.072 0.607 1.000 1.000 1.000 1.000 1.000	TLUD 0.081 0.997 1.000 1.000 1.000 1.000 TLUD 0.088 0.815 1.000 1.000 1.000 1.000	rolling fixed p	ynamic bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause	, robust GR1 0.129 0.411 0.228 0.000 0.000 0.000 R,D GR1 0.528 0.603 0.005 0.000 0.000 0.000 0.000 R,D	t GR2 0.049 0.152 0.167 0.090 0.000 0.000 R,D GR2 0.052 0.025 0.126 0.066 0.000 0.000 0.000 0.000 0.000 0.000	SGR1 0.138 0.612 0.246 0.015 0.001 0.000 0.001 R SGR1 0.754 0.998 1.000 1.000 1.000 0.964 0.963 0.990 R,D	SGR2 0.096 0.170 0.156 0.014 0.000 0.000 R,D SGR2 0.229 0.470 0.253 0.010 0.000 0.000 0.000 0.000 0.000 R,D	DSW1 0.095 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 0.110 0.430 0.595 0.260 0.075 0.230 0.075 0.330 0.030 0.330 R,D	DSW2 0.110 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 0.405 0.615 0.315 0.405 0.605 0.305 0.600 0.070 R,D
rolling fixed (q	atic, ro bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 2.5 5.0 7.5 10.0 cause bA	bust GR1 0.090 0.458 0.073 0.000 0.000 0.000 0.000 0.000 R GR1 0.261 0.261 0.261 0.261 0.268 1.000 1.000 1.000 1.000 - GR1	GR2 0.061 0.452 0.992 1.000 1.000 1.000 1.000 - GR2 0.054 0.240 0.899 0.998 0.713 0.712 0.996 R R GR2	SGR1 0.111 0.776 0.997 1.000 1.000 1.000 - SGR1 0.367 0.999 1.000 1.000 1.000 1.000 1.000 1.000	SGR2 0.096 0.519 0.998 1.000 1.000 1.000 - SGR2 0.129 0.528 0.993 0.993 0.993 0.993 R R SGR2	DSW1 0.083 0.997 1.000 1.000 1.000 1.000 - DSW1 0.077 0.836 1.000 1.000 1.000 1.000 1.000 1.000	DSW2 0.109 0.996 1.000 1.000 1.000 1.000 - DSW2 0.103 0.804 1.000 1.000 1.000 1.000 1.000 - -	TLSW 0.069 0.831 1.000 1.000 1.000 1.000 - TLSW 0.072 0.607 1.000 1.000 1.000 1.000 1.000 - TLSW	TLUD 0.081 0.997 1.000 1.000 1.000 1.000 - TLUD 0.088 0.815 1.000 1.000 1.000 1.000 1.000 - TLUD	rolling fixed (p	ynamic bA 0.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA	, robust GR1 0.129 0.411 0.228 0.000 0.000 0.000 R,D GR1 0.528 0.603 0.005 0.005 0.000 0.000 0.000 R,D GR1	t GR2 0.049 0.152 0.167 0.090 0.000 0.000 R,D GR2 0.052 0.052 0.126 0.066 0.000 0.000 0.000 0.000 0.000 R,D GR2	SGR1 0.138 0.612 0.246 0.015 0.001 0.000 0.001 R SGR1 0.754 0.998 1.000 1.000 0.964 0.963 0.990 R,D SGR1	SGR2 0.096 0.170 0.156 0.014 0.000 0.000 R,D SGR2 0.229 0.470 0.253 0.010 0.000 0.000 0.000 0.000 R,D SGR2	DSW1 0.095 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 0.430 0.430 0.430 0.430 0.260 0.075 0.300 0.030 R,D DSW1	DSW2 0.110 1.000 1.000 1.000 1.000 1.000 1.000 0.405 0.110 0.405 0.615 0.315 0.315 0.600 0.070 R,D DSW2
rolling fixed a	atic, ro bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 7.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.0	bust GR1 0.090 0.458 0.073 0.000 0.000 0.000 0.000 0.000 R GR1 0.848 0.968 1.000 1.000 1.000 - GR1 0.085	GR2 0.061 0.452 0.992 1.000 1.000 1.000 1.000 - GR2 0.054 0.240 0.899 0.713 0.712 0.996 R GR2 0.996 R	SGR1 0.111 0.776 0.997 1.000 1.000 1.000 	SGR2 0.096 0.519 0.998 1.000 1.000 1.000 1.000 - - SGR2 0.129 0.528 0.899 0.998 0.998 0.998 0.993 0.974 0.993 R SGR2 0.064	DSW1 0.083 0.997 1.000 1.000 1.000 1.000 - DSW1 0.077 0.836 1.000 1.000 1.000 1.000 1.000 - DSW1 0.079	DSW2 0.109 0.996 1.000 1.000 1.000 1.000 - DSW2 0.103 0.804 1.000 1.000 1.000 1.000 1.000 - DSW2 0.115	TLSW 0.069 0.831 1.000 1.000 1.000 1.000 - TLSW 0.072 0.607 1.000 1.000 1.000 1.000 1.000 - TLSW 0.061	TLUD 0.081 0.997 1.000 1.000 1.000 1.000 - TLUD 0.088 0.815 1.000 1.000 1.000 1.000 1.000 1.000 - TLUD 0.071	rolling fixed (p	ynamic bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 cause bA 0.0	, robust GR1 0.129 0.411 0.228 0.000 0.000 0.000 R,D GR1 0.528 0.603 0.005 0.000 0.000 0.000 R,D GR1 0.103	t GR2 0.049 0.152 0.167 0.090 0.000 0.000 R,D GR2 0.052 0.126 0.055 0.126 0.066 0.000 0.000 0.000 R,D GR2 0.047	SGR1 0.138 0.612 0.246 0.015 0.001 0.000 0.001 R SGR1 0.754 0.998 1.000 1.000 0.963 0.990 0.963 0.990 R,D SGR1 0.063	SGR2 0.096 0.170 0.156 0.014 0.000 0.000 R,D SGR2 0.229 0.470 0.253 0.470 0.253 0.010 0.000 0.000 0.000 R,D SGR2 0.049	DSW1 0.095 0.995 1.000 1.000 1.000 1.000 1.000 - DSW1 0.110 0.430 0.595 0.260 0.075 0.030 0.030 R,D DSW1 0.105	DSW2 0.110 1.000 1.000 1.000 1.000 1.000 1.000 0.100 0.405 0.615 0.315 0.315 0.315 0.315 0.060 0.0700 R,D DSW2 0.100
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scursive rolling fixed (atic, ro bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 2.5 5.0 7.5 1.0 2.5 5.0 7.5 1.0 0.5 1.0 2.5 5.0 7.5 1.0 0 2.5 1.0 0 2.5 2.5 1.0 0 2.5 2.5 2.5 2.5 2.5 2.5 2.5 2.5 2.5 2.5	bust GR1 0.090 0.458 0.073 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.261 0.848 0.968 1.000 1.000 1.000 - GR1 0.848 0.017 0.0000 0.0000	GR2 0.061 0.452 0.992 1.000 1.000 1.000 1.000 1.000 0.054 0.240 0.899 0.998 0.713 0.712 0.996 R GR2 0.060 0.534 0.534 0.998 1.000	SGR1 0.111 0.776 0.997 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000	SGR2 0.096 0.519 0.998 1.000 1.000 1.000 - SGR2 0.129 0.528 0.899 0.998 0.993 0.993 0.974 0.993 R SGR2 0.064 0.580 1.000 1.000	DSW1 0.083 0.997 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000	DSW2 0.109 0.996 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000	TLSW 0.069 0.831 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000	TLUD 0.081 0.997 1.000 1.000 1.000 1.000 - TLUD 0.088 0.815 1.000 1.000 1.000 1.000 1.000 - TLUD 0.071 0.938 1.000 1.000	scursive rolling fixed (p	ynamic bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 7.5 10.0 2.5 5.0 7.5 10.0 cause bA 0.5 1.0 2.5 5.0 7.5 10.0 0.5 1.0 2.5 5.0 7.5 1.0 0.5 1.0 2.5 5.0 7.5 5.0 7.5 5.0 7.5 5.0 7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5	robust GR1 0.129 0.411 0.228 0.000 0.000 0.000 R,D GR1 0.528 0.603 0.005 0.000 0.000 R,D GR1 0.528 0.603 0.000 0.000 R,D GR1 0.103 0.0201	GR2 0.049 0.152 0.167 0.090 0.000 0.000 R,D GR2 0.055 0.126 0.066 0.000 0.000 0.000 R,D GR2 0.045 0.045 0.045 0.045 0.187 0.095	SGR1 0.138 0.612 0.246 0.015 0.001 0.000 0.001 R SGR1 0.754 0.998 1.000 1.000 0.964 0.963 0.990 R,D SGR1 0.063 0.179 0.159 0.129	SGR2 0.096 0.170 0.156 0.014 0.000 0.000 R,D SGR2 0.229 0.470 0.253 0.470 0.253 0.470 0.253 0.470 0.253 0.470 0.253 0.470 0.200 R,D SGR2 0.000 0.000 0.000 0.000 0.000 0.000 0.299 0.470 0.253 0.470 0.253 0.470 0.253 0.470 0.000 0.000 0.253 0.470 0.000 0.253 0.470 0.253 0.470 0.253 0.470 0.000 0.253 0.470 0.253 0.470 0.253 0.470 0.253 0.470 0.253 0.470 0.253 0.470 0.253 0.470 0.253 0.470 0.000 0.000 0.253 0.470 0.253 0.470 0.000 0.000 0.253 0.470 0.000 0.000 0.253 0.470 0.000 0.000 0.000 0.253 0.470 0.000 0.253 0.470 0.000 0.000 0.000 0.253 0.470 0.000 0.000 0.000 0.253 0.470 0.000 0.000 0.000 0.000 0.253 0.470 0.0000 0.000	DSW1 0.095 1.000 1.000 1.000 1.000 1.000 1.000 0.430 0.595 0.260 0.075 0.030 0.030 R,D DSW1 0.105 0.555 0.650 0.535	DSW2 0.110 1.000 1.000 1.000 1.000 1.000 0.000 0.000 0.405 0.615 0.315 0.405 0.070 R,D DSW2 0.100 0.510 0.510 0.665 0.490
recursive rolling fixed (d	atic, ro bA 0.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.5 1.0 2.5 5.0 7.5 5.0 7.5 5.0 7.5 5.0 7.5 5.0 7.5 5.0 7.5 5.0 7.5 5.0 7.5 5.0 7.5 5.0 7.5 5.0 7.5 5.0 7.5 5.0 7.5 5.0 7.5 5.0 7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5	bust GR1 0.090 0.458 0.073 0.000 0.000 0.000 R GR1 0.261 0.848 1.000 1.000 1.000 1.000 1.000 1.000 0.017 GR1 0.85 0.017 0.0000 0.000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.0000 0.00000 0.	GR2 0.061 0.452 0.992 1.000 1.000 1.000 - GR2 0.054 0.240 0.240 0.899 0.998 0.713 0.712 0.996 R GR2 0.060 0.534 0.998 1.000 1.000	SGR1 0.111 0.776 0.997 1.000 1.000 1.000 - SGR1 0.367 0.399 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000	SGR2 0.096 0.519 0.998 1.000 1.000 1.000 - SGR2 0.129 0.528 0.899 0.998 0.993 0.993 0.974 0.993 R SGR2 0.064 0.580 1.000 1.000 1.000	DSW1 0.083 0.997 1.000 1.000 1.000 1.000 - DSW1 0.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000	DSW2 0.109 0.996 1.000 1.000 1.000 1.000 0.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000	TLSW 0.069 0.831 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000	TLUD 0.081 0.997 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000	recursive rolling fixed (p	ynamic bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 2.5 5.0 7.5 1.0 0 5.0 7.5 1.0 2.5 5.0 7.5 5.0 5.0 7.5 5.0 7.5 5.0 5.0 7.5 5.0 7.5 5.0 7.5 5.0 7.5 5.0 5.0 7.5 7.5 5.0 7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5	robust GR1 0.129 0.411 0.228 0.000 0.000 0.000 0.000 R,D GR1 0.528 0.603 0.000 0.000 0.000 0.000 0.000 R,D GR1 0.103 0.000 0.013 0.000 0.000	t GR2 0.049 0.152 0.167 0.090 0.000 0.000 R,D GR2 0.052 0.095 0.126 0.066 0.000 0.000 0.000 R,D GR2 0.047 0.165 0.187 0.095 0.000	SGR1 0.138 0.612 0.246 0.015 0.001 R SGR1 0.754 1.000 1.000 0.964 0.963 0.990 R,D SGR1 0.063 0.179 0.159 0.159 0.12 0.000	SGR2 0.096 0.170 0.156 0.014 0.000 0.000 R,D SGR2 0.229 0.470 0.253 0.010 0.253 0.010 0.000 0.000 R,D SGR2 0.049 0.149 0.149 0.013 0.000	DSW1 0.095 1.000 1.000 1.000 1.000 1.000 1.000 1.000 0.430 0.595 0.260 0.075 0.030 0.030 R,D DSW1 0.105 0.555 0.650 0.535 0.230	DSW2 0.110 1.000 1.000 1.000 1.000 1.000 1.000 0.405 0.615 0.615 0.615 0.615 0.615 0.600 0.700 R,D DSW2 0.100 0.510 0.665 0.490 0.125
recursive rolling fixed (q	atic, ro bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 5.0 7.5 10.0 cause bA 0.5 1.0 2.5 5.0 7.5 1.0 7.5 1.0 7.5 1.0 7.5 1.0 7.5 7.5 1.0 7.5 7.5 1.0 7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5	bust GR1 0.090 0.458 0.073 0.000 0.000 0.000 R GR1 0.848 0.968 1.000 1.000 1.000 1.000 1.000 1.000 1.000 0.017 0.001 0.0000 0.000 0.00000 0.00000 0.00000 0.00000 0.000000 0.00000 0.00000000	GR2 0.061 0.452 0.992 1.000 1.000 1.000 - GR2 0.240 0.240 0.899 0.998 0.713 0.712 0.996 R GR2 0.060 0.534 0.534 0.998 1.000 1.000 1.000	SGR1 0.111 0.776 0.997 1.000 1.000 1.000 - SGR1 0.999 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000	SGR2 0.096 0.519 0.998 1.000 1.000 1.000 - SGR2 0.129 0.528 0.899 0.998 0.993 0.974 0.993 R SGR2 0.064 0.580 1.000 1.000 1.000	DSW1 0.083 0.997 1.000 1.000 1.000 1.000 - DSW1 0.077 0.836 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000	DSW2 0.109 0.996 1.000 1.000 1.000 1.000 - DSW2 0.103 0.804 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000	TLSW 0.069 0.831 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000	TLUD 0.081 0.997 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000	recursive rolling fixed (p	ynamic bA 0.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 5.10 2.5 5.0 7.5 10.0 cause bA 0.5 1.0 2.5 5.0 7.5 1.0 7.5 1.0 7.5 1.0 7.5 7.5 1.0 7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5	robus GR1 0.129 0.411 0.228 0.000 0.000 0.000 0.000 R,D GR1 0.528 0.603 0.000 0.000 0.000 0.000 0.000 R,D GR1 0.103 0.052 0.013 0.000 0.000 0.000 0.000	t GR2 0.049 0.152 0.167 0.090 0.000 0.000 R,D GR2 0.095 0.126 0.066 0.000 0.000 0.000 R,D GR2 0.095 0.187 0.187 0.185 0.187 0.095 0.000 0.000	SGR1 0.138 0.612 0.246 0.015 0.001 R SGR1 0.754 0.998 1.000 1.000 0.964 0.963 0.990 R,D SGR1 0.963 0.990 R,D SGR1 0.063 0.179 0.159 0.012 0.000 0.000	SGR2 0.096 0.170 0.156 0.014 0.000 0.000 R,D SGR2 0.273 0.470 0.253 0.010 0.253 0.010 0.253 0.010 0.000 0.000 R,D SGR2 0.049 0.145 0.145 0.145 0.145 0.145 0.145	DSW1 0.095 1.000 1.000 1.000 1.000 1.000 0.430 0.595 0.260 0.075 0.030 0.030 R,D DSW1 0.105 0.555 0.650 0.535 0.230 0.125	DSW2 0.110 1.000 1.000 1.000 1.000 1.000 1.000 0.405 0.615 0.315 0.645 0.315 0.105 0.600 0.700 R,D DSW2 0.100 0.510 0.665 0.490 0.125 0.075
recursive rolling fixed q	atic, ro bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 7.5 10.0 2.5 5.0 7.5 10.0 cause bA 0.0 5.0 7.5 10.0 cause bA 0.0 5.0 7.5 10.0 2.5 5.0 7.5 10.0 7.5 10.0 2.5 5.0 7.5 10.0 2.5 5.0 7.5 10.0 2.5 5.0 7.5 10.0 2.5 5.0 7.5 10.0 2.5 5.0 7.5 10.0 2.5 5.0 7.5 10.0 2.5 5.0 7.5 10.0 2.5 5.0 7.5 10.0 2.5 5.0 7.5 10.0 7.5 10.0 7.5 10.0 7.5 10.0 7.5 10.0 7.5 10.0 7.5 10.0 7.5 10.0 10.5 10.0 7.5 10.0 7.5 10.0 10.0 10.0 10.5 10.0 10.5 10.0 10.5 10.0 10.5 10.0 10.0	bust GR1 0.090 0.458 0.073 0.000 0.000 0.000 0.000 R GR1 0.848 0.968 1.000 1.000 1.000 1.000 1.000 1.000 0.085 0.017 0.085 0.017 0.0000 0.000 0.00000 0.00000 0.00000 0.00000 0.000000 0.00000 0.00000000	GR2 0.061 0.452 0.992 1.000 1.000 1.000 - GR2 0.054 0.240 0.240 0.240 0.240 0.240 0.2998 0.713 0.712 0.996 R GR2 0.060 0.534 0.998 1.000 1.000 1.000	SGR1 0.111 0.776 0.997 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000	SGR2 0.096 0.519 0.998 1.000 1.000 1.000 - SGR2 0.129 0.528 0.899 0.998 0.993 0.974 0.993 0.974 0.993 R SGR2 0.064 0.580 1.000 1.000 1.000 1.000	DSW1 0.083 0.997 1.000 1.000 1.000 1.000 - DSW1 0.077 0.836 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000	DSW2 0.109 0.996 1.000 1.000 1.000 1.000 - DSW2 0.103 0.804 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000	TLSW 0.069 0.831 1.000 1.000 1.000 - TLSW 0.607 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000	TLUD 0.081 0.997 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000	recursive rolling fixed (p	ynamic bA 0.0 2.5 5.0 7.5 10.0 cause bA 0.0 0.5 1.0 2.5 5.0 7.5 10.0 cause bA 0.0 5.0 7.5 10.0 cause bA 0.5 1.0 2.5 5.0 7.5 10.0 0.5 1.0 2.5 5.0 7.5 10.0 0.5 1.0 2.5 5.0 7.5 10.0 0.5 1.0 2.5 5.0 7.5 10.0 0.5 1.0 2.5 5.0 7.5 10.0 0.5 1.0 2.5 5.0 7.5 10.0 0.5 1.0 2.5 5.0 7.5 10.0 0.5 1.0 2.5 5.0 7.5 10.0 0.5 1.0 2.5 5.0 7.5 1.0 0 2.5 5.0 7.5 1.0 0 2.5 5.0 7.5 1.0 0 2.5 5.0 7.5 1.0 0 2.5 5.0 7.5 1.0 0 2.5 5.0 7.5 1.0 0 2.5 5.0 7.5 1.0 0 2.5 5.0 7.5 1.0 0 2.5 5.0 7.5 1.0 0 2.5 5.0 7.5 1.0 2.5 5.0 7.5 1.0 2.5 5.0 7.5 1.0 2.5 5.0 7.5 1.0 2.5 5.0 7.5 1.0 2.5 5.0 7.5 1.0 2.5 5.0 7.5 1.0 2.5 5.0 7.5 1.0 0 2.5 5.0 7.5 1.0 0 2.5 5.0 7.5 1.0 0 2.5 5.0 7.5 1.0 0 2.5 5.0 7.5 1.0 0 2.5 5.0 7.5 1.0 2.5 5.0 7.5 1.0 2.5 5.0 7.5 1.0 0 2.5 5.0 7.5 1.0 0 2.5 5.0 7.5 1.0 2.5 5.0 7.5 1.0 0 2.5 5.0 7.5 1.0 0 2.5 5.0 7.5 1.0 0 2.5 5.0 7.5 1.0 0 2.5 5.0 7.5 1.0 0 2.5 5.0 7.5 1.0 0 2.5 5.0 7.5 1.0 0 2.5 5.0 7.5 1.0 2.5 5.0 7.5 1.0 2.5 5.0 1.0 2.5 5.0 1.0 2.5 1.0 2.5 1.0 2.5 5.0 7.5 1.0 2.5 1.0 2.5 5.0 7.5 1.0 2.5 1.0 2.5 5.0 7.5 1.0 2.5 5.0 7.5 1.0 2.5 5.0 7.5 1.0 2.5 5.0 7.5 1.0 2.5 5.0 7.5 1.0 2.5 5.0 7.5 1.0 2.5 5.0 7.5 1.0 7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5	robus GR1 0.129 0.411 0.228 0.000 0.000 0.000 0.000 R,D GR1 0.528 0.603 0.005 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.001 0.002 0.003 0.004 0.005 0.005 0.000 0.001 0.002 0.003 0.004 0.000 0.000 0.000 0.000	t GR2 0.049 0.152 0.167 0.090 0.000 0.000 R,D GR2 0.095 0.126 0.095 0.126 0.095 0.126 0.000 0.000 0.000 R,D GR2 0.047 0.165 0.187 0.095 0.187 0.095	SGR1 0.138 0.612 0.246 0.015 0.001 R SGR1 0.754 0.998 1.000 1.000 0.964 0.963 0.990 R,D SGR1 0.063 0.179 0.159 0.012 0.000 0.000 0.000	SGR2 0.096 0.170 0.156 0.014 0.000 0.000 R,D SGR2 0.273 0.470 0.253 0.010 0.000 0.000 0.000 R,D SGR2 0.049 0.145 0.149 0.145 0.149 0.013 0.000 0.000 0.000 0.000	DSW1 0.095 1.000 1.000 1.000 1.000 1.000 - DSW1 0.430 0.595 0.260 0.075 0.030 0.030 R,D DSW1 0.105 0.555 0.650 0.535 0.230 0.535 0.230 0.125 0.230	DSW2 0.110 1.000 1.000 1.000 1.000 1.000 1.000 0.000 0.405 0.405 0.615 0.315 0.405 0.615 0.490 0.510 0.665 0.490 0.125 0.495 0.125 0.495 0.125 0.495



Figure 1. Shapes of $E[L^*(r)]$ for a coefficient break in a static regression a) small break ($\Delta_\beta = 1$):

Figure 2. Shapes of $E[L^*(r)]$ for a coefficient break in a dynamic regression a) small break ($\Delta_\beta = 1$):





Figure 3. Equity premium for the S&P 500 $\,$

Table 5. Tests for changes in forecast performance: equity premium forecasts

Static				0	-	L	I	5 1			
	tau	DSW1	DSW2	TLSW	TLUD	GR1	GR2	SGR1	SGR2	LM1	LM2
fixed	1	214.89 ***	214.89 ***	266.23 ***	534.37 ***	2.29 **	2.55 **	2.81 **	2.33 *	432.37 ***	432.78 ***
	3	212.85 ***	212.85 ***	270.02 ***	551.42 ***	2.10 **	2.17 **	2.38	2.21	435.27 ***	408.26 ***
	6	196.44 ***	196.44 ***	291.79 ***	622.41 ***	1.98 **	1.88 *	2.20	2.20	436.88 ***	408.91 ***
	12	223.76 ***	223.76 ***	282.76 ***	522.12 ***	1.96 **	1.67 *	2.08	2.08	434.40 ***	416.75 ***
rolling	1	15.09 **	44.78 ***	168.45 ***	168.45 ***	2.78 ***	3.19 ***	6.28 ***	6.28 ***	416.82 ***	422.25 ***
	3	15.73 **	52.28 ***	151.58 ***	151.58 ***	2.53 **	3.10 ***	6.00 ***	6.00 ***	421.08 ***	423.34 ***
	6	18.36 ***	55.21 ***	185.80 ***	185.80 ***	2.35 **	2.67 ***	8.02 ***	6.87 ***	423.03 ***	424.54 ***
	12	16.35 ***	72.05 ***	186.13 **	186.13 ***	2.39 ***	2.01 **	7.75 ***	6.54 ***	418.71 ***	419.76 ***
recursive	1	179.75 ***	179.75 ***	190.88 ***	190.88 ***	2.57 **	2.93 ***	3.31 ***	2.61 **	419.00 ***	422.98 ***
	3	239.51 ***	239.51 ***	234.21 ***	234.21 ***	2.35 **	2.83 ***	3.15 **	2.41 *	423.03 ***	423.95 ***
	6	322.67 ***	322.67 ***	319.95 ***	319.95 ***	2.20 **	2.47 **	2.60 *	2.30 *	424.89 ***	425.10 ***
	12	205.12 ***	205.12 ***	208.90 ***	208.90 ***	2.29 **	1.91 *	2.62 *	2.43 *	419.54 ***	419.95 ***
Dynamic											
	tau	DSW1	DSW2	TLSW	TLUD	GR1	GR2	SGR1	SGR2	LM1	LM2
fixed	1	23.94 ***	23.94 ***	164.48 ***	164.48 ***	1.57	2.94 ***	11.95 ***	11.95 ***	72.71 ***	51.37 ***
	3	90.60 ***	90.60 ***	126.27 ***	191.85 ***	1.09	0.79	3.95 ***	3.95 ***	329.85 ***	241.43 ***
	6	198.75 ***	198.75 ***	307.34 ***	395.40 ***	2.27 **	0.88	2.29	2.27 *	376.24 ***	369.13 ***
	12	223.18 ***	223.18 ***	298.22 ***	619.16 ***	2.11 **	1.43	2.29	2.23	423.79 ***	413.79 ***
rolling	1	4.42	4.80	166.02 ***	166.02 ***	0.35	0.93	5.14 ***	3.03 **	68.68 ***	51.17 ***
	3	3.14	3.47	43.14 ***	102.92 ***	0.53	1.63	3.43 ***	1.22	304.46 ***	237.76 ***
	6	2.42	2.42	27.63 ***	54.11 ***	1.13	0.57	8.12 ***	2.90 **	346.24 ***	312.03 ***
	12	2.34	2.81	17.96 ***	34.56 ***	1.50	0.19	7.50 ***	4.33 ***	386.88 ***	378.56 ***
recursive	1	4.52	4.52	162.42 ***	162 42 ***	2 89 ***	2 72 ***	13.84 ***	11.91 ***	67 25 ***	51 16 ***
					102.12	2.00	3.72			01.20	51.10
	3	2.62	2.85	51.26 ***	97.82 ***	0.63	3.98 ***	6.68 ***	5.00 ***	313.95 ***	238.64 ***
	3 6	2.62 3.78	2.85 3.78	51.26 *** 33.78 ***	97.82 *** 51.63 ***	0.63 0.51	3.98 *** 1.32	6.68 *** 2.88 **	5.00 *** 1.92	313.95 *** 357.41 ***	238.64 *** 313.73 ***



Table 6. Tests for change in forecasting performance: inflation forecasts $\ensuremath{\scriptscriptstyle\mathsf{Dynamic}}\xspace1$

,											
	tau	DSW1	DSW2	TLSW	TLUD	GR1	GR2	SGR1	SGR2	LM1	LM2
fixed	1	84.69 ***	84.69 ***	25.65 ***	97.96 ***	0.29	0.08	4.48 ***	1.09	262.17 ***	377.83 ***
	3	86.86 ***	86.86 ***	18.10 ***	100.57 ***	0.91	0.45	4.32 ***	1.68	215.57 ***	324.12 ***
	6	34.00 ***	34.00 ***	13.93 ***	90.18 ***	0.99	0.34	4.38 ***	1.44	206.69 ***	304.09 ***
	12	66.44 ***	66.44 ***	15.53 ***	90.46 ***	0.93	0.39	4.53 ***	1.43	173.27 ***	270.93 ***
rolling	1	11.51 *	11.51	20.68 ***	97.59 ***	0.88	0.30	5.47 ***	0.89	251.68 ***	365.56 ***
	3	7.64	7.64	15.95 ***	73.09 ***	1.21	0.39	7.13 ***	1.34	214.88 ***	320.59 ***
	6	10.22	10.22	16.68 ***	73.20 ***	1.27	0.35	8.06 ***	1.44	211.15 ***	322.59 ***
	12	10.66	10.66	16.30 ***	74.73 ***	1.63	0.47	10.02 ***	1.91	210.89 ***	322.20 ***
recursive	1	15.47 **	15.49 **	20.58 ***	99.77 ***	0.54	0.18	2.22	1.02	267.17 ***	380.19 ***
	3	9.10	9.10	12.26 **	73.10 ***	1.06	0.49	2.52 *	1.50	230.30 ***	330.83 ***
	6	7.06	7.06	13.64 ***	73.30 ***	1.02	0.44	2.42 *	1.35	211.93 ***	308.10 ***
	12	6.93	6.93	15.00 ***	74.90 ***	1.06	0.41	2.86 **	1.30	192.71 ***	286.08 ***
Dvnamic 3											
	tau	DSW1	DSW2	TLSW	TLUD	GR1	GR2	SGR1	SGR2	LM1	LM2
fixed	1	65.94 ***	65.94 ***	20.08 ***	102.20 ***	0.77	0.34	4.40 ***	1.50	244.07 ***	359.219 ***
	3	32.88 ***	32.88 ***	13.26 ***	88.70 ***	1.18	0.52	4.26 ***	1.52	206.98 ***	309.692 ***
	6	28.18 ***	28.18 ***	14.07 ***	88.94 ***	1.02	0.35	4.37 ***	1.56	212.29 ***	310.011 ***
	12	70.15 ***	70.15 ***	15.58 ***	90.15 ***	1.07	0.35	4.57 ***	1.39	191.00 ***	291.011 ***
rolling	1	10.06	11.39	20.71 ***	95.36 ***	1.03	0.35	5.51 ***	1.14	242.31 ***	365.424 ***
	3	8.76	8.76	15.81 ***	73.32 ***	1.45	0.44	7.21 ***	1.49	213.46 ***	319.281 ***
	6	9.36	9.36	16.46 ***	73.23 ***	1.29	0.40	7.54 ***	1.42	216.42 ***	327.907 ***
	12	11.56 *	11.56	17.52 ***	75.18 ***	1.77 *	0.47	10.97 ***	2.00	204.48 ***	317.704 ***
recursive	1	12.85 **	13.41 *	18.78 ***	89.55 ***	0.90	0.41	2.57 *	1.32	256.18 ***	371.771 ***
	3	7.12	7.12	11.88 **	73.34 ***	1.28	0.63	2.36	1.47	218.54 ***	310.208 ***
	6	9.24	9.24	14.05 ***	73.31 ***	1.16	0.55	2.64 *	1.54	213.83 ***	312.891 ***
	12	8.09	8.09	16.14 ***	75.28 ***	1.20	0.42	3.01 **	1.33	198.17 ***	295.058 ***

"Testing for Changes in Forecasting Performance" by Pierre Perron and Yohei Yamamoto Supplementary Material

a) Comments about the complementarity of forecast breakdown and structural change tests

We here expand on a comment made in the introduction about the complementarity of forecast breakdown and structural change tests. Since forecast breakdowns are often associated with changes in the parameters of the forecasting models, one may question the value-added of forecast breakdown tests over simply using a structural change test directly on the forecasting model. We expand upon an interesting case alluded to in the introduction, whereby it is shown that structural change and forecast breakdown tests complement each other; when one test has poor power for some parameter configurations, the other has high power. We consider data generated such that the relevant predictor changes from some x_t to some w_t at date $t = T_b$, i.e.,

$$y_{t+\tau} = \begin{cases} \alpha + x_t \beta + e_{t+\tau} & \text{for } t = 1, ..., T_b \\ \alpha + w_t \beta + e_{t+\tau} & \text{for } t = T_b + 1, ..., T - \tau \end{cases}$$
(A.1)

However, w_t is not accessible to the researcher, hence one uses the following misspecified model over the entire sample

$$y_{t+\tau} = \alpha + x_t \beta + e_{t+\tau}$$
 for $t = 1, ..., T - \tau$. (A.2)

We first theoretically illustrate how the forecast breakdown and structural change tests behave under this setting. For simplicity, let x_t , w_t and e_t be independent scalar random variables with $E(x_t) = E(w_t) = \mu$ and $E(e_t) = 0$. We also let $Var(x_t) = \sigma_x^2$, $Var(w_t) = \sigma_w^2$ and $Var(e_t) = \sigma^2$. For the forecasting tests, assume that the fixed window scheme is applied (shown to be the preferred one in this paper) with an in-sample length smaller than or equal to T_b so that the coefficient β is consistently estimated. It is easy to show that the expected value of the limit of the quadratic forecasting loss changes from σ^2 to $\sigma^2 + \sigma_w^2 \beta^2 + \sigma_x^2 \beta^2$ before and after $t = T_b$. Hence, the magnitude of the change is

$$\sigma_w^2 \beta^2 + \sigma_x^2 \beta^2. \tag{A.3}$$

For the structural change tests, we consider the Wald statistic (divided by T) assuming, for simplicity, the break date to be known:

$$T^{-1}W = \left[(SSR_r - SSR_u)/T \right] / \left[SSR_u/T \right].$$

The restricted (\sim) and unrestricted residuals ($\hat{}$) are then, respectively,

$$\widetilde{e}_{t+\tau} = \begin{cases} e_{t+\tau} - x_t(\widetilde{\beta} - \beta) - (\widetilde{\alpha} - \alpha) & \text{for } t = 1, ..., T_b \\ e_{t+\tau} + w_t\beta - x_t\widetilde{\beta} - (\widetilde{\alpha} - \alpha) & \text{for } t = T_b + 1, ..., T - \tau \end{cases},$$

$$\widehat{e}_{t+\tau} = \begin{cases} e_{t+\tau} - x_t(\widehat{\beta}_{(1)} - \beta) - (\widehat{\alpha}_{(1)} - \alpha) & \text{for } t = 1, ..., T_b \\ e_{t+\tau} + w_t\beta - x_t\widehat{\beta}_{(2)} - (\widehat{\alpha}_{(2)} - \alpha) & \text{for } t = T_b + 1, ..., T - \tau \end{cases}$$

After some algebra, one can show that $\tilde{\alpha} \xrightarrow{p} \alpha$ when $E(x_t) = E(w_t)$ (otherwise, $\tilde{\alpha} \xrightarrow{p} \alpha + [\lambda E(x_t) + (1-\lambda)E(w_t)])$. Also $\hat{\alpha}_{(1)}, \hat{\alpha}_{(2)} \xrightarrow{p} \alpha, \tilde{\beta} \xrightarrow{p} \lambda\beta, \hat{\beta}_{(1)} \xrightarrow{p} \beta$ and $\hat{\beta}_{(2)} \xrightarrow{p} 0$, where $\lambda = \lim_{T \to \infty} T_b/T$, so that the limit of $(SSR_r - SSR_u)/T$ is $\lambda(1-\lambda)\sigma_x^2\beta^2$ and that of SSR_u/T is $\sigma^2 + (1-\lambda)\sigma_w^2\beta^2$. Hence, the limit of the scaled Wald statistic is

$$\lambda (1-\lambda) \sigma_x^2 \beta^2 / [\sigma^2 + (1-\lambda) \sigma_w^2 \beta^2].$$
(A.4)

Comparing (A.3) and (A.4) yields the following insight. When the variance of the unavailable predictor σ_w^2 increases, the change in the forecast loss increases and the change in forecast performance is easier to detect. However, a large variance would not help to detect a change in β associated with the predictor x_t via a structural change test because an increase in σ_w^2 lowers the value of test statistic. And vice-versa, when σ_w^2 is small, the change in the loss function is reduced while the value of the Wald test for a change is increased.

To quantify the implications of this insight, we implement a simple Monte Carlo simulation. We set $\alpha = \beta = 1$ and generate $e_t \sim i.i.d. N(0,1)$ for t = 1, ..., T. The variables are generated by $x_t \sim i.i.d.N(0,1)$ and $w_t \sim i.i.d.N(0,\sigma_w^2)$, which are independent of each other. Let T = 150, $T_b = 75$ and $\tau = 1$, for the sake of illustration (the results remain qualitatively the same with other parameter values). For the forecasting tests, we consider the GR_m test with m = 40, the SGR test with $[0.2T] \le m \le [0.8T]$, the DSW test with $m_0 = [0.2T]$ and $\bar{\mu} = 0.5$, as well as the TLSW and TLUD tests described in the text. We only consider the fixed window scheme for reason discussed in the text. For the structural break tests, we consider the full-sample regression model (A.2) and test for variations in both (α, β) . Specifically, we use the sup F test of Andrews (1993) and the UD max test of Bai and Perron (1998). The maximum number of breaks for the UD max tests is five and the truncation parameter $\epsilon = 0.1$ is used. The number of replications is 1,000. Table S.1 shows the rejection frequencies when we vary σ_w from 0.0 to 10.0. It illustrates a clear complementarity between the power of the forecasting and structural change tests. When σ_w is small, the rejection frequencies of the forecasting tests are small for all tests considered. However, the rejection frequencies of the structural change tests are large because the denominator in (A.4) is small, which leads a large value of test statistic. The simulation results show that this feature continues to hold with more general tests with an unknown break date or with multiple breaks.

Table S.1: Rejection frequencies

Sw	GR	SGR	DSW	TLSW	TLUD	SupF	UD max
0.0	0.123	0.253	0.137	0.611	0.677	0.995	0.996
0.5	0.252	0.424	0.189	0.507	0.595	0.995	0.995
1.0	0.564	0.832	0.340	0.509	0.592	0.959	0.960
2.5	0.999	1.000	0.885	0.996	0.997	0.483	0.496
5.0	1.000	1.000	0.966	1.000	1.000	0.141	0.171
7.5	1.000	1.000	0.983	1.000	1.000	0.095	0.125
10.0	1.000	1.000	0.979	1.000	1.000	0.073	0.091

b) Proof of Theorem 1

For the proof, we denote $T_b(m)$ by T_b for simplicity. The Wald test for a constant mean versus one break at time $t = T_b = m_0 + \tau + \lfloor \lambda n_0 \rfloor$ for the series $\{L_{t+\tau}^o\}_{t=m}^{T-\tau}$ is

$$W^{m}(T_{b}) = \frac{SSR_{L^{o}(m)} - SSR(T_{b})_{L^{o}(m)}}{\hat{V}_{L^{o}(m)}},$$

where $SSR_{L^{o}(m)}$, $SSR(T_{b})_{L^{o}(m)}$ and $\hat{V}_{L^{o}(m)}$ are defined after (1). First, for a given *m*, the restricted SSR is:

$$SSR_{L^{o}(m)} = \sum_{t=m}^{T-\tau} L_{t+\tau}^{o2} - \frac{1}{T-\tau-m+1} \left(\sum_{t=m}^{T-\tau} L_{t+\tau}^{o} \right)^{2}$$
$$= \sum_{t=m}^{T-\tau} L_{t+\tau}^{o2} - \frac{n_{0}}{T-\tau-m+1} \left(n_{0}^{-1/2} \sum_{t=m}^{T-\tau} L_{t+\tau}^{o} \right)^{2},$$

and the unrestricted SSR assuming a break at $t = T_b$ is given by

$$SSR(T_b)_{L^o(m)} = \sum_{t=m}^{T_b-\tau} L_{t+\tau}^{o2} - \frac{n_0}{T_b-\tau-m+1} \left(n_0^{-1/2} \sum_{t=m}^{T_b-\tau} L_{t+\tau}^o \right)^2 + \sum_{t=T_b-\tau+1}^{T-\tau} L_t^{o2} - \frac{n_0}{T-T_b} \left(n_0^{-1/2} \sum_{t=T_b-\tau+1}^{T-\tau} L_{t+\tau}^o \right)^2.$$

Hence,

$$SSR_{L^{o}(m)} - SSR(T_{b})_{L^{o}(m)} = -\frac{n_{0}}{T - \tau - m + 1} \left(n_{0}^{-1/2} \sum_{t=m}^{T - \tau} L_{t+\tau}^{o} \right)^{2} + \frac{n_{0}}{T_{b} - \tau - m + 1} \left(n_{0}^{-1/2} \sum_{t=m}^{T_{b} - \tau} L_{t+\tau}^{o} \right)^{2} + \frac{n_{0}}{T - T_{b}} \left(n_{0}^{-1/2} \sum_{t=T_{b} - \tau + 1}^{T - \tau} L_{t+\tau}^{o} \right)^{2}.$$

Let $\mu = \lim_{T\to\infty} (m - m_0)/n_0$. Then, using $T = n_0 + m_0 + \tau - 1$ and $T_b = m_0 + \tau + \lfloor \lambda n_0 \rfloor$, we have

$$\frac{n_0}{T - \tau - m + 1} = \frac{n_0}{n_0 - (m - m_0)} \to \frac{1}{1 - \mu},$$

$$\frac{n_0}{T_b - \tau - m + 1} = \frac{n_0}{\lfloor \lambda n_0 \rfloor - (m - m_0) + 1} \to \frac{1}{\lambda - \mu},$$

$$\frac{n_0}{T - T_b} = \frac{n_0}{n_0 - \lfloor \lambda n_0 \rfloor - 1} \to \frac{1}{1 - \lambda}.$$

Because $L_{t+\tau-1}^{o} = L_t$ for $t = m+1, ..., T - \tau + 1$ and using Assumption 1

$$n_0^{-1/2} \sum_{t=m}^{T-\tau} L_{t+\tau}^o = n_0^{-1/2} \sum_{t=m-\tau+1}^{T-2\tau+1} L_{t+\tau}$$

= $n_0^{-1/2} \sum_{t=m_0-\tau}^{T-2\tau+1} L_{t+\tau} - n_0^{-1/2} \sum_{t=m_0-\tau}^{m-\tau} L_{t+\tau}$
 $\Rightarrow \Omega^{1/2} [W(1) - W(\mu)],$

$$n_0^{-1/2} \sum_{t=m}^{T_b-\tau} L_{t+\tau}^o = n_0^{-1/2} \sum_{t=m-\tau+1}^{T_b-2\tau+1} L_{t+\tau}$$

= $n_0^{-1/2} \sum_{t=m_0-\tau}^{T_b-2\tau+1} L_{t+\tau} - n_0^{-1/2} \sum_{t=m_0-\tau}^{m-\tau} L_{t+\tau}$
 $\Rightarrow \Omega^{1/2} [W(\lambda) - W(\mu)],$

$$n_0^{-1/2} \sum_{t=T_b-\tau+1}^{T-\tau} L_{t+\tau}^o = n_0^{-1/2} \sum_{t=T_b-2\tau+2}^{T-2\tau+1} L_{t+\tau}$$

= $n_0^{-1/2} \sum_{t=m_0-\tau}^{T-2\tau+1} L_{t+\tau} - n_0^{-1/2} \sum_{t=m_0-\tau}^{T_b-2\tau+1} L_{t+\tau}$
 $\Rightarrow \Omega^{1/2} [W(1) - W(\lambda)].$

Combining the above results yields

$$SSR_{L^{o}(m)} - SSR(T_{b})_{L^{o}(m)} \\ \Rightarrow \Omega[-\frac{[W(1) - W(\mu)]^{2}}{1 - \mu} + \frac{[W(\lambda) - W(\mu)]^{2}}{\lambda - \mu} + \frac{[W(1) - W(\lambda)]^{2}}{1 - \lambda}],$$

and, under the null hypothesis, we have $\hat{V}_{L^o(m)} \xrightarrow{p} \Omega$. Note that $\mu = \lim_{T \to \infty} (m - m_0)/n_0 \le \lim_{T \to \infty} (m_1 - m_0)/n_0 = \bar{\mu}$, so that $\mu \in [0, \bar{\mu}]$. We also have for a trimming parameter ϵ ,

$$T_{b} \in [m + \tau + \epsilon n, m + \tau + (1 - \epsilon)n],$$

$$\frac{T_{b} - m_{0} - \tau}{n_{0}} \in \left[\frac{(m - m_{0}) + \epsilon n}{n_{0}}, \frac{(m - m_{0}) + (1 - \epsilon)n}{n_{0}}\right],$$

$$\frac{T_{b} - m_{0} - \tau}{n_{0}} \in \left[\frac{(m - m_{0}) + \epsilon(n_{0} + m_{0} - m)}{n_{0}}, \frac{(m - m_{0}) + (1 - \epsilon)(n_{0} + m_{0} - m)}{n_{0}}\right]$$

Taking the limit implies $\lambda \in [\mu + \epsilon(1 - \mu), 1 - \epsilon(1 - \mu)]$, and the result follows.

		$\epsilon = 0.05$	õ		$\epsilon = 0.15$				
$\bar{\mu}$	10%	5%	2.5%	1%	$\bar{\mu}$	10%	5%	2.5%	1%
0.20	11.796	13.738	15.306	17.729	0.20	9.627	11.368	13.037	15.432
0.25	12.237	14.085	15.788	18.148	0.25	10.210	12.048	13.866	16.249
0.30	12.582	14.384	16.253	18.356	0.30	10.374	12.100	14.004	16.448
0.35	12.936	14.662	16.484	18.631	0.35	10.631	12.248	14.068	16.729
0.40	13.498	15.356	17.265	19.328	0.40	11.205	12.946	14.788	17.317
0.45	13.752	15.561	17.276	19.364	0.45	11.293	13.104	14.952	17.478
0.50	14.007	15.808	17.431	19.385	0.50	11.539	13.338	15.088	17.540
0.55	14.359	15.985	17.795	20.052	0.55	11.929	13.534	15.237	17.760
0.60	14.403	16.166	17.984	20.247	0.60	12.202	13.887	15.536	17.626
0.65	14.887	16.589	18.245	20.343	0.65	12.342	14.243	15.631	17.812
0.70	15.245	16.873	18.412	20.772	0.70	12.773	14.434	16.005	17.998
0.75	15.261	16.890	18.695	20.837	0.75	12.801	14.509	16.130	18.159
0.80	15.750	17.412	19.337	21.097	0.80	13.067	15.008	17.060	19.548

c) Table S.2: Additional critical values of the DSW test

		100/	=0/	4.0.4
		10%	5%	1%
SW	fixed	0.113	0.062	0.013
	rolling	0.118	0.064	0.015
	recursive	0.096	0.051	0.01
UD	fixed	0.125	0.064	0.013
	rolling	0.126	0.072	0.016
	recursive	0.101	0.057	0.010

d) Table S.3: Additional simulation results for the size of the TLSW and TLUDtests for T = 150a) static, non-robust

b) static, robust

, .				
		10%	5%	1%
SW	fixed	0.125	0.069	0.018
	rolling	0.132	0.072	0.022
	recursive	0.107	0.061	0.013
UD	fixed	0.150	0.081	0.020
	rolling	0.159	0.088	0.025
	recursive	0.129	0.071	0.016

c) dynamic, non-robust

		10%	5%	1%
SW	fixed	0.166	0.093	0.031
	rolling	0.146	0.083	0.023
	recursive	0.097	0.055	0.015
UD	fixed	0.201	0.114	0.036
	rolling	0.177	0.096	0.027
	recursive	0.117	0.063	0.016

d) dynamic, robust

_ / J	,			
		10%	5%	1%
SW	fixed	0.154	0.088	0.025
	rolling	0.146	0.089	0.028
	recursive	0.108	0.066	0.017
UD	fixed	0.200	0.111	0.026
	rolling	0.194	0.109	0.035
	recursive	0.149	0.080	0.018

a) static, i	non-robust		400/			C 0/			40/	
	0	0.07	10%	0.47	0.07	5% 0.0T	0.47	0.07	1% 0.0T	0.47
mu_bar	fixed	0.31	0.21	0.11	0.31	0.21	0.11	0.31	0.21	0.11
0.25	Tixed	0.097	0.086	0.093	0.065	0.048	0.050	0.033	0.025	0.020
	rolling	0.101	0.075	0.051	0.072	0.049	0.034	0.032	0.018	0.012
	fixed	0.069	0.064	0.077	0.003	0.052	0.046	0.031	0.022	0.023
0.5	lixed	0.114	0.121	0.117	0.075	0.071	0.071	0.020	0.020	0.020
	ronng	0.110	0.114	0.101	0.061	0.074	0.005	0.031	0.025	0.02
	recursive	0.113	0.117	0.115	0.078	0.076	0.071	0.029	0.025	0.020
0.75	nxea	0.174	0.165	0.160	0.116	0.112	0.105	0.055	0.049	0.046
	rolling	0.174	0.160	0.151	0.125	0.112	0.104	0.056	0.052	0.049
	recursive	0.164	0.152	0.147	0.123	0.119	0.110	0.052	0.049	0.046
o) static, I	robust									
			10%			5%			1%	
mu_bar	m0	0.3T	0.2T	0.1T	0.3T	0.2T	0.1T	0.3T	0.2T	0.1T
0.25	fixed	0.131	0.122	0.122	0.092	0.083	0.082	0.044	0.035	0.027
	rolling	0.128	0.090	0.059	0.092	0.056	0.037	0.045	0.031	0.017
	recursive	0.124	0.112	0.106	0.089	0.076	0.072	0.044	0.032	0.030
0.5	fixed	0.161	0.160	0.151	0.112	0.107	0.100	0.050	0.041	0.043
	rolling	0.170	0.155	0.131	0.109	0.100	0.083	0.055	0.043	0.036
	recursive	0.167	0.156	0.151	0.111	0.103	0.095	0.053	0.044	0.038
0.75	fixed	0 278	0.254	0.244	0.218	0.193	0.186	0.108	0.096	0.09
	lixeu							0.447	0 100	0 400
0.75	rolling	0.269	0.244	0.222	0.217	0.191	0.177	0.117	0.100	0.100
0.75 c) dynami	rolling recursive	0.269 0.270	0.244 0.247	0.222 0.236	0.217 0.218	0.191 0.191	0.177 0.178	0.117 0.109	0.100	0.100
0.75 c) dynami	rolling recursive	0.269 0.270	0.244 0.247 10% 0.2T	0.222 0.236	0.217 0.218	0.191 0.191 5% 0.2T	0.177 0.178	0.117 0.109	0.106 0.101 1% 0.2T	0.100
0.75 c) dynami mu_bar 0.25	rolling recursive	0.269 0.270 0.3T 0.109	0.244 0.247 10% 0.2T	0.222 0.236 0.1T	0.217 0.218 0.3T	0.191 0.191 5% 0.2T	0.177 0.178 0.1T	0.117 0.109 0.3T	0.108 0.101 1% 0.2T 0.032	0.100 0.094 0.1T
0.75 c) dynami mu_bar 0.25	rolling recursive	0.269 0.270 0.3T 0.109 0.108	0.244 0.247 10% 0.2T 0.099 0.078	0.222 0.236 0.1T 0.127 0.065	0.217 0.218 0.3T 0.078 0.072	0.191 0.191 5% 0.2T 0.071 0.052	0.177 0.178 0.1T 0.092 0.041	0.117 0.109 0.3T 0.036 0.035	0.106 0.101 1% 0.2T 0.032 0.024	0.100 0.094 0.1T 0.037 0.015
0.75 c) dynami mu_bar 0.25	rolling recursive	0.269 0.270 0.3T 0.109 0.108 0.103	0.244 0.247 10% 0.2T 0.099 0.078 0.097	0.222 0.236 0.1T 0.127 0.065 0.103	0.217 0.218 0.3T 0.078 0.072 0.070	0.191 0.191 5% 0.2T 0.071 0.052 0.062	0.177 0.178 0.1T 0.092 0.041 0.071	0.117 0.109 0.3T 0.036 0.035 0.034	0.106 0.101 1% 0.2T 0.032 0.024 0.026	0.100 0.094 0.11 0.037 0.015 0.035
0.75 c) dynami mu_bar 0.25	rolling recursive ic, non-robust m0 fixed rolling recursive fixed	0.269 0.270 0.3T 0.109 0.108 0.103 0.124	0.244 0.247 10% 0.2T 0.099 0.078 0.097 0.137	0.222 0.236 0.1T 0.127 0.065 0.103 0.137	0.217 0.218 0.3T 0.078 0.072 0.070 0.086	0.191 0.191 5% 0.2T 0.071 0.052 0.062 0.086	0.177 0.178 0.1T 0.092 0.041 0.071 0.089	0.117 0.109 0.3T 0.036 0.035 0.034 0.033	0.106 0.101 1% 0.2T 0.032 0.024 0.026 0.033	0.100 0.094 0.1T 0.037 0.015 0.034
0.75 c) dynami mu_bar 0.25 0.5	rolling recursive ic, non-robust m0 fixed rolling recursive fixed rolling	0.269 0.270 0.3T 0.109 0.108 0.103 0.124 0.124	0.244 0.247 10% 0.2T 0.099 0.078 0.097 0.137 0.115	0.222 0.236 0.1T 0.127 0.065 0.103 0.137 0.106	0.217 0.218 0.3T 0.078 0.072 0.070 0.086 0.088	0.191 0.191 5% 0.2T 0.071 0.052 0.062 0.086 0.078	0.177 0.178 0.1T 0.092 0.041 0.071 0.089 0.071	0.117 0.109 0.3T 0.036 0.035 0.034 0.033 0.038	0.106 0.101 1% 0.2T 0.032 0.024 0.026 0.033 0.033	0.100 0.094 0.11 0.037 0.037 0.034 0.034 0.034
0.75 c) dynami mu_bar 0.25 0.5	rolling recursive ic, non-robust m0 fixed rolling recursive fixed rolling recursive	0.269 0.270 0.3T 0.109 0.108 0.103 0.124 0.124 0.124	0.244 0.247 10% 0.2T 0.099 0.078 0.097 0.137 0.115 0.128	0.222 0.236 0.1T 0.127 0.065 0.103 0.137 0.106 0.133	0.217 0.218 0.3T 0.078 0.072 0.070 0.086 0.088 0.090	0.191 0.191 5% 0.2T 0.071 0.052 0.062 0.086 0.078 0.090	0.177 0.178 0.17 0.092 0.041 0.071 0.089 0.071 0.093	0.117 0.109 0.3T 0.036 0.035 0.034 0.033 0.038 0.033	0.108 0.101 1% 0.2T 0.032 0.024 0.026 0.033 0.033 0.033	0.100 0.094 0.037 0.037 0.034 0.034 0.027 0.034
0.75 c) dynami mu_bar 0.25 0.5 0.75	rolling recursive ic, non-robust m0 fixed rolling recursive fixed rolling recursive fixed	0.269 0.270 0.3T 0.109 0.108 0.103 0.124 0.124 0.124 0.121 0.189	0.244 0.247 10% 0.2T 0.099 0.078 0.097 0.137 0.115 0.128 0.183	0.222 0.236 0.1T 0.127 0.065 0.103 0.137 0.106 0.133 0.190	0.217 0.218 0.3T 0.078 0.072 0.070 0.086 0.088 0.090 0.132	0.191 0.191 5% 0.2T 0.071 0.052 0.062 0.086 0.078 0.090 0.131	0.177 0.178 0.17 0.092 0.041 0.071 0.089 0.071 0.093 0.133	0.117 0.109 0.3T 0.036 0.035 0.034 0.033 0.038 0.033 0.061	0.106 0.101 1% 0.2T 0.032 0.024 0.026 0.033 0.033 0.033 0.031	0.100 0.094 0.037 0.035 0.034 0.034 0.034 0.034 0.034 0.035
0.75 c) dynami mu_bar 0.25 0.5 0.75	rolling recursive ic, non-robust m0 fixed rolling recursive fixed rolling recursive fixed rolling recursive	0.269 0.270 0.3T 0.109 0.108 0.103 0.124 0.124 0.121 0.189 0.193	0.244 0.247 10% 0.2T 0.099 0.078 0.097 0.137 0.115 0.128 0.183 0.177	0.222 0.236 0.1T 0.127 0.065 0.103 0.137 0.106 0.133 0.190 0.165	0.217 0.218 0.3T 0.078 0.072 0.070 0.086 0.088 0.090 0.132 0.136	0.191 0.191 5% 0.2T 0.071 0.052 0.062 0.086 0.078 0.090 0.131 0.128	0.177 0.178 0.17 0.092 0.041 0.071 0.089 0.071 0.093 0.133 0.122	0.117 0.109 0.3T 0.036 0.035 0.034 0.033 0.038 0.033 0.061 0.073	0.106 0.101 1% 0.2T 0.032 0.024 0.026 0.033 0.033 0.033 0.031 0.058 0.064	0.100 0.094 0.037 0.037 0.034 0.037 0.034 0.027 0.034 0.055
0.75 c) dynami mu_bar 0.25 0.5 0.75	recursive recursive ic, non-robust m0 fixed rolling recursive fixed rolling recursive fixed rolling recursive	0.269 0.270 0.270 0.109 0.108 0.103 0.124 0.124 0.124 0.121 0.189 0.193 0.192	0.244 0.247 10% 0.2T 0.099 0.078 0.097 0.137 0.115 0.128 0.183 0.177 0.177	0.222 0.236 0.1T 0.127 0.065 0.103 0.137 0.106 0.133 0.190 0.165 0.176	0.217 0.218 0.3T 0.078 0.072 0.070 0.086 0.088 0.090 0.132 0.136 0.131	0.191 0.191 5% 0.2T 0.071 0.052 0.062 0.086 0.078 0.090 0.131 0.128 0.129	0.177 0.178 0.178 0.092 0.041 0.071 0.089 0.071 0.093 0.133 0.122 0.129	0.117 0.109 0.3T 0.036 0.035 0.034 0.033 0.038 0.033 0.061 0.073 0.061	0.106 0.101 1% 0.2T 0.032 0.024 0.026 0.033 0.033 0.033 0.031 0.058 0.064 0.060	0.100 0.094 0.037 0.037 0.034 0.032 0.034 0.027 0.034 0.055 0.055
0.75 c) dynami mu_bar 0.25 0.5 0.75	recursive m0 fixed rolling recursive fixed rolling recursive fixed rolling recursive	0.269 0.270 0.270 0.109 0.108 0.103 0.124 0.124 0.124 0.121 0.189 0.193 0.192	0.244 0.247 10% 0.2T 0.099 0.078 0.097 0.137 0.115 0.128 0.177 0.177	0.222 0.236 0.1T 0.127 0.065 0.103 0.103 0.106 0.133 0.190 0.165 0.176	0.217 0.218 0.3T 0.078 0.072 0.070 0.086 0.088 0.090 0.132 0.136 0.131	0.191 0.191 5% 0.2T 0.071 0.052 0.062 0.086 0.078 0.090 0.131 0.128 0.129	0.177 0.178 0.17 0.092 0.041 0.071 0.089 0.071 0.093 0.133 0.122 0.129	0.117 0.109 0.3T 0.036 0.035 0.034 0.033 0.033 0.033 0.061 0.073 0.061	0.106 0.101 1% 0.2T 0.032 0.024 0.026 0.033 0.033 0.033 0.033 0.058 0.064 0.060	0.100 0.094 0.037 0.037 0.034 0.034 0.034 0.034 0.035 0.055
0.75 b) dynami mu_bar 0.25 0.5 0.75 d) dynami	rolling recursive ic, non-robust m0 fixed rolling recursive fixed rolling recursive fixed rolling recursive	0.269 0.270 0.270 0.109 0.108 0.103 0.124 0.124 0.121 0.189 0.193 0.192	0.244 0.247 10% 0.2T 0.099 0.078 0.097 0.137 0.115 0.128 0.183 0.177 0.177	0.222 0.236 0.1T 0.127 0.065 0.103 0.137 0.106 0.133 0.190 0.165 0.176	0.217 0.218 0.3T 0.078 0.072 0.070 0.086 0.088 0.090 0.132 0.136 0.131	0.191 0.191 5% 0.2T 0.071 0.052 0.062 0.086 0.078 0.090 0.131 0.128 0.129	0.177 0.178 0.17 0.092 0.041 0.071 0.089 0.071 0.093 0.133 0.122 0.129	0.117 0.109 0.3T 0.036 0.035 0.034 0.033 0.038 0.033 0.061 0.073 0.061	0.106 0.101 1% 0.2T 0.032 0.024 0.026 0.033 0.033 0.033 0.033 0.031 0.058 0.064 0.060	0.100 0.094 0.03 0.03 0.034 0.03 0.034 0.02 0.034 0.055 0.055
0.75 c) dynami mu_bar 0.25 0.5 0.75 d) dynami mu_bar	recursive m0 fixed rolling recursive fixed rolling recursive fixed rolling recursive fixed rolling recursive	0.269 0.270 0.270 0.109 0.108 0.103 0.124 0.124 0.124 0.121 0.189 0.193 0.192	0.244 0.247 10% 0.2T 0.099 0.078 0.097 0.137 0.115 0.128 0.183 0.177 0.177 0.177	0.222 0.236 0.1T 0.127 0.065 0.103 0.137 0.106 0.133 0.190 0.165 0.176	0.217 0.218 0.3T 0.078 0.072 0.070 0.086 0.088 0.090 0.132 0.136 0.131	0.191 0.191 5% 0.2T 0.071 0.052 0.062 0.086 0.078 0.090 0.131 0.128 0.129 5% 0.2T	0.177 0.178 0.17 0.092 0.041 0.071 0.089 0.071 0.093 0.133 0.122 0.129	0.117 0.109 0.3T 0.036 0.035 0.034 0.033 0.038 0.033 0.061 0.073 0.061 0.073 0.061	0.106 0.101 1% 0.2T 0.032 0.024 0.026 0.033 0.033 0.033 0.033 0.031 0.058 0.064 0.060	0.100 0.094 0.037 0.037 0.034 0.037 0.034 0.036 0.036 0.055 0.055 0.055
0.75 b) dynami mu_bar 0.25 0.5 0.75 d) dynami mu_bar 0.25	recursive m0 fixed rolling recursive fixed rolling recursive fixed rolling recursive fixed rolling recursive	0.269 0.270 0.270 0.270 0.109 0.108 0.103 0.124 0.124 0.121 0.121 0.193 0.192 0.3T 0.3T 0.33T	0.244 0.247 10% 0.2T 0.099 0.078 0.097 0.137 0.115 0.128 0.183 0.177 0.177 0.177 10% 0.2T	0.222 0.236 0.1T 0.127 0.065 0.103 0.137 0.106 0.133 0.190 0.165 0.176 0.176	0.217 0.218 0.3T 0.078 0.072 0.070 0.086 0.088 0.090 0.132 0.136 0.131 0.3T 0.095	0.191 0.191 5% 0.2T 0.071 0.052 0.062 0.086 0.078 0.090 0.131 0.128 0.129 5% 0.2T 0.081	0.177 0.178 0.17 0.092 0.041 0.071 0.089 0.071 0.093 0.133 0.122 0.129 0.11T	0.117 0.109 0.3T 0.036 0.035 0.034 0.033 0.038 0.033 0.061 0.073 0.061 0.073 0.061 0.3T 0.044	0.106 0.101 1% 0.2T 0.032 0.024 0.026 0.033 0.033 0.033 0.033 0.031 0.058 0.064 0.060 1% 0.2T	0.100 0.094 0.037 0.037 0.034 0.037 0.034 0.035 0.035 0.055 0.055 0.055
0.75 c) dynami mu_bar 0.25 0.5 0.75 d) dynami mu_bar 0.25	recursive m0 fixed rolling recursive fixed rolling recursive fixed rolling recursive fixed rolling recursive	0.269 0.270 0.270 0.270 0.109 0.108 0.103 0.124 0.124 0.121 0.124 0.121 0.193 0.192 0.3T 0.135 0.126	0.244 0.247 10% 0.2T 0.099 0.078 0.097 0.137 0.115 0.128 0.183 0.177 0.177 10% 0.2T 0.2T 0.124 0.098	0.222 0.236 0.1T 0.127 0.065 0.103 0.137 0.106 0.133 0.190 0.165 0.176 0.176	0.217 0.218 0.3T 0.078 0.072 0.070 0.086 0.088 0.090 0.132 0.136 0.131 0.3T 0.095 0.085	0.191 0.191 5% 0.2T 0.071 0.052 0.062 0.086 0.078 0.090 0.131 0.128 0.129 5% 0.2T 0.081 0.057	0.177 0.178 0.178 0.092 0.041 0.071 0.093 0.133 0.122 0.129 0.11T 0.093 0.042	0.117 0.109 0.3T 0.036 0.035 0.034 0.033 0.038 0.033 0.061 0.073 0.061 0.073 0.061 0.3T 0.044 0.047	0.106 0.101 1% 0.2T 0.032 0.024 0.026 0.033 0.033 0.033 0.033 0.031 0.058 0.064 0.060 1% 0.2T 0.037 0.027	0.100 0.094 0.037 0.037 0.034 0.037 0.034 0.027 0.034 0.055 0.055 0.055 0.055 0.055
0.75 c) dynami mu_bar 0.25 0.5 0.75 d) dynami mu_bar 0.25	recursive m0 fixed rolling recursive fixed rolling recursive fixed rolling recursive fixed rolling recursive	0.269 0.270 0.270 0.270 0.109 0.108 0.103 0.124 0.124 0.124 0.121 0.189 0.193 0.192 0.192 0.3T 0.135 0.126 0.132	0.244 0.247 10% 0.2T 0.099 0.078 0.097 0.137 0.115 0.128 0.183 0.177 0.177 10% 0.2T 0.124 0.098 0.123	0.222 0.236 0.1T 0.127 0.065 0.103 0.133 0.190 0.165 0.176 0.176 0.171 0.134 0.072 0.127	0.217 0.218 0.3T 0.078 0.072 0.070 0.086 0.088 0.090 0.132 0.136 0.131 0.3T 0.095 0.085 0.088	0.191 0.191 5% 0.2T 0.071 0.052 0.062 0.086 0.078 0.090 0.131 0.128 0.129 5% 0.2T 0.081 0.057 0.075	0.177 0.178 0.178 0.092 0.041 0.071 0.093 0.133 0.122 0.129 0.11T 0.093 0.042 0.083	0.117 0.109 0.3T 0.036 0.035 0.034 0.033 0.038 0.033 0.061 0.073 0.061 0.073 0.061 0.073 0.044 0.044 0.043	0.106 0.101 1% 0.2T 0.032 0.024 0.026 0.033 0.033 0.033 0.033 0.031 0.058 0.064 0.060 1% 0.2T 0.037 0.027 0.027	0.100 0.094 0.03 0.03 0.034 0.03 0.034 0.02 0.034 0.055 0.055 0.055 0.055 0.055 0.055
0.75 c) dynami mu_bar 0.25 0.5 0.75 d) dynami mu_bar 0.25 0.5	recursive m0 fixed rolling recursive fixed rolling recursive fixed rolling recursive fixed rolling recursive	0.269 0.270 0.270 0.270 0.109 0.108 0.103 0.124 0.124 0.124 0.121 0.135 0.192 0.37T 0.135 0.126 0.132 0.132	0.244 0.247 10% 0.2T 0.099 0.078 0.097 0.137 0.115 0.128 0.183 0.177 0.177 10% 0.2T 0.124 0.098 0.123 0.123 0.169	0.222 0.236 0.1T 0.127 0.065 0.103 0.137 0.106 0.133 0.190 0.165 0.176 0.176 0.171 0.134 0.072 0.127 0.127	0.217 0.218 0.3T 0.078 0.072 0.070 0.086 0.088 0.090 0.132 0.136 0.131 0.3T 0.095 0.085 0.088 0.119	0.191 0.191 5% 0.2T 0.071 0.052 0.062 0.086 0.078 0.090 0.131 0.128 0.129 5% 0.2T 0.081 0.057 0.075 0.115	0.177 0.178 0.17 0.092 0.041 0.071 0.093 0.133 0.122 0.129 0.1T 0.093 0.042 0.083 0.042 0.083 0.17	0.117 0.109 0.3T 0.036 0.035 0.034 0.033 0.033 0.061 0.073 0.061 0.073 0.061 0.073 0.061 0.073 0.061	0.106 0.101 1% 0.2T 0.032 0.024 0.026 0.033 0.033 0.033 0.033 0.031 0.058 0.064 0.060 1% 0.2T 0.037 0.027 0.035 0.049	0.100 0.094 0.037 0.037 0.034 0.037 0.034 0.035 0.055 0.055 0.055 0.055 0.055 0.055 0.055 0.055
0.75 c) dynami mu_bar 0.25 0.5 0.75 d) dynami mu_bar 0.25 0.5	recursive m0 fixed rolling recursive fixed rolling recursive fixed rolling recursive fixed rolling recursive fixed rolling recursive fixed rolling	0.269 0.270 0.270 0.270 0.109 0.108 0.103 0.124 0.124 0.121 0.189 0.193 0.192 0.192 0.192 0.135 0.126 0.132 0.167 0.168	0.244 0.247 10% 0.2T 0.099 0.078 0.097 0.137 0.115 0.128 0.183 0.177 0.177 10% 0.2T 0.124 0.098 0.123 0.169 0.154	0.222 0.236 0.1T 0.127 0.065 0.103 0.137 0.106 0.133 0.190 0.165 0.176 0.176 0.171 0.134 0.072 0.127 0.161 0.135	0.217 0.218 0.3T 0.078 0.072 0.070 0.086 0.088 0.090 0.132 0.136 0.131 0.3T 0.095 0.085 0.085 0.088 0.119 0.116	0.191 0.191 5% 0.2T 0.071 0.052 0.062 0.062 0.062 0.062 0.078 0.078 0.090 0.131 0.128 0.129 5% 0.2T 0.081 0.057 0.075 0.075 0.115 0.103	0.177 0.178 0.178 0.092 0.041 0.071 0.089 0.071 0.093 0.133 0.122 0.129 0.117 0.093 0.042 0.083 0.117 0.084	0.117 0.109 0.3T 0.036 0.035 0.034 0.033 0.038 0.033 0.061 0.073 0.061 0.073 0.061 0.073 0.061 0.073 0.061 0.073 0.061 0.073 0.061 0.073 0.061 0.073 0.061 0.073 0.061 0.073 0.061 0.061 0.073 0.061 0.064 0.064 0.064 0.065 0.064 0.065 0.064 0.065 0.064 0.065 0.064 0.065 0.064 0.065 0.064 0.065 0.064 0.065 0.064 0.065 0.064 0.065 0.064 0.065 0.064 0.065 0.064 0.065 0.065 0.064 0.065 0.065 0.065 0.064 0.065 0.055 0.0	0.106 0.101 1% 0.2T 0.032 0.024 0.026 0.033 0.033 0.033 0.033 0.031 0.058 0.064 0.060 1% 0.2T 0.037 0.027 0.035 0.049 0.051	0.100 0.094 0.03 0.03 0.03 0.03 0.03 0.03 0.05
0.75 c) dynami mu_bar 0.25 0.5 0.75 d) dynami mu_bar 0.25 0.5	recursive ic, non-robust m0 fixed rolling recursive fixed rolling recursive fixed rolling recursive ic, robust m0 fixed rolling recursive	0.269 0.270 0.270 0.270 0.109 0.108 0.103 0.124 0.124 0.124 0.121 0.189 0.193 0.192 0.192 0.192 0.135 0.126 0.132 0.167 0.168 0.176	0.244 0.247 10% 0.2T 0.099 0.078 0.097 0.137 0.115 0.128 0.128 0.183 0.177 0.177 10% 0.2T 0.124 0.098 0.123 0.169 0.154 0.173	0.222 0.236 0.1T 0.127 0.065 0.103 0.137 0.106 0.133 0.190 0.165 0.176 0.176 0.171 0.134 0.072 0.127 0.161 0.135 0.171	0.217 0.218 0.3T 0.078 0.072 0.070 0.086 0.090 0.132 0.136 0.131 0.3T 0.095 0.085 0.088 0.119 0.116 0.119	0.191 0.191 5% 0.2T 0.071 0.052 0.062 0.086 0.078 0.090 0.131 0.128 0.129 5% 0.2T 0.081 0.057 0.075 0.115 0.103 0.114	0.177 0.178 0.178 0.092 0.041 0.093 0.071 0.093 0.133 0.122 0.129 0.117 0.093 0.042 0.083 0.117 0.084 0.113	0.117 0.109 0.3T 0.036 0.035 0.034 0.033 0.033 0.033 0.061 0.073 0.061 0.073 0.061 0.073 0.061 0.073 0.061 0.044 0.044 0.047 0.043 0.053 0.053 0.053 0.055 0.0	0.106 0.101 1% 0.2T 0.032 0.024 0.026 0.033 0.033 0.033 0.033 0.031 0.058 0.064 0.060 1% 0.2T 0.037 0.027 0.035 0.049 0.051 0.051	0.100 0.094 0.037 0.037 0.034 0.034 0.027 0.034 0.055 0.
0.75 c) dynami mu_bar 0.25 0.5 0.75 d) dynami mu_bar 0.25 0.5 0.5 0.5	rolling recursive ic, non-robust m0 fixed rolling recursive fixed rolling recursive fixed rolling recursive ic, robust m0 fixed rolling recursive fixed rolling recursive	0.269 0.270 0.270 0.270 0.109 0.108 0.103 0.124 0.124 0.124 0.121 0.189 0.193 0.192 0.192 0.192 0.135 0.126 0.132 0.167 0.168 0.176	0.244 0.247 10% 0.2T 0.099 0.078 0.097 0.137 0.115 0.128 0.183 0.177 0.177 10% 0.2T 0.124 0.098 0.123 0.169 0.154 0.173 0.261	0.222 0.236 0.1T 0.127 0.065 0.103 0.137 0.106 0.133 0.190 0.165 0.176 0.176 0.171 0.134 0.072 0.127 0.161 0.135 0.171 0.135 0.171	0.217 0.218 0.3T 0.078 0.072 0.070 0.086 0.090 0.132 0.136 0.131 0.3T 0.095 0.085 0.088 0.119 0.116 0.119 0.226	0.191 0.191 5% 0.2T 0.071 0.052 0.062 0.086 0.078 0.090 0.131 0.128 0.129 5% 0.2T 0.081 0.057 0.075 0.115 0.103 0.114 0.203	0.177 0.178 0.178 0.092 0.041 0.093 0.071 0.093 0.133 0.122 0.129 0.117 0.093 0.042 0.083 0.117 0.084 0.113 0.014	0.117 0.109 0.3T 0.036 0.035 0.034 0.033 0.033 0.033 0.061 0.073 0.061 0.073 0.061 0.073 0.061 0.044 0.044 0.047 0.043 0.053 0.062 0.055 0.119	0.106 0.101 1% 0.2T 0.032 0.024 0.026 0.033 0.033 0.033 0.033 0.031 0.058 0.064 0.060 1% 0.2T 0.037 0.027 0.035 0.049 0.051 0.051 0.051	0.100 0.094 0.037 0.037 0.034 0.037 0.034 0.027 0.034 0.055
0.75 c) dynami mu_bar 0.25 0.5 0.75 d) dynami mu_bar 0.25 0.75 0.75	recursive m0 fixed rolling recursive fixed rolling recursive fixed rolling recursive fixed rolling recursive fixed rolling recursive fixed rolling recursive fixed rolling recursive fixed rolling recursive	0.269 0.270 0.270 0.270 0.109 0.108 0.103 0.124 0.124 0.124 0.124 0.124 0.121 0.192 0.193 0.192 0.192 0.135 0.126 0.132 0.167 0.168 0.176 0.280	0.244 0.247 10% 0.2T 0.099 0.078 0.097 0.137 0.115 0.128 0.128 0.183 0.177 0.177 0.177 0.177 0.177 0.124 0.098 0.123 0.169 0.154 0.154 0.154 0.154 0.154	0.222 0.236 0.1T 0.127 0.065 0.103 0.137 0.106 0.133 0.190 0.165 0.176 0.176 0.171 0.134 0.072 0.127 0.161 0.135 0.171 0.253 0.234	0.217 0.218 0.3T 0.078 0.072 0.070 0.086 0.090 0.132 0.136 0.131 0.3T 0.095 0.085 0.085 0.088 0.119 0.116 0.119 0.226 0.225	0.191 0.191 5% 0.2T 0.071 0.052 0.062 0.086 0.078 0.090 0.131 0.128 0.129 5% 0.2T 0.081 0.057 0.075 0.115 0.103 0.114 0.203 0.202	0.177 0.178 0.17 0.092 0.041 0.093 0.071 0.093 0.133 0.122 0.129 0.11T 0.093 0.042 0.083 0.117 0.084 0.113 0.194 0.184	0.117 0.109 0.3T 0.036 0.035 0.033 0.033 0.033 0.033 0.033 0.061 0.073 0.061 0.073 0.061 0.073 0.061 0.044 0.044 0.047 0.043 0.053 0.042 0.055 0.119 0.129	0.106 0.101 1% 0.2T 0.032 0.024 0.026 0.033 0.033 0.033 0.031 0.058 0.064 0.060 1% 0.2T 0.037 0.027 0.035 0.049 0.051 0.051 0.051 0.108	0.100 0.094 0.037 0.037 0.037 0.034 0.037 0.036 0.055 0.

e) Table S.4: Additional simulation results for the size of the DSW test for T=150

f) Theoretical results about the limit of the loss function under the various DGPs with a single change

We consider the asymptotic behavior of the loss sequence when there is a single coefficient or variance break. Our results pertain to the loss sequence in large samples. These are directly used when constructing the DSW, TLSW and TLUD tests. The surprise losses are used when constructing the GR_m and SGR tests. However, since the surprise losses series subtract the average of the in-sample losses, the dynamics of both sequences are similar. Hence, we consider only the loss sequence, namely the expected values of $p \lim_{T\to\infty} L_t =$ $L^*(r)$, defined on the unit interval $r \in [0, 1]$ where $r = \lim_{T\to\infty} (t/T)$. The squared loss function is applied. For simplicity, and without substantive loss of generality, we consider a single break model generated by:

$$y_{t+\tau} = x_t \beta_t + e_{t+\tau}, \text{ for } t = 1, ..., T - \tau,$$
 (A.5)

where $\beta_t = \beta_1$ for $t \leq [T\lambda_0]$ and $\beta_t = \beta_2$ for $t > [T\lambda_0]$. Again for simplicity, the predictor x_t is a scalar that satisfies $E(x_t^2) = \sigma_x^2$ and $E(x_t x_{t-j}) = \sigma_{xj}$. We also assume that e_t is a white noise with mean 0 and variance σ_t^2 , where $\sigma_t^2 = \sigma_1^2$ for $t \leq [T\lambda_0]$ and $\sigma_t^2 = \sigma_2^2$ for $t > [T\lambda_0]$. Let the in-sample length be $m = [T\lambda]$ with m chosen so that $\lambda \leq \lambda_0$. In the following, we consider the following two cases: a coefficient change, i.e., $\beta_1 = 0$ and $\beta_2 = \Delta_\beta$ with $\sigma_1^2 = \sigma_2^2 = \sigma^2$; a variance change, i.e., $\sigma_1^2 = \sigma^2$ and $\sigma_2^2 = \sigma^2 + \Delta_{\sigma^2}$ with $\beta_1 = \beta_2 = \beta$. Suppose we use the static regression model of $y_{t+\tau}$ on x_t to produce a τ -period ahead forecast at time t. For the out-of-sample procedure, we use the estimate of the coefficient β obtained from the in-sample information given in $t \in [1, T]$, labelled as $\hat{\beta}_{[1,t]}$. We consider the three window schemes and estimate the coefficient using OLS for the sample period $[1, m - \tau]$ with the fixed scheme, $[t - m + 1, t - \tau]$ with the rolling scheme, and $[1, t - \tau]$ with the recursive scheme. Hence, $\hat{\beta}_{[1,t]}$ with the same t can be different depending on the window scheme. When the static regression is used, the expected value of $L^*(r)$ is such that

$$E\left[L^{*}(r)\right] = E\left[p\lim_{T \to \infty} (y_{t+\tau} - x_{t}\hat{\beta}_{[1,t]})^{2}\right] = \sigma_{r}^{2} + \sigma_{x}^{2}(\beta_{r} - \beta_{[0,r]}^{*})^{2},$$
(A.6)

where we denote $\beta_{[0,r]}^* = p \lim_{T \to \infty} \hat{\beta}_{[1,t]}$. We also denote the true value of β_t and σ_t^2 by β_r and σ_r^2 . Next, we consider a dynamic regression, i.e., the regression of $y_{t+\tau}$ on y_t and x_t . Including y_t as a predictor while the true model is (A.5) is inconsequential under the null hypothesis, because the true value for α is zero. Things are quite different when instabilities are present. When the dynamic model is used, with $\alpha_{[0,r]}^* = p \lim_{T\to\infty} \hat{\alpha}_{[1,t]}$, the expected value of $L^*(r)$ is:

$$E[L^{*}(r)] = E\left[p\lim_{T \to \infty} (y_{t+\tau} - \hat{\alpha}_{[1,t]}y_{t} - x_{t}\hat{\beta}_{[1,t]})^{2}\right],$$

$$= (1 + \alpha_{[0,r]}^{*2})\sigma_{r}^{*2} + \sigma_{x}^{2}[(1 - \alpha_{[0,r]}^{*})\beta_{r} - \beta_{[0,r]}^{*}]^{2}.$$
 (A.7)

The case of a coefficient change. Consider the case of coefficient change, i.e., $\beta_1 \neq \beta_2$ with $\sigma_1^2 = \sigma_2^2 = \sigma^2$. For the static model, we obtain the following results for the limit of the

coefficient estimates. With the fixed scheme, $\beta_{[0,r]}^* = \beta_1$, for $0 \le r \le 1$. With the rolling scheme,

$$\beta_{[0,r]}^* = \begin{cases} \beta_1 & \text{for } 0 \le r \le \lambda_0, \\ \frac{\lambda_0 - r + \lambda}{\lambda} \beta_1 + \frac{r - \lambda_0}{\lambda} \beta_2 & \text{for } \lambda_0 < r \le \lambda_0 + \lambda \\ \beta_2 & \text{for } \lambda_0 + \lambda < r \le 1. \end{cases}$$

With the recursive scheme,

$$\beta_{[0,r]}^* = \begin{cases} \beta_1 & \text{for } 0 \le r \le \lambda_0, \\ \frac{\lambda_0}{r} \beta_1 + \frac{r - \lambda_0}{r} \beta_2 & \text{for } \lambda_0 < r \le 1. \end{cases}$$

Note that the coefficient estimate is biased when the rolling and the recursive schemes are used. When the dynamic model is used, the results are more complex, so we focus on the case with $\beta_1 = 0$ and $\beta_2 = \Delta_\beta$, without loss of generality With the fixed scheme,

$$\begin{bmatrix} \hat{\alpha}_{[1,t]} \\ \hat{\beta}_{[1,t]} \end{bmatrix} = \begin{bmatrix} m^{-1} \sum_{s=1}^{m-\tau} y_s^2 & m^{-1} \sum_{s=1}^{m-\tau} x_s y_s \\ m^{-1} \sum_{s=1}^{m-\tau} x_s y_s & m^{-1} \sum_{s=1}^{m-\tau} x_s^2 \end{bmatrix}^{-1} \begin{bmatrix} m^{-1} \sum_{s=1}^{m-\tau} y_s y_{s+\tau} \\ m^{-1} \sum_{s=1}^{m-\tau} x_s y_{s+\tau} \end{bmatrix}.$$
Using $m^{-1} \sum_{s=1}^{m-\tau} y_s^2 \xrightarrow{p} \sigma^2, m^{-1} \sum_{s=1}^{m-\tau} x_s y_s \xrightarrow{p} 0, m^{-1} \sum_{s=1}^{m-\tau} x_s^2 \xrightarrow{p} \sigma_x^2, m^{-1} \sum_{s=1}^{m-\tau} y_s y_{s+\tau} \xrightarrow{p} 0,$
and $m^{-1} \sum_{s=1}^{m-\tau} x_s y_{s+\tau} \xrightarrow{p} 0,$

$$\begin{bmatrix} \alpha_{[0,r]} \\ \beta_{[0,r]}^* \end{bmatrix} = \begin{bmatrix} \sigma^2 & 0 \\ 0 & \sigma_x^2 \end{bmatrix}^{-1} \begin{bmatrix} 0 \\ 0 \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \end{bmatrix} \text{ for } 0 \le r \le 1.$$

For the rolling scheme, let $\phi = (r - \lambda_0)/\lambda$. After some algebra, we obtain:

$$\begin{bmatrix} \alpha^*_{[0,r]} \\ \beta^*_{[0,r]} \end{bmatrix} = \begin{cases} \begin{bmatrix} 0 \\ 0 \end{bmatrix} & \text{for } 0 \leq r \leq \lambda_0, \\ \begin{bmatrix} \frac{\sigma_x^2 \sigma_{x\tau} \phi(1-\phi)\Delta_\beta^2}{\sigma_x^2 \sigma^2 + \sigma_x^2 \phi(1-\phi)\Delta_\beta^2} \\ \frac{\sigma_{x\tau} \sigma^2 \phi \Delta_\beta}{\sigma_x^2 \sigma^2 + \sigma_x^2 \phi(1-\phi)\Delta_\beta^2} \end{bmatrix} & \text{for } \lambda_0 < r \leq \lambda_0 + \lambda, \\ \begin{bmatrix} 0 \\ \Delta_\beta \end{bmatrix} & \text{for } \lambda_0 + \lambda < r \leq 1. \end{cases}$$

For the recursive scheme, let $\psi = (r - \lambda_0)/r$. After some algebra, we obtain:

$$\begin{bmatrix} \alpha_{[0,r]}^* \\ \beta_{[0,r]}^* \end{bmatrix} = \begin{cases} \begin{bmatrix} 0 \\ 0 \end{bmatrix} & \text{for } 0 \le r \le \lambda_0, \\ \begin{bmatrix} \frac{\sigma_x^2 \sigma_{x\tau} \psi(1-\psi) \Delta_\beta^2}{\sigma_x^2 \sigma^2 + \sigma_x^2 \psi(1-\psi) \Delta_\beta^2} \\ \frac{\sigma_x \tau \sigma^2 \psi \Delta_\beta}{\sigma_x^2 \sigma^2 + \sigma_x^2 \psi(1-\psi) \Delta_\beta^2} \end{bmatrix} & \text{for } \lambda_0 < r \le 1. \end{cases}$$

As in (A.6), when the static model is used, $E[L^*(r)] = \sigma^2 + \sigma_x^2 \Gamma(r)$, where $\Gamma(r) = (\beta_r - \beta_{[0,r]}^*)^2$. Therefore, i) with the fixed scheme,

$$\Gamma(r) = \begin{cases} 0 & \text{for } 0 < r \le \lambda_0, \\ \Delta_\beta^2 & \text{for } \lambda_0 < r \le 1. \end{cases}$$

ii) With the rolling scheme,

$$\Gamma(r) = \begin{cases} 0 & \text{for } 0 \le r \le \lambda_0, \\ \left(\frac{\lambda_0 - r + \lambda}{\lambda} \beta_1 + \frac{r - \lambda_0}{\lambda} \beta_2 - \beta_2\right)^2 = \frac{(\lambda_0 - r + \lambda)^2}{\lambda^2} \Delta_\beta^2 & \text{for } \lambda_0 < r \le \lambda_0 + \lambda, \\ 0 & \text{for } \lambda_0 + \lambda < r \le 1. \end{cases}$$

iii) With the recursive scheme,

$$\Gamma(r) = \begin{cases} 0 & \text{for } 0 \le r \le \lambda_0, \\ \left(\frac{\lambda_0}{r}\beta_1 + \frac{r - \lambda_0}{r}\beta_2 - \beta_2\right)^2 = \frac{\lambda_0^2}{r^2}\Delta_\beta^2 & \text{for } \lambda_0 < r \le 1 \end{cases}$$

When the dynamic model is used, we have: i) with the fixed scheme,

$$E[L^*(r)] = \begin{cases} \sigma^2 & \text{for } 0 \le r \le \lambda_0, \\ \sigma^2 + \sigma_x^2 \Delta_\beta^2 & \text{for } \lambda_0 < r \le 1. \end{cases}$$

ii) With the rolling scheme,

$$E[L^*(r)] = \begin{cases} \sigma^2 & \text{for } 0 \le r \le \lambda_0, \\ D_{rol}(\sigma, \phi, \Delta_\beta, \sigma_x, \sigma_{x,\tau}) & \text{for } \lambda_0 < r \le \lambda_0 + \lambda, \\ \sigma^2 & \text{for } \lambda_0 + \lambda < r \le 1, \end{cases}$$

where $D_{rol}(\sigma, \phi, \Delta_{\beta}, \sigma_x, \sigma_{x,\tau}) \equiv N_{rol}(\sigma, \phi, \Delta_{\beta}, \sigma_x, \sigma_{x,\tau}) / [\sigma_x^2 \sigma^2 + \sigma_x^2 \phi (1 - \phi) \Delta_{\beta}^2]^2$, with

$$N_{rol}(\sigma, \phi, \Delta_{\beta}, \sigma_{x}, \sigma_{x,\tau}) = \sigma_{x}^{4} \sigma^{6} + [2\sigma_{x}^{2}\phi(1-\phi) + (\sigma_{x}^{2} - \sigma_{x\tau}\phi)^{2}]\sigma_{x}^{2}\sigma^{4}\Delta_{\beta}^{2} + [\sigma_{x\tau}^{2}\phi(1-\phi) + 2(\sigma_{x}^{2} - \sigma_{x\tau}\phi)(1-\sigma_{x\tau}) + \phi(1-\phi)]\phi(1-\phi)\sigma_{x}^{4}\sigma^{2}\Delta_{\beta}^{4} + (1-\sigma_{x\tau})^{2}\phi^{2}(1-\phi)^{2}\sigma_{x}^{6}\Delta_{\beta}^{4},$$

and iii) with the recursive scheme,

$$E[L^*(r)] = \begin{cases} \sigma^2 & \text{for } 0 \le r \le \lambda_0, \\ D_{rec}(\sigma, \psi, \Delta_\beta, \sigma_x, \sigma_{x,\tau}) & \text{for } \lambda_0 < r \le 1, \end{cases}$$

where $D_{rec}(\sigma, \phi, \Delta_{\beta}, \sigma_x, \sigma_{x,\tau}) \equiv N_{rec}(\sigma, \phi, \Delta_{\beta}, \sigma_x, \sigma_{x\tau}) / [\sigma_x^2 \sigma^2 + \sigma_x^2 \phi (1 - \phi) \Delta_{\beta}^2]^2$ with

$$N_{rec}(\sigma, \phi, \Delta_{\beta}, \sigma_{x}, \sigma_{x,\tau}) = \sigma_{x}^{4} \sigma^{6} + [2\sigma_{x}^{2}\psi(1-\psi) + (\sigma_{x}^{2} - \sigma_{x\tau}\psi)^{2}]\sigma_{x}^{2}\sigma^{4}\Delta_{\beta}^{2} + [\sigma_{x\tau}^{2}\psi(1-\psi) + 2(\sigma_{x}^{2} - \sigma_{x\tau}\psi)(1-\sigma_{x\tau}) + \psi(1-\psi)]\psi(1-\psi)\sigma_{x}^{4}\sigma^{2}\Delta_{\beta}^{4} + (1-\sigma_{x\tau})^{2}\psi^{2}(1-\psi)^{2}\sigma_{x}^{6}\Delta_{\beta}^{4}.$$

The case of a variance change. We now consider the case of variance change, i.e., $\sigma_1^2 = \sigma^2$ and $\sigma_2^2 = \sigma^2 + \Delta_{\sigma^2}$ with $\beta_1 = \beta_2 = \beta$. It is relatively easy to derive the limit of the coefficient estimate and of the loss sequence. Under any window schemes, we can show that: i) when the static model is used $\beta_{[0,r]}^* = \beta$, for $0 \le r \le 1$, and when the dynamic model is used,

$$\begin{bmatrix} \alpha^*_{[0,r]} \\ \beta^*_{[0,r]} \end{bmatrix} = \begin{bmatrix} 0 \\ \beta \end{bmatrix} \text{ for } 0 \le r \le 1.$$

Therefore, under any window schemes, when the static model is used, (A.6) yields

$$E[L^*(r)] = \sigma_r^2 + \sigma_x^2 (\beta_r - \beta_{[0,r]}^*)^2$$

= σ_r^2
=
$$\begin{cases} \sigma^2 & \text{for } 0 \le r \le \lambda_0, \\ \sigma^2 + \Delta_{\sigma^2} & \text{for } \lambda_0 < r \le 1, \end{cases}$$

and when the dynamic model is used,

$$E[L^{*}(r)] = (1 + \alpha_{[0,r]}^{*2})\sigma_{r}^{2} + \sigma_{x}^{2}[(1 - \alpha_{[0,r]}^{*})\beta_{r} - \beta_{[0,r]}^{*}]^{2}$$

$$= \sigma_{r}^{2}$$

$$= \begin{cases} \sigma^{2} & \text{for } 0 \leq r \leq \lambda_{0}, \\ \sigma^{2} + \Delta_{\sigma^{2}} & \text{for } \lambda_{0} < r \leq 1. \end{cases}$$

Numerical illustration. We compute the numerical values of $E[L^*(r)]$ for $0 \leq r \leq 1$. We set $\sigma^2 = 1$, $\lambda = 0.1$ and $\lambda_0 = 0.5$ and a small break $(\Delta_\beta, \Delta_{\sigma^2} = 1)$ and a large break $(\Delta_\beta, \Delta_{\sigma^2} = 5)$ to investigate how the magnitude of the break affects the shape of the loss sequence. Figures 1 and 2 present $E[L^*(r)]$ for the coefficient change case for the static and dynamic regressions, respectively. The upper (lower) panels report the case of a small (large) break. When the static model is used (Figure 1), we see a stepwise change in the loss sequences when the fixed scheme is used. However, the same change in coefficient translates into a spiked shape with the rolling scheme and a triangular shape with the rolling or recursive scheme. This explains why the fixed scheme is to be preferred and why using the rolling or recursive scheme induces a loss of power. Note, however, that the break magnitude only changes the height of the change in the loss sequence, not the shapes of the loss sequences. Hence, increasing the magnitude of the break size should still increase power under all schemes. Things are different when considering the dynamic model, We still have the same general shapes for the loss sequences. However, the spikes and the triangular shape for the rolling and the recursive schemes become more narrow and closer to an outlier as the break becomes larger. This explains why, when using a dynamic model, the use of a rolling or recursive scheme leads to a non-monotonic power function, i.e., the power decreases as the break magnitude increases.

Figures S.1 and S.2 present $E[L^*(r)]$ for the variance change case when the static and dynamic regressions are used, respectively. Here, the results are simple. The limit of the loss sequence always yields a stepwise change, whose magnitude depends on the change in variance. Hence, all tests should have similar power functions that are monotonically increasing in the magnitude of the variance break.



Figure S.1. Shapes of $E[L^*(r)]$ for a variance break in a static regression a) Small break ($\Delta_{\sigma^2} = 1$):

Figure S.2. Shapes of $E[L^*(r)]$ for a variance break in a dynamic regression a) Small break ($\Delta_{\sigma^2} = 1$):



g) Theoretical results for the iterated forecast method

We assess the properties of the loss sequence when the iterated forecasting method is used. We consider the case of a coefficient change with no extra predictors x_t , i.e., an unconditional forecast, to avoid the potential complication of forecasting x_t . The data are generated by

$$y_t = \beta_t + e_t$$
, for $t = 1, ..., T$

where

$$\beta_t = \begin{cases} 0 & \text{for } t \leq [T\lambda_0], \\ \Delta_\beta & \text{for } t > [T\lambda_0], \end{cases}$$

and e_t is a white noise with mean 0 and variance σ^2 . Suppose we use an AR1 model, in which the true value of α is zero for simplicity and without loss of generality, so that the regression is:

$$y_{t+1} = \beta + \alpha y_t + error.$$

After we obtain the OLS coefficient estimate $\hat{\alpha}_{[1,t]}$ and $\hat{\beta}_{[1,t]}$, the iterative method constructs a τ -period ahead forecast as follows

$$\hat{y}_{t+\tau} = \hat{\beta}_{[1,t]} + \hat{\alpha}_{[1,t]} y_{t+\tau-1},
= \hat{\beta}_{[1,t]} (1 + \hat{\alpha}_{[1,t]}) + \hat{\alpha}_{[1,t]}^2 y_{t+\tau-2},
\vdots
= \hat{\beta}_{[1,t]} \overline{\hat{\alpha}}_{[1,t]} + \hat{\alpha}_{[1,t]}^\tau y_t,$$

where $\overline{\hat{\alpha}}_{[1,t]} \equiv \sum_{j=0}^{\tau} \hat{\alpha}_{[1,t]}^{j}$. Because τ is asymptotically small, the expected value of $L^{*}(r)$ becomes

$$E[L^{*}(r)] = E\left[p\lim_{T \to \infty} (\hat{y}_{t+\tau} - \hat{\beta}_{[1,t]}\overline{\hat{\alpha}}_{[1,t]} + \hat{\alpha}_{[1,t]}^{\tau}y_{t})^{2}\right], \qquad (A.8)$$

$$= (1 + \alpha_{[0,r]}^{*2\tau})\sigma_{r}^{*2} + [(1 - \alpha_{[0,r]}^{*\tau})\beta_{r} - \beta_{[0,r]}^{*}\overline{\hat{\alpha}}_{[0,r]}^{*}]^{2},$$

where $\alpha_{[0,r]}^* = p \lim_{T \to \infty} \hat{\alpha}_{[1,t]}, \beta_{[0,r]}^* = p \lim_{T \to \infty} \hat{\beta}_{[1,t]}$ and $\overline{\hat{\alpha}}_{[0,r]}^* = p \lim_{T \to \infty} \sum_{j=0}^{\tau} \alpha_{[0,r]}^{*j}$. Note that we now have an expression for $E[L^*(r)]$ influenced by τ , which did not appear in the direct forecast counterparts; see (A.7). Hence, it is interesting to assess the effects of τ . The limit of the coefficient estimate is the same as that for the dynamic regression model with $x_t = 1$ for all t since τ is fixed and, hence, small in large samples. With the fixed scheme,

$$\begin{bmatrix} \hat{\alpha}_{[1,t]} \\ \hat{\beta}_{[1,t]} \end{bmatrix} = \begin{bmatrix} m^{-1} \sum_{s=1}^{m-1} y_s^2 & m^{-1} \sum_{s=1}^{m-1} y_s \\ m^{-1} \sum_{s=1}^{m-1} y_s & m^{-1} \sum_{s=1}^{m-1} 1 \end{bmatrix}^{-1} \begin{bmatrix} m^{-1} \sum_{s=1}^{m-1} y_s y_{s+\tau} \\ m^{-1} \sum_{s=1}^{m-1} y_{s+\tau} \end{bmatrix}.$$

We have $m^{-1} \sum_{s=1}^{m-1} y_s^2 \xrightarrow{p} \sigma^2$, $m^{-1} \sum_{s=1}^{m-1} y_s \xrightarrow{p} 0$, $m^{-1} \sum_{s=1}^{m-1} 1 \xrightarrow{p} 1$, $m^{-1} \sum_{s=1}^{m-1} y_s y_{s+1} \xrightarrow{p} 0$ and $m^{-1} \sum_{s=1}^{m-1} y_{s+1} \xrightarrow{p} 0$ so that

$$\begin{bmatrix} \alpha_{[0,r]}^* \\ \beta_{[0,r]}^* \end{bmatrix} = \begin{bmatrix} \sigma^2 & 0 \\ 0 & \sigma_x^2 \end{bmatrix}^{-1} \begin{bmatrix} 0 \\ 0 \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \end{bmatrix} \text{ for } 0 \le r \le 1.$$

With the rolling scheme, we let $\phi = (r - \lambda_0)/\lambda$ and obtain

$$\begin{bmatrix} \alpha_{[0,r]}^* \\ \beta_{[0,r]}^* \end{bmatrix} = \begin{cases} \begin{bmatrix} 0 \\ 0 \end{bmatrix} & \text{for } 0 \le r \le \lambda_0, \\ \begin{bmatrix} \frac{\phi(1-\phi)\Delta_{\beta}^2}{\sigma^2 + \phi(1-\phi)\Delta_{\beta}^2} \\ \frac{\sigma^2 \phi \Delta_{\beta}}{\sigma^2 + \phi(1-\phi)\Delta_{\beta}^2} \end{bmatrix} & \text{for } \lambda_0 < r \le \lambda_0 + \lambda, \\ \begin{bmatrix} 0 \\ \\ \Delta_{\beta} \end{bmatrix} & \text{for } \lambda_0 + \lambda < r \le 1. \end{cases}$$

With the recursive scheme, we let $\psi = (r - \lambda_0)/r$ and obtain

$$\begin{bmatrix} \alpha_{[0,r]} \\ \beta_{[0,r]}^* \end{bmatrix} = \begin{cases} \begin{bmatrix} 0 \\ 0 \end{bmatrix} & \text{for } 0 \le r \le \lambda_0, \\ \begin{bmatrix} \frac{\psi(1-\psi)\Delta_{\beta}^2}{\sigma^2 + \psi(1-\psi)\Delta_{\beta}^2} \\ \frac{\sigma^2 \psi \Delta_{\beta}}{\sigma^2 + \psi(1-\psi)\Delta_{\beta}^2} \end{bmatrix} & \text{for } \lambda_0 < r \le 1. \end{cases}$$

We can then obtain $E[L^*(r)]$ by plugging $\alpha^*_{[0,r]}$ and $\beta^*_{[0,r]}$ into (A.8). With the fixed scheme,

$$E[L^*(r)] = \begin{cases} \sigma^2 & \text{for } 0 \le r \le \lambda_0, \\ \sigma^2 + \Delta_\beta^2 & \text{for } \lambda_0 < r \le 1. \end{cases}$$

With the rolling scheme,

$$E[L^*(r)] = \begin{cases} \sigma^2 & \text{for } 0 \le r \le \lambda_0, \\ R_{rol}(\sigma, \phi, \Delta_\beta) & \text{for } \lambda_0 < r \le \lambda_0 + \lambda, \\ \sigma^2 & \text{for } \lambda_0 + \lambda < r \le 1, \end{cases}$$

where $R_{rol}(\sigma, \phi, \Delta_{\beta}) \equiv (1 + \alpha_{[0,r]}^{*2\tau})\sigma^2 + [(1 - \alpha_{[0,r]}^{*\tau})\Delta_{\beta} - \beta_{[0,r]}^*\overline{\alpha}_{[0,r]}^*]^2$ with $\alpha_{[0,r]}^* = [\phi(1 - \phi)\Delta_{\beta}^2]/[\sigma^2 + \phi(1 - \phi)\Delta_{\beta}^2]$ and $\beta_{[0,r]}^* = [\sigma^2\phi\Delta_{\beta}]/[\sigma^2 + \phi(1 - \phi)\Delta_{\beta}^2]$. With the recursive scheme,

$$E[L^*(r)] = \begin{cases} \sigma^2 & \text{for } 0 \le r \le \lambda_0, \\ R_{rec}(\sigma, \psi, \Delta_\beta) & \text{for } \lambda_0 < r \le 1, \end{cases}$$

where $R_{rec}(\sigma, \phi, \Delta_{\beta}) \equiv (1 + \alpha_{[0,r]}^{*2\tau})\sigma^2 + [(1 - \alpha_{[0,r]}^{*\tau})\Delta_{\beta} - \beta_{[0,r]}^*\overline{\alpha}_{[0,r]}^*]^2$ with $\alpha_{[0,r]}^* = [\psi(1 - \psi)\Delta_{\beta}^2]/[\sigma^2 + \psi(1 - \psi)\Delta_{\beta}^2]$ and $\beta_{[0,r]}^* = [\sigma^2\psi\Delta_{\beta}]/[\sigma^2 + \psi(1 - \psi)\Delta_{\beta}^2]$. Since the expressions

above are not quite intuitive, we compute the numerical values of $E[L^*(r)]$ for $0 \le r \le 1$. In particular, we set the parameter values $\sigma^2 = 1$, $\lambda = 0.1$ and $\lambda_0 = 0.5$. We consider the forecasting horizons $\tau = 3$ and $\tau = 12$. For each value of τ , we consider a small break $(\Delta_\beta = 1)$ and a large break $(\Delta_\beta = 5)$ to investigate how the magnitude of the break affects the shape of the loss sequence. Figures S.3 presents $E[L^*(r)]$ for the coefficient change case when $\tau = 3$. The upper panel reports the case of a small break and the lower panel that of a large break. The pattern of the loss sequence is very similar to what was obtained using the direct forecasting (dynamic regression) in that the change in the coefficient translates into a spike when the rolling or the recursive schemes are used. For the direct forecast method, τ does not appear in the results as it is assumed small relative to T. Figure S.4 presents $E[L^*(r)]$ for the coefficient change case when $\tau = 12$ and the results are very similar to those of $\tau = 3$, except that the effect of increasing the break magnitude on the shapes of $E[L^*(r)]$ for the rolling and the recursive schemes is somewhat weaker when τ is larger. Otherwise, all qualitative results reported in the text for the "direct forecast method" continue to hold if one uses the "indirect forecast method".



Figure S.3. Shapes of $E[L^*(r)]$: Coefficient break with iterated forecasts ($\tau = 3$) a) Small break ($\Delta_\beta = 1$)

Figure S.4. Shapes of $E[L^*(r)]$: Coefficient break with iterated forecasts ($\tau = 12$) a) Small break ($\Delta_\beta = 1$)



h) A "typical" realization of the loss sequences

Figures S.5 and S.6 present a "typical" realization of the loss sequences for DGPs 3-5 under the three forecasting schemes for the tests SGR2, DSW2 and TLSW (the results using SGR1, DSW1 and TLUD are, respectively, almost equivalent and, hence, omitted). Because the loss sequence is generated for every m, we present the one for which the test statistic is maximized, say m^* , whose value is indicated in parenthesis above each path.



Figure S.5: A realization of loss sequences: static model







Figure S.6: A realization of loss sequences: dynamic model



