



**MONASH University**

**Department of Economics  
Discussion Papers  
ISSN 1441-5429**

**Multiple Regime Shifts and the Effect of  
Changes in Leadership on the United States  
Supreme Court Dissent Rate**

**Paresh Kumar Narayan and Russell Smyth**

**No. 04/04**

**Monash University  
Victoria 3800  
Australia**

**Multiple Regime Shifts and the Effect of Changes in Leadership on  
the United States Supreme Court Dissent Rate**

Paresh Kumar Narayan\* and Russell Smyth†

Corresponding Author

Associate Professor Russell Smyth  
Department of Economics  
Monash University, 3800  
Victoria,  
Australia

Telephone: +(613) 99051560

Fax: +(613) 99055476

E-mail: [Russell.Smyth@BusEco.monash.edu.au](mailto:Russell.Smyth@BusEco.monash.edu.au)

---

\* Department of Economics, Monash University

† Department of Economics, Monash University

**Multiple Regime Shifts and the Effect of Changes in Leadership on  
the United States Supreme Court Dissent Rate**

**ABSTRACT**

In this paper we use a global optimization technique developed by Bai and Perron (1998) to estimate both the number and location of structural breaks in dissenting opinions on the United States Supreme Court. While it has commonly been believed that there has been one regime shift in dissenting opinions on the United States Supreme Court corresponding to the breakdown in the consensual norm in the 1930s or 1940s, we find that there have been three breaks. We then test to see if changes in the leadership of the Supreme Court have had a statistically significant effect on dissent taking the structural breaks as given. This is a more rigorous test of the influence of judicial leadership on consensus than testing leadership dummy variables against an otherwise fixed intercept as commonly used in previous research. We find that changes in the leadership of the Court have had a statistically significant effect on variations in dissenting opinions.

## 1. Introduction

Most studies of decision-making on the United States Supreme Court have focused on the 1930s or early 1940s as the period at which the consensual norm on the Court broke down. Caldeira and Zorn (1998) use cointegration and error-correction modelling to test for the existence of a consensual norm on the Court. To take account of the large increase in the number of separate opinions at the beginning of the 1940s they employ the Gregory and Hansen (1996) approach to cointegration, which allows for one structural break. For dissenting opinions they identify the structural break as occurring in 1939 or 1940 with a steady decline in the consensual norm from the mid-1920s. Caldeira and Zorn (1998, p. 892) suggest: “[t]hese results, although only suggestive, encourage reexamination of earlier results on the exact date at which norms on the Court dissolved”.

Irrespective of the exact date at which the consensual norm broke down, implicit in Calderia and Zorn’s (1998) approach and certainly that of the other literature which has focused on the rise in dissenting opinions since the 1930-1940 period is that there is one structural break in the dissent rate. Scholars such as Danelski (1960) have asserted that dissents increased as the norm of consensus eroded in the early to mid-twentieth century. More recently, Walker *et al* (1988) and Haynie (1992) suggest that, in part, dissensus begins with Chief Justices Hughes and Stone. Our principal argument is that the statistical focus on explaining the massive increase in the dissent rate in the 1930s and 1940s, while important, has tended to overshadow the existence of fluctuations in dissent in other periods of the Court’s past. Bouts of dissension, combined with several changes in the political complexion of the Court in the nineteenth century, particularly in the transition from Marshall to Taney and in the period surrounding the Civil War suggest *ex*

*ante* that there might be more than the one regime shift in the Court's decision-making identified by Caldeira and Zorn (1998) and others. Consistent with Walker *et al* (1988, p. 362) here "we use the term 'regime' to refer to shared norms and values governing the actions of individuals engaged in an established collective decision-making process".

There are several reasons why one should be interested in the dissent rate and its determinants and therefore why it is important if there have been multiple regime shifts throughout the Court's past. Firstly, Pritchett (1954, p. 22) suggests that the increase in concurring and dissenting opinions in the 1930s and 1940s weakened the Court's "institutional ethos" and on this basis argues "it is precisely because the Court's institutional ethos has become so weak that we must examine the thinking of the individual justices". This call has spawned a large literature on the factors influencing justices' decision-making patterns, focusing on the Stone Court and after. If, however, there are multiple regime shifts in the Court's decision-making patterns this suggests a reevaluation of the implicit notion in Pritchett's (1954) argument that there was a strong (or stronger) "institutional ethos" in earlier periods is appropriate. If there is no constant institutional ethos or norm of decision-making other issues open up for investigation relating to the reasons for earlier regime shifts and, following Pritchett's (1954) original suggestion, the thinking of the Justices before, during and following these regime shifts.

Second, the weakening in the institutional ethos of the Court which Pritchett identifies has been associated, in the eyes of some, with a reduction in the power and legitimacy of the Court. For instance Judge Learned Hand thought that on constitutional matters

division on the Court was “disastrous” because it cancelled “the impact of monolithic solidarity on which the authority of a bench of judges so largely depends” (as cited in Halpern and Vines, 1977, p. 471). Third, a related point is that the level of consensus potentially influences the standing of the Court among other branches of government and in the eyes of the general public. When the Court speaks with many voices this potentially makes its decisions more vulnerable to outside criticism. Danelski (1960), Swisher (1965) and Frank (1968), among others, have argued that the increase in the level of dissent in the 1930s and 1940s have undermined public confidence in the Court.

The objective of this paper is twofold. First we employ a method developed by Bai and Perron (1998) for identifying multiple regime shifts to find the exact number and dates of break points in dissenting opinions. The Bai and Perron (1998) approach has the advantage that one can construct confidence intervals around the breaks. These can be used to examine the importance of changes in the leadership of the Court or events such as the Judges Bill or the New Deal period on these permanent changes in the Court’s decision-making processes. If a change in leadership or other episodic event occurs within the confidence interval surrounding the structural break, there is strong evidence that this event was responsible for the regime shift in the Court. We find that there are three breaks in the dissent rate. One break occurs in 1836, at the beginning of Taney’s term as chief justice; a second occurs in 1867, which is in the middle of Chase’s term as Chief Justice, and the third is in 1941, at the start of Stone’s term as chief justice.

Our second objective is to implement a method suggested by Caporale and Grier (2000, 2002) for using the break dates identified by the Bai and Perron (1998) procedure to re-examine the effect of leadership on variations in the dissent rate. We focus on leadership because the role of the chief justice has consistently been regarded as one of the most important factors influencing consensus (see eg Danelski 1960, 1986, Murphy 1964, Haynie, 1992). However, in previous research, the alternative hypothesis to the influence of the chief justice has often been ill specified. Where dummy variables denoting the tenure of specific chief justices have been significant, this has been interpreted as meaning that leadership has been important (see eg Haynie 1992). The problem with this approach is that other, potentially statistically better, break dates are ignored.

Our approach to examine the effect of leadership is to assume that the Bai and Perron (1998) break dates are not due to changes in leadership on the Court. We test to see if changes in the chief justice are statistically significant taking the Bai and Perron (1998) break dates as given. In other words we test to see if changes in leadership have had a statistically significant effect on variations in dissent, once the Bai and Perron changes are taken into account. This is a more appropriate and rigorous test for the effects of leadership than testing leadership dummies against an otherwise fixed intercept as in previous research. Our finding from this exercise is that changes in the leadership of the Court have had a statistically significant effect on variations in dissenting opinions.

In the balance of the paper we begin with a brief outline of the patterns of dissent on the Court up to and including Stone's term as chief justice. Following this we explain the

Bai and Perron (1998) procedure and use it to examine the number and dates of break points in dissenting opinions. We then proceed to use the Bai and Perron (1998) break dates to consider the effect of changes in leadership on the dissent rate.

## **2. Overview of the Data**

The Bai and Perron (1998) approach can be used to test for and estimate multiple regime shifts only if the data are stationary. Our initial intention was to test for breaks in both concurring and dissenting opinions, conditional on finding the data were stationary. The data on concurrences and dissents on the Supreme Court is for each term from 1800 to 1991. The data comes from Epstein *et al* (1994) and was previously employed by Caldeira and Zorn (1998). We follow the approach in Caldeira and Zorn (1998) and use the raw number of concurring and dissenting opinions rather than the number per 100 decisions because of uncertainty about the total number of decisions at some points.

Figure 1 plots decisions with concurrences and dissents from 1800 to 1991. As is well known, early in the Court's existence Marshall replaced the British practice of seriatim opinion writing with a single opinion of the Court. It is often argued that this increased the legitimacy of the Court because for the first time it spoke with one voice (Beveridge 1919, Lively 1992). With the exception of the Jeffersonian Republican William Johnson (1803-35) who served on the Federalist dominated Bench, few judges wrote concurring and dissenting opinions in Marshall's term. There were 35 concurring opinions and 74 dissents while Johnson was on the Supreme Court; of which, Johnson wrote 21 concurrences and 34 dissents (Schwartz 1993, p. 63). However, for most of the first two decades of his period on the Court Johnson acquiesced in Marshall's unanimity rule. At

the urging of Jefferson to resist Marshall's centralization of power in Washington, though, during his last ten years on the Court Johnson became more vocal in speaking out, issuing nine concurring and 18 dissenting opinions (Schwartz 1993, p. 64).

-----  
Insert Fig. 1  
-----

However, Marshall's stranglehold on the Court started to decline towards the end of the 1820s with the Jackson appointments who did not agree with Marshall's approach to decision-making and there was a marked increase in the dissent rate when Taney (1836-64) replaced Marshall as chief justice. Dissents reached a peak for the nineteenth century in 1850, under Taney's leadership, when there were dissents in 25 cases. Throughout the chief justiceships of Chase (1864-1873), Waite (1874-1888) and Fuller (1888-1910) there were a steady flow of dissenting opinions, particularly from Justices Field (1863-97) and Miller (1862-90). Figure 1 shows that there were regularly dissents in more than 25 cases per term throughout the 1860s, 1870s and 1890s. While this figure is not high compared with the number of dissenting opinions since the 1940s, it is more than one would expect in an institution where decision-making was based on building consensus. For the first quarter of the twentieth century there were more than 20 dissenting opinions per term on only four occasions and then from the mid-1920s dissenting opinions became more frequent before exploding in the 1941 term under the leadership of Stone.

### **3. Stationarity Properties of the Data**

To determine the stationarity properties of the variables we started by performing the standard Augmented Dickey Fuller (ADF) unit root test for each variable without

allowing for structural breaks. The results are not presented here to conserve space, but consistent with Caldeira and Zorn's (1998, p. 883) findings the ADF test suggested that both concurring and dissenting opinions are integrated of order one (a non-stationary process). However, Perron (1989) showed that in situations where there is a regime shift, as we are testing for here, the power to reject a unit root decreases when the stationary alternative is true and the structural break is ignored. Perron (1989) proposed three alternative models. These are (a) model A (the "crash model"), which allows for a one-time structural break in the intercept of the trend function; (b) model B (the "changing growth" model), which allows for a structural break in the slope; and (c) model C (the "crash-cum-growth" model), which allows for a structural break in intercept and slope.

Perron (1989) treated the structural break as exogenous. If we were to treat the structural break in concurrences and dissents as exogenous, based on casual inspection of Figure 1 the appropriate date would be at the beginning of the 1940s. The subsequent literature, beginning with Banerjee *et al* (1992), Christiano (1992) and Zivot and Andrews (1992), however, has largely treated the structural break as being endogenously determined from the data. Therefore, selecting the break dates *a priori* based on an *ex post* examination or knowledge of the data could lead to an over rejection of the unit root hypothesis. Thus, we follow the recent literature and treat the break date as being endogenous.

We used two forms of the Zivot and Andrews (1992) sequential trend break model to further investigate the stationarity properties of concurrences and dissents. Using Perron's (1989) terminology, we used Zivot and Andrews' (1992) model A and model C.

Model A has the following form:

$$\Delta y_{it} = \kappa_i + \alpha_i y_{it-1} + \beta_i t + \theta_i DU_t + \sum_{j=1}^k d_{ij} \Delta y_{it-j} + \varepsilon_{it} \quad (1)$$

Model C takes the following form:

$$\Delta y_{it} = \kappa_i + \alpha_i y_{it-1} + \beta_i t + \theta_i DU_t + \gamma_i DT_t + \sum_{j=1}^k d_{ij} \Delta y_{it-j} + \varepsilon_{it} \quad (2)$$

Here  $\Delta$  is the first difference operator,  $\varepsilon_{it}$  is a white noise disturbance term with variance  $\sigma^2$ , and  $t = 1, \dots, T$  is an index of time. The  $\Delta y_{it-j}$  terms on the right-hand-side of Equations (1) and (2) allow for serial correlation and ensure the disturbance term is white noise. Of the dummy variables,  $DU_t$  is an indicator dummy variable for a mean shift occurring at time  $TB$  and  $DT$  is the corresponding trend shift variable, where

$$DU_t = \begin{cases} 1 & \text{if } t > TB \\ 0 & \text{otherwise} \end{cases}$$

and

$$DT_t = \begin{cases} t - TB & \text{if } t > TB \\ 0 & \text{otherwise} \end{cases}$$

The lag length ( $k$ ) is selected using the “t-sig” approach developed by Hall (1994). This involves starting with an upper bound on  $k$ , which is chosen *a priori*. If the last included lag is significant, the upper bound  $k$  is chosen. If not,  $k$  is reduced by one until the last lag becomes significant. If no lags are significant  $k$  is set equal to zero. We set  $k_{max}=8$  and use a critical value of 1.60 to determine the significance of the  $t$ -statistic on the last lag. We do not increase the upper bound when the procedure selects  $k=k_{max}$ .

The break date is searched for over the range of the sample (0.15T, 0.85T). The null hypothesis is that  $\alpha_i = 0$ , in Equations (1) and (2), which implies that the series  $\{y_t\}$  is an integrated process without a structural break. The alternative hypothesis is that  $\alpha_i < 0$ , which implies that  $\{y_t\}$  is break point stationary. The break date is selected by choosing the value of  $TB$  for which the  $t$ -statistic for  $\alpha$  is minimized. The results for the Zivot and Andrews (1992) test are reported in table 1. Zivot and Andrews (1992) provide relevant critical values. For dissenting opinions, the  $t$ -statistic on  $\alpha$  is less than the relevant critical value at the 1 per cent level for both model A and model C, which means that dissenting opinions are break point stationary. The break date for dissenting opinions is 1939 (model A) or 1940 (model C), which is close to the end of Hughes' term and the beginning of Stone's term as chief justice. For concurring opinions the  $t$ -statistic on  $\alpha$  is higher than the relevant critical values even at the 10 per cent level. Therefore, we are unable to reject the null hypothesis of a unit root for concurring opinions. The break dates for concurring opinions occur in 1954 (model A) or 1919 (model C), which is near the beginning of the terms of White and Warren as chief justice respectively.

The unit root tests suggest that concurring opinions are long memory processes, and therefore that shocks in the level of such behavior will persist. Thus, concurring opinions will fluctuate widely and may increase or decrease steadily for long periods of time. Note that shocks in this context could be caused by factors such as changes in leadership, a change in the composition of the Court or institutional changes such as the Judges Bill. In contrast to concurring opinions, dissenting opinions are short memory processes

around a breaking trend. This means that the persistence of shocks in dissenting opinions is limited to major “turning points” in the history of the Court corresponding to the break dates in the trend and that the impact of other shocks on dissenting opinions will have only a fleeting effect on the current value of the series. Given that we were unable to establish that concurring opinions are break point stationary, which is a prerequisite for the application of the Bai and Perron (1998) test, concurring opinions are dropped from further analysis and in we focus on the time series properties of dissenting opinions.

-----  
 Insert Table 1  
 -----

#### 4. Number and Location of Break Dates in Dissenting Opinions

Having established the integration properties of the data we proceed to estimating break dates for dissenting opinions which are break point stationary using the Bai and Perron (1998) method. Bai and Perron (1998) recommend a multiple linear regression model with  $m$  breaks ( $m + 1$  regimes). The model takes the following form:

$$y_t = x_t' \beta + z_t' \psi_j + \kappa_t, \quad t = T_{j-1} + 1, \dots, T_j, \text{ for } j = 1, \dots, m + 1 \quad (3)$$

Here  $y_t$  is the dependent variable at time  $t$ ,  $x_t$  ( $p \times 1$ ) and  $z_t$  ( $q \times 1$ ) are vectors of covariates,  $\beta$  and  $\psi_j$  are the corresponding vectors of coefficients, and  $\kappa_t$  captures disturbance at time  $t$ . In Equation (3) the break dates  $(T_1, \dots, T_m)$  are explicitly treated as unknown. Our objective is to estimate the unknown regression coefficients together with the break dates when  $T$  observations of  $(y_t, x_t, z_t)$  are available. Bai and Perron (1998) develop test statistics to identify multiple breaks. For each  $m$ -partition  $(T_1, \dots, T_m)$ ,  $\beta$  and  $\psi_j$  are estimated by minimizing the sum of squared residuals:

$$\sum_{i=1}^{m+1} \sum_{t=T_{i-1}+1}^{T_i} [y_t - x_t' \beta - z_t' \psi_j] \quad (4)$$

Letting  $\hat{\beta}(\{T_j\})$  and  $\hat{\psi}(\{T_j\})$  denote the estimates based on the given  $m$ -partition  $(T_1, \dots, T_m)$  represented here as  $\{T_j\}$ , one needs only to substitute these into Equation (4) to get the estimated break dates. If we depict the resulting sum of squared residuals as  $S_{T, \dots}(T_1, \dots, T_m)$ , it follows that the estimated break dates  $(\hat{T}_1, \dots, \hat{T}_m)$  will be such that  $(\hat{T}_1, \dots, \hat{T}_m) = \arg \min_{T_1, \dots, T_m} S_T(T_1, \dots, T_m)$  (see Bai and Perron, 1998).

Bai and Perron (1998) recommend a suite of tests for first ascertaining the existence of one or more structural breaks in a series and second, conditional on finding that there are breaks, determining the number and location of breaks. To test for the existence of one or more structural breaks Bai and Perron (1998) advocate the  $SupF_t(L)$  F-statistic and double maximum tests. The  $SupF_t(L)$  F-statistic tests the null hypothesis of no structural breaks ( $m = 0$ ) against the alternative hypothesis that there are  $m = k$  breaks. The procedure searches all possible break dates and minimizes the difference between the restricted and unrestricted sum of squares over all the potential breaks. The double maximum test considers the null hypothesis of no structural breaks ( $m = 0$ ) against the alternative hypothesis of at least 1 through to  $M$  structural breaks. The double maximum test takes two forms, which Bai and Perron (1998) term  $UDmax$  and  $WDmax$ . The  $UDmax$  statistic is the maximum value of the  $SupF_t(L)$  F-statistic where  $L$

represents an upper bound on the possible number of breaks while the  $WDmax$  statistic weights the individual statistics so as to equalize the p-values across values of  $m$ .

If the null hypothesis of no structural break is rejected by the double maximum test, Bai and Perron (1998) suggest a sequential  $SupF_i(L+1/L)$  procedure to determine the optimal number and location of structural breaks.<sup>1</sup> The sequential procedure tests the null hypothesis of  $L$  breaks against the alternative hypothesis of  $(L+1)$  breaks. For the model with  $L$  breaks, the estimated break dates denoted by  $\hat{T}_1, \dots, \hat{T}_m$  are obtained by global minimization of the sum of squared residuals. Rejection of the null hypothesis in favour of a model with  $(L+1)$  breaks occurs if the overall minimum value of the sum of squared residuals is sufficiently smaller than the sum of squared residuals from the  $L$  break model. The appropriate critical values are available in Bai and Perron (1998).<sup>2</sup>

Before implementing the Bai and Perron (1998) procedure, an initial trimming region must be specified to ensure that there is a reasonable amount of degrees of freedom to calculate an initial error sum of squares. The trimming specification determines the maximum possible number of breaks and minimum regime size. We imposed  $\text{trimming} \in = 0.15$  and allowed the system to search for a maximum of five breaks. Given that our sample span is from 1800 to 1991 or 192 observations, this trimming ensures that each segment has at least 38 observations to account for potential serial correlation via non-parametric adjustments. The Bai and Perron (1998) procedure also corrects for serial correlation in the errors and different variances of residuals across segments through incorporating Andrews' (1991) robust standard errors.

The results from the Bai and Perron (1998) test for dissenting opinions are reported in Table 2. The  $SupF_t(L)$  test is statistically significant at the 1 per cent level for values of  $L$  between one and five. The  $UDmax$  and  $WDmax$  statistics are also both statistically significant at the 1 per cent level. This implies that there is at least one structural break in dissenting opinions. To select the optimal number of structural breaks we use the sequential procedure. The sequential procedure finds that there are three break dates: 1836, 1867 and 1941. Moreover, each of the three structural breaks is positive, which reflects the sustained increase in the dissent rate. We report the 95 per cent confidence interval for each break date. The 1941 break date has a tightly estimated confidence interval of 1937 to 1942, but the other two break dates are not as tightly estimated being 1811-1838 (for 1836) and 1857 to 1872 (for 1867).

-----  
 Insert Table 2  
 -----

#### *Discussion of the Location of the Break Dates*

Caporale and Grier (2000, 2002) argue that the confidence intervals can be used to examine how well political dummy variables correlate with the break dates estimated by the Bai and Perron (1998) method. As Caporale and Grier (2002, p. 14) describe it:

If the number of regimes implied by the political model is equal to the number implied by the time series model, and each political break point fall inside the confidence interval of a Bai and Perron (1998) break, that would be very strong evidence in favour of the primacy of the political effects. They are responsible for all the major break points in the sample. If there is a partial match between

political breaks and Bai and Perron (1998) breaks the importance of politics can still be argued, but the matter becomes open to interpretations.

The Bai and Perron (1998) break dates correspond to the switch from Marshall to Taney (1836) and the switch from Hughes to Stone (1941) and occur in the middle of Chase's term as chief justice (1867). What is the explanation for these break dates? Beginning with the first break date in 1836, the period from 1827 to 1836 is usually regarded as one of transition. Haines (1944, p. 580) describes these as "uncertain and hesitant years [which] form a marked contrast with that of the decade from 1815 to 1825 when, with something in the nature of a pontifical air, the Court was applying and expounding the principles of Hamiltonian nationalism". Seddig (1975, p. 822) echoes these words, suggesting: "By all accounts 1827 marks the unmistakable beginning of a period of change, a transition from the conservative nationalism of the golden age to the salient policies of the Taney Court with its emphasis on dual federalism and state police powers". In the late 1820s and early 1830s Marshall lost control of the Court in part because of judicial turnover and in part because the justices began to live on their own rather than collectively making internal norms of unanimity more and more difficult to maintain. As Seddig (1975, p. 825) puts it: "Group normativeness broke down as consensus about internal norms disappeared". This breakdown in norms and lack of leadership was associated with a sharp increase in the dissent rate after 1829.

Marshall's declining influence over the Court was accelerated following the death of Marshall's close ally, Bushrod Washington (1798-1829), when Jackson appointed

McLean (1829-61), Baldwin (1830-44) and Wayne (1835-1867). The introduction of new judges with different values or sitting at different points on the ideological spectrum can alter the balance of power and leadership structure on the Court increasing the level of dissent as one or more judges find themselves in the minority. The appointment of the new judges, together with Johnson's renewed willingness to express dissent at the urging of Jefferson altered the small group dynamic, leaving the "old Federalist guard" of Marshall and Story increasingly on the defensive (Seddig, 1975, Kolsky 1995). This made effective leadership more difficult (Murphy, 1966). Baldwin has been described "as an erratic individual whose behavior contributed greatly to increased internal disruption" (Seddig 1975, p. 824), while it has been said that McLean was "almost immune to Marshall's logic and persuasive powers" (Loth, 1949, p. 347).

The judges increased willingness to express dissent towards the end of Marshall's term signaled the beginning of a new period of flux under Taney. This reflected the issues before the Court and the blend of northerners and southerners on the Court during Taney's regime which made it difficult for Taney to control the Court. Under Marshall the Constitution was interpreted so as to sanction the centralisation of power in the federal government. The Justices appointed by Jackson and Van Buren had a different outlook than their predecessors. While it is wrong to suppose that Taney accomplished a wholesale reversal of Marshall's doctrines (Schwartz 1993, p. 101) it remains that Taney opposed many of the principles for which Marshall stood. Moreover, the more significant aspects of Taney's term as chief justices are those where he attempted to redirect the trends for which Marshall was responsible (Swisher 1935, p. 585). A prominent instance

of this is reinterpreting the Constitution to reflect the Jacksonian belief that property rights should be the subject of control by the community (Schwartz 1993, p. 102).

This shift in thinking isolated Story on the early Taney Court. Following the death of Marshall, Story, who remained on the Court until 1845, became a rigorous dissenter in Taney's early years (Schwartz 1993, Swisher, 1935). Writing in 1837 in relation to the different approaches of the Marshall and Taney Courts, Story described himself as "the last of the old race of judges. I stand their solitary representative, with a pained heart and a subdued confidence" (quoted in Swisher 1935, p. 379). Consistent with our findings that 1836 is the first regime shift, Ganoë (1942, p. 286) argues: "The real era of dissent began with the appointment of Taney as chief justice. ... [and] [t]he era of dissent ... continued throughout Taney's long career. The celebrated *Dred Scott Case*<sup>3</sup> was just one episode in a long conflict over fundamental philosophies of law and government".

The second break date occurs in 1867 in the middle of Chase's term as chief justice with a 5 per cent confidence interval from 1857 to 1872. Towards the end of Taney's term as chief justice the prestige of the Court was tarnished by the *Dred Scott* case and conflict between Lincoln and Taney. When Chase became chief justice the prestige of the Court was at one of its lowest ebbs. From the *Dred Scott* case through the Civil War, the Court suffered from falling public esteem (see Hughes 1965, Stephenson 1973). Chase had a tough challenge to build consensus because the issues the Court faced in the Reconstruction period were difficult and because he inherited a mixture of Democrats, Republicans and Whigs. Faced with this situation, Friedman (1997, p. 566) suggests that

Chase was ineffectual at building consensus, exercising “little control over his brothers on the Bench – particularly such strong figures as Bradley, Miller and Field”.

Chase’s ambition was legendary (Benedict, 1997). One can be critical of Chase on leadership grounds through pointing to his persistent posturing for a presidential nomination from different parties and the inconstancy of his personality. Chase’s influence over his colleagues was hindered by his failing health, following a major stroke suffered in 1870 (Hughes 1965, Stephenson 1973). Hughes (1965, p. 602) states: “The signs of his failing health must have been obvious to the Court and could scarcely have failed to excite the ambitions for his place that Miller, Bradley, Strong and Swayne nursed”. It seems that Justices Miller, Swayne (1862-81) and Strong (1870-80) each harbored ambitions to succeed Chase as chief justice and openly lobbied for the position following Chase’s stroke, fuelling the personal animosities on the Court.

The third break occurs in 1941 with a 5 per cent confidence interval from 1937 to 1942. Of the three break dates that we identify this is the most expected and the one that has been most studied. Some have argued that the decline in consensus in the 1930s and 1940s had its antecedents in the Judges Bill in the mid-1920s (Halpern & Vines, 1977) and with Taft’s frustration with Brandeis, Holmes and Stone in the late 1920s (Caldeira and Zorn, 1998). Others focus on the constitutional struggle between the Hughes Court and Roosevelt in the first New Deal period or the lack of leadership or leadership style of Hughes and Stone (Haynie 1992, Walker *et al* 1988). After a comprehensive exploration of the reasons for the increase in dissenting opinions spanning the 1920s to the 1940s

Walker *et al* (1988) conclude that Stone's leadership was the principal cause. Haynie's (1992) empirical results support this view. Our finding of a regime shift at the beginning of Stone's period as chief justice with a very tight confidence interval also suggests that Stone's term, rather than other factors such as the Judges Bill, was instrumental.

### **5. Does Leadership Have Any Additional Power to Explain Dissent Rates?**

To examine the effect of different leadership styles on variations in dissenting opinions we adapt an approach for utilizing the Bai and Perron (1998) break dates suggested by Caporale and Grier (2000, 2002). Caporale and Grier (2002) propose that the importance of political dummy variables can be gauged through testing whether the fitted values from a political intercept shift model have any incremental power in the Bai and Perron (1998) intercept shifting model. Caporale and Grier (2002) suggest that if the political dummy variables have incremental explanatory power, the political shifts represented by those dummy variables can be regarded as important or statistically significant events.

To capture the effects of different leadership styles our political dummy variables are dummy variables for each chief justice's tenure. As Haynie (1992, p. 1160) points out: "If the relationship between leadership and consensus is important, variations in consensus would be expected with different leadership styles. In a time series analysis this would be reflected in a statistically significant coefficient for a chief justice's tenure". Therefore, the Caporale and Grier (2002) approach involves testing whether, given the null hypothesis of break points at the dates uncovered by the Bai and Perron (1998) procedure, there is any additional evidence of the effect of leadership on dissenting opinions. To put it differently, this involves assuming that the Bai and Perron

(1998) break dates are not due to changes in the leadership personnel on the Court and testing to see if changes in the chief justice are statistically significant taking the Bai and Perron (1998) break dates as given (see Caporale and Grier, 2002, pp. 17-18).

-----  
Insert Table 3  
-----

The first two columns of Table 3 report ordinary least squares regressions of dissenting opinions on the Bai and Perron (1998) break points and chief justice change break dates. In the first column each of the Bai and Perron (1998) break dates are statistically significant at the 5 per cent level or better and in the second column most, but not all, of the chief justice change break dates are statistically significant at the 5 per cent level or better. In the final column the fitted values of the chief justice change regression are used as an additional regressor in the Bai and Perron (1998) break date regression. The chief justice fitted value is positive and statistically significant at the 1 per cent level, indicating that leadership on the Court is a significant determinant of dissenting opinions.

## **6. Conclusion**

The first objective of this paper was to employ the Bai and Perron (1998) multiple regime shift procedure to find the exact number and dates of break points in dissenting opinions. Our findings suggest that there have been three regime shifts in dissenting opinions on the Supreme Court rather than one as has been believed in the past. The implication is that the dissent rate has been essentially constant over long periods of time, subject to infrequent mean shifts. It is also to be noted that each of the regime shifts is positive reflecting the sustained increase in the dissent rate over time.

The paper's second objective was to implement the Caporale and Grier (2000, 2002) approach for using the break dates identified by the Bai and Perron (1998) procedure to reexamine the effect of leadership on variations in the dissent rate. Most of the dummy variables for leadership change on the Court are significant against the null of a fixed intercept. Two of these dummy variables for Taney (1836) and Stone (1941) match up exactly with the optimal intercept shifts suggested by the Bai and Perron (1998) procedure, while the dummy variable for Chase lies within the 5 per cent confidence interval surrounding the 1867 break. The leadership change dummies are statistically significant when tested against a null hypothesis that includes the Bai and Perron (1998) break dates. This provides strong evidence that the beginning of the Taney, Chase and Stone terms were responsible for the regime shifts uncovered by the Bai and Perron (1998) method, although with the Taney and Chase breaks, the confidence intervals are wide. These results provide a more convincing argument in favour of the relevance of leadership in explaining dissenting opinions on the Supreme Court than previous research which has tested leadership dummies against an otherwise fixed intercept.

## References

- Andrews, D.W.K. 1991, 'Heteroskedasticity and Autocorrelation Consistent Covariance Matrix Estimation', *Econometrica*, 59, 817-858.
- Bai, J. and P., Perron 1998. 'Estimating and Testing Linear Models with Multiple Structural Changes', *Econometrica* 66, 47-78.
- Bai, J. and P. Perron 2003. 'Computation and Analysis of Multiple Structural Change Models', *Journal of Applied Econometrics* 18, 1-22.
- Banerjee, A., R. Lumsdaine & J. Stock, 1992, 'Recursive and sequential tests of the unit root and trend-break hypotheses: theory and international evidence', *Journal of Business and Economic Statistics*, 10, 271-287.
- Benedict, M.L. 1997, 'Review Essay: Salmon P. Chase and Constitutional Politics', *Law and Social Inquiry*, 22, 459-500.
- Beveridge, A.J. 1919. *The Life of John Marshall* (Boston: Houghton Mifflin)
- Caldeira, G. and C. Zorn 1998, 'On Time and Consensual Norms in the Supreme Court', *American Journal of Political Science*, 42, 874-902.

Caporale, T. and K. Grier 2000. 'Political Regime Change and the Real Interest Rate', *Journal of Money, Credit and Banking*, 32, 320-334.

Caporale, T. and K. Grier 2002. 'How Smart is my Dummy? Time Series Tests for the Influence of Politics', Unpublished Manuscript, Ohio University.

Christiano, L. 1992, 'Searching for a break in GNP', *Journal of Business and Economic Statistics*, 10, 237-250.

Danelski, D. 1960. 'The Influence of the Chief Justice in the Decisional Process of the Supreme Court'. Presented at the Annual Meeting of the American Political Science Association, New York.

Danelski, D. 1986. 'Causes and Consequences of Conflict and its Resolution in the Supreme Court'. In S. Goldman and C. Lamb (eds) *Judicial Conflict and Consensus: Behavioral Analyses of American Appellate Courts* (Lexington: University of Kentucky Press).

Epstein, L., J. Segal, H. Spaeth and T. Walker. 1994. *The Supreme Court Compendium: Data, Decisions and Developments* (Washington DC: Congressional Quarterly Press).

Frank, J. 1968. *The Marble Palace* (New York: Knopf).

- Friedman, L. 1997. 'Salmon P. Chase' in L. Friedman and F. I. Israel (eds) *The Justices of the United States Supreme Court: Their Lives and Major Opinions, Volume 2* (New York: Chelsea House)
- Ganoë, J.T. 1942. 'The Passing of the Old Dissent', *Oregon Law Review*, 21, 285-297.
- Gregory, A.W. and B. Hansen 1996. 'Residual-Based Tests for Cointegration in Models with Regime Shifts', *Journal of Econometrics* 70, 99-126.
- Haines, C. 1944. *The Role of the Supreme Court in American Government and Politics, 1739-1835* (New York: Russell & Russell).
- Hall, A.D. 1994, 'Testing for a unit root in time series with pretest data based model selection', *Journal of Business and Economic Statistics*, 12, 461-470.
- Halpern, S.C. and K.N. Vines 1977. "Institutional Disunity, the Judges' Bill and the Role of the Supreme Court', *Western Political Quarterly*, 30, 471-483.
- Haynie, S. 1992. 'Leadership and Consensus on the U.S. Supreme Court', *Journal of Politics* 54, 1168-1169.
- Hughes, D.F. 1965. 'Salmon P. Chase: Chief Justice', *Vanderbilt Law Review*, 18, 569-614.

Kolsky, M. 1995. 'Justice William Johnson and the History of the Supreme Court Dissent', *Georgetown Law Journal* 83, 2069-2096

Lively, D. 1992. *Foreshadows of the Law: Supreme Court Dissents and Constitutional Development*

Loth, D. 1949. *Chief Justice: John Marshall and the Growth of the Republic* (New York: Greenwood Press).

Murphy, W. 1964. *Elements of Judicial Strategy* (Chicago: University of Chicago Press).

Murphy, W. 1966. 'Courts as Small Groups', *Harvard Law Review*, 79, 1565.

Perron, P. 1989, 'The great crash, the oil price shock and the unit root hypothesis', *Econometrica*, 57, 1361-1401.

Pritchett, C.H. 1954. *Civil Liberties and the Vinson Court* (Chicago: University of Chicago Press).

Schwartz, B. 1993. *A History of the Supreme Court* (New York: Oxford University Press).

Seddig, R.G. 1975 'John Marshall and the Origins of Supreme Court Leadership',  
*University of Pittsburgh Law Review*, 36, 785-833.

Stephenson, D.G. 1973. 'The Chief Justice as Leader: The Case of Morrison Remick  
Waite', *William and Mary Law Review* 14, 899-927.

Swisher C.B. 1935. *Roger B. Taney* (New York: MacMillan)

Swisher, C.B. 1965. *The Supreme Court in its Modern Role* (New York: New York  
University Press).

Walker, T.G., L.J. Epstein and W. Dixon 1988. 'On the Mysterious Demise of  
Consensual Norms in the United States Supreme Court', *Journal of Politics* 50, 361-389.

Zivot, E. & D. Andrews, 1992, 'Further Evidence of the Great crash, the Oil-price Shock  
and the Unit-root Hypothesis', *Journal of Business and Economic Statistics* 10, 251-270.

Table 1: Zivot and Andrews test for unit roots with one structural break

	Dissenting Opinions		Concurring Opinions	
	Model A	Model C	Model A	Model C
<i>TB</i>	1939	1940	1954	1919
$\alpha$	-0.4541* (-6.3315)	-0.6973* (-5.9621)	-0.2129 (-4.3714)	-0.4728 (-4.3666)
$\theta$	23.2434* (9.1632)	27.4981 (0.2902)	8.6040* (4.2283)	-4.2483 (0.4509)
$\gamma$	-	6.0697* (2.4211)	-	-2.1185* (4.0308)
<i>k</i>	3	5	7	7
Ljung-Box	9.1632	13.0566	8.2699	8.0793
Q-Statistic	(0.8688)	(0.5979)	(0.9125)	(0.9206)

Notes: The figure in parenthesis are t-statistics, except those in parenthesis under the Ljung-Box Q statistics, which are probabilities. The critical values for the structural break dummy variables follow the asymptotic standard normal distribution. Critical values for  $t_{\alpha}$  are Model A: -5.34 (1%), -4.8 (5%), -4.58(10%); Model C -5.57 (1%), -5.08 (5%), -4.52 (10%) from Zivot and Andrews (1992). \* indicates statistical significance at the 1 per cent level.

Table 2: Empirical results from the Bai and Perron (1998) test for multiple regime shifts in dissenting opinions on the United States Supreme Court

$z_t \{1\}$	$q = 1$	Specifications		
		$p = 0$	$h = 15$	$M = 5$
$SupF_t(1)$		259.7776* (12.2900)		
$SupF_t(2)$		176.0405* (9.3600)		
$SupF_t(3)$		152.2848* (7.6000)		
$SupF_t(4)$		118.0168* (6.1900)		
$SupF_t(5)$		95.9146* (4.9100)		
$SupF_t(2/1)$		78.7684* (12.2900)		
$SupF_t(3/2)$		9.7817* (13.8900)		
$SupF_t(4/3)$		0.7489 (14.8000)		
$SupF_t(5/4)$		-		
$UDmax$		259.7776* (12.3700)		
$WDmax$		259.7776* (13.8300)		
Number of Breaks Selected with the Sequential Method		3		
Estimates with Breaks				
$\hat{T}_1$		1941 (1937-1942)		
$\hat{T}_2$		1867 (1857-1872)		
$\hat{T}_3$		1836 (1811-1838)		
$\hat{\psi}_1$		1.9189 (3.5734)		
$\hat{\psi}_2$		4.2500 (3.7309)		
$\hat{\psi}_3$		16.6301 (15.1261)		

Notes: The  $SupF_t(L)$  test and the reported standard errors and confidence intervals allow for the possibility of serial correlation in the disturbance. Figures in parentheses are the t statistics (robust to serial correlation) for  $\psi_j$  ( $j = 1, \dots, 2$ ) and the 95% confidence intervals for  $\hat{T}_i$  ( $i = 1, 2$ ).

\* indicates statistical significance at the 1 per cent level.

Table 3: Alternative Mean Shifting Variables of Dissenting Opinions

	CHIEF JUSTICE (CJ) MODEL	STRUCTURAL BREAK MODEL	STRUCTURAL BREAK + CJ Fit
Constant	9.09* (2.80)	1.94* (4.21)	-0.75 (0.72)
TANEY	-2.50 (0.71)	-	-
CHASE	4.36 (0.98)	-	-
WAITE	5.71 (1.54)	-	-
FULLER	7.04** (2.08)	-	-
WHITE	3.43 (0.97)	-	-
TAFT	6.74** (2.12)	-	-
HUGHES	8.31** (2.01)	-	-
STONE	48.38* (8.76)	-	-
VINSON	47.82* (6.09)	-	-
WARREN	50.31* (5.83)	-	-
BURGER	75.35* (11.62)	-	-
REIHNQUIST	59.85* (9.79)	-	-
BP REGIME 2	-	4.89* (3.11)	5.43* (3.35)
BP REGIME 3	-	9.66* (5.48)	7.13* (3.66)
BP REGIME 4	-	60.16* (15.99)	42.76* (7.85)
CJ FIT	-	-	0.30* (2.87)
Adjusted R <sup>2</sup>	0.85	0.91	0.92

Notes: All regressions are estimated using the Newey-West HAC corrected standard errors with lag truncation =4. The figures in parenthesis are t-statistics. (\*\*\*) denotes statistical significance at the 1 per cent and 5 per cent levels respectively.

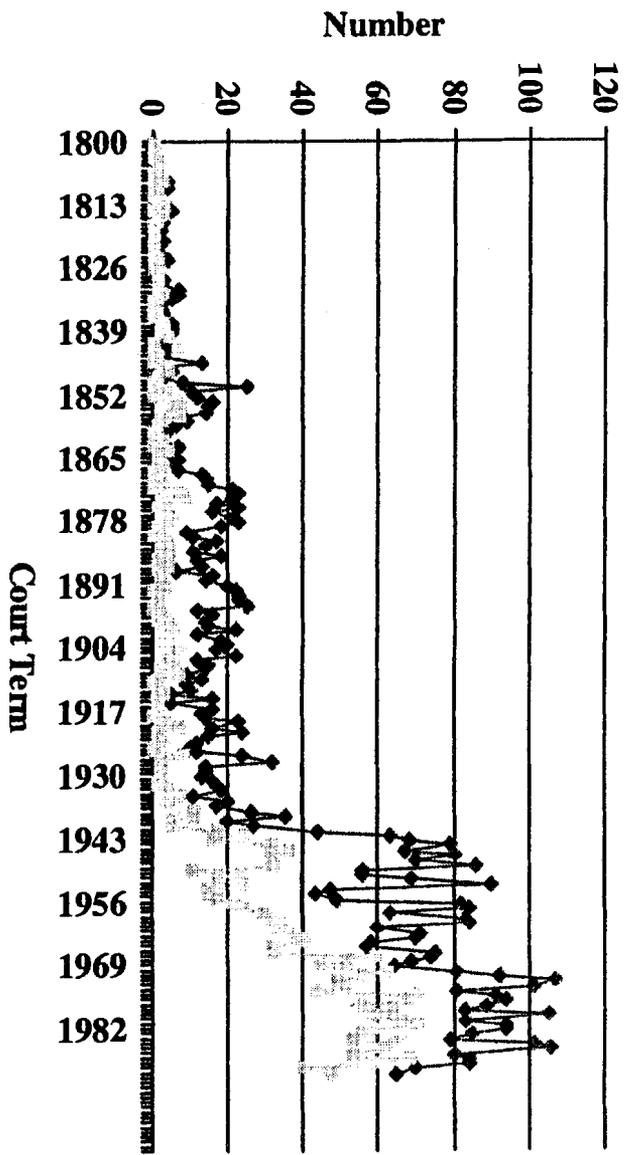


Figure 1: Decisions with Concurrences and Dissents 1800-1991

◆— Dissents  
 .....□ Concurrences

## ENDNOTES

---

<sup>1</sup> Alternatives to the sequential procedure for determining the optimal number of break dates are the Bayesian Information Criteria and Schwartz Criteria (see Bai and Perron 2003 for details). However, using Monte Carlo experiments, Bai and Perron show that these tests do not perform as well as the sequential procedure so we do not use these here.

<sup>2</sup> The asymptotic theory for this test is strictly only valid for the case of non-trending data. With trending data there are different asymptotic distributions. However, Bai and Perron (2003, p. 14) state: “the asymptotic distributions in the two cases are fairly similar, especially in the tail where critical values are obtained. Hence, one can safely use the same critical values. Using simulations we found the size distortions to be minor”.

<sup>3</sup> Dred Scott, Plaintiff in Error v John F.A. Sanford, 19 Howard 393 (1857)

## **Titles in the Department of Economics Discussion Papers**

01-02

World Income Distribution and Tax Reform: Do Low-Income Countries Need Direct Tax System?

*J Ram Pillarisetti*

02-02

Labour Market Intervention, Revenue Sharing and Competitive Balance in the Victorian Football League/Australian Football League (VFL/AFL), 1897-1998

*D Ross Booth*

03-02

Is Chinese Provincial Real GDP Per Capita Nonstationary? Evidence from Panel Data and Multiple Trend Break Unit Root Tests

*Russell Smyth*

04-02

Age at Marriage and Total Fertility in Nepal

*Pushkar Maitra*

05-02

Productivity and Technical Change in Malaysian Banking 1989-1998

*Ergun Dogan and Dietrich K Fausten*

06-02

Why do Governments Encourage Improvements in Infrastructure? Indirect Network Externality of Transaction Efficiency

*Yew-Kwang Ng and Siang Ng*

07-02

Intertemporal Impartial Welfare Maximization: Replacing Discounting by Probability Weighting

*Yew-Kwang Ng*

08-02

A General Equilibrium Model with Impersonal Networking Decisions and Bundling Sales

*Ke Li and Xiaokai Yang*

09-02

Walrasian Sequential Equilibrium, Bounded Rationality, and Social Experiments

*Xiaokai Yang*

10-02

Institutionalized Corruption and Privilege in China's Socialist Market Economy: A General Equilibrium Analysis

*Ke Li, Russell Smyth, and Yao Shuntian*

11-02

Time is More Precious for the Young, Life is More Valuable for the Old

*Guang-Zhen and Yew-Kwang Ng*

12-02

Ethical Issues in Deceptive Field Experiments of Discrimination in the Market Place  
*Peter A Riach and Judith Rich*

13-02

“Errors & Omissions” in the Reporting of Australia’s Cross-Border Transactions  
*Dietrich K Fausten and Brett Pickett*

14-02

Case Complexity and Citation to Judicial authority – Some Empirical Evidence from the New Zealand Court of Appeal  
*Russell Smyth*

15-02

The Life Cycle Research Output of Professors in Australian Economics Departments: An Empirical Analysis Based on Survey Questionnaires  
*Mita Bhattacharya and Russell Smyth*

16-02

Microeconomic Reform in Australia: How Well is it Working?  
*Peter Forsyth*

17-02

Low Cost Carriers in Australia: Experiences and Impacts  
*Peter Forsyth*

18-02

Reforming the Funding of University Research  
*Peter Forsyth*

19-02

Airport Price Regulation: Rationales, Issues and Directions for Reform  
*Peter Forsyth*

20-02

Uncertainty, Knowledge, Transaction Costs and the Division of Labor  
*Guang-Zhen Sun*

21-02

Third-degree Price Discrimination, Heterogeneous Markets and Exclusion  
*Yong He and Guang-Zhen Sun*

22-02

A Hedonic Analysis of Crude Oil: Have Environmental Regulations Changed Refiners’ Valuation of Sulfur Content?  
*Zhongmin Wang*

23-02

Informational Barriers to Pollution Reduction in Small Businesses  
*Ian Wills*

24-02

Industrial Performance and Competition in Different Business Cycles: the Case of Japanese Manufacturing

*Mita Bhattacharya and Ryoji Takehiro*

25-02

General Equilibria in Large Economies with Endogenous Structure of Division of Labor

*Guang-Zhen Sun & Xiaokai Yang*

26-02

Testing the Diamond Effect – A Survey on Private Car Ownership in China

*Xin Deng*

01-03

The J-Curve: Evidence from Fiji

*Paresh Narayan and Seema Narayan*

02-03

Savings Behaviour in Fiji: An Empirical Assessment Using the ARDL Approach to Cointegration

*Paresh Narayan and Seema Narayan*

03-03

League-Revenue Sharing and Competitive Balance

*Ross Booth*

04-03

Econometric Analysis of the Determinants of Fertility in China, 1952-2000

*Paresh Kumar Narayan and Xiujian Peng*

05-03

Profitability of Australian Banks: 1985-2001

*Mustabshira Rushdi and Judith Tennant*

06-03

Diversity of Specialization Patterns, Schur Convexity and Transference: A Note on the Axiomatic Measurement of the Division of Labor

*Chulin Li and Guang-Zhen Sun*

07-03

Identification of Equilibrium Structures of Endogenous Specialisation: A Unified Approach Exemplified

*Guang-Zhen Sun*

08-03

Electricity Consumption, Employment and Real Income in Australia

*Paresh Narayan and Russell Smyth*

09-03

Import Demand Elasticities for Mauritius and South Africa: Evidence from two recent cointegration techniques

*Seema Narayan and Paresh Kumar Narayan*

10-03

Dead Man Walking: An Empirical Reassessment of the Deterrent Effect of Capital Punishment Using the Bounds Testing Approach to Cointegration

*Paresh Narayan and Russell Smyth*

11-03

Knowledge, Specialization, Consumption Variety and Trade Dependence

*Guang-Zhen Sun*

12-03

The Determinants of Immigration From Fiji to New Zealand An Empirical Re-assessment Using the Bounds Testing Approach

*Paresh Narayan and Russell Smyth*

13-03

Sugar Industry Reform in Fiji, Production Decline and its Economic Consequences

*Paresh Narayan and Biman Chand Prasad*

14-03

The Contribution of Household and Small Manufacturing Establishments to Indonesian Economic Development 1986-2000

*Robert Rice*

15-03

The Smith Dilemma: Towards A Resolution

*Yew-Kwang Ng and Dingsheng Zhang*

16-03

Cobweb model with the trade off between sensitive incentive and stability

*Dingsheng Zhang*

17-03

Average-cost pricing, increasing returns, and optimal output in a model with home and market production

*Yew-Kwang Ng and Dingsheng Zhang*

18-03

Dynamic Analysis of the Evolution of Conventions in a Public Goods Experiment with Intergenerational Advice

*Ananish Chaudhuri, Pushkar Maitra and Sara Graziano*

19-03

The Increasing Returns and Economic Efficiency

*Yew-Kwang Ng*

20-03

Endogenous Power, Household Expenditure Patterns and Gender Bias: Evidence from India

*Geoffrey Lancaster, Pushkar Maitra and Ranjan Ray*

21-03

Parental Education and Child Health: Evidence from China

*Pushkar Maitra, Xiujian Peng and Yaer Zhuang*

22-03

Beyond the Diversification Cone: A Neo-Heckscher-Ohlin Model of Trade with Endogenous Specialization

*Christis Tombazos, Xiaokai Yang, and Dingsheng Zhang*

23-03

Curvature enforcement and the tenuous flexibility of the transcendental logarithmic variable profit function

*Christis G Tombazos*

01-04

Age at First Birth, Health Inputs and Child Mortality: Recent Evidence from Bangladesh

*Pushkar Maitra and Sarmistha Pal*

02-04

Reformulating Critical Values for the Bounds F-statistics Approach to Cointegration: An Application to the Tourism Demand Model for Fiji

*Paresh Kumar Narayan*

03-04

A Theory of Age-Dependent Value of Life and Time

*Guang-Zhen Sun and Yew-Kwang Ng*

04-04

Multiple Regime Shifts and the Effect of Changes in Leadership on the United States Supreme Court Dissent Rate

*Paresh Kumar Narayan and Russell Smyth*