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-.#!P'7'!23!3'7&%':!P/0'07#%0!'3P!7.#/%!.&?'3!/?>'B7!'%#!P2B&?#37#P!/3!7.#!ADS =5-!P'7'$'0#!H/7.!P'7'!B2::#B7#P!$(!7.#![#37%#!@2%!^#0#'%B.!23!7.#!A>/P#?/2:26(!2@! =/0'07#%0!,[^A=80[T]!-.#!ADS=5-!P'7'$'0#!.'0!H2%:PH/P#!B21#%'6#I!'3P!B237'/30!P'7'! 23!7.#!2BB&%%#3B#!'3P!#@@#B70!2@!3'7&%':!P/0'07#%0!@%2?!RJ**!72!7.#!>%#0#370!-.#!P'7'$'0#! /0!B2?>/:#P!@%2?!1'%/2&0!02&%B#0I!/3B:&P/36!F;!'6#3B/#0I!323S621#%3?#37':! 2%6'3/Z'7/230I!/30&%'3B#!B2?>'3/#0I!%#0#'%B.!/307/7&7/230!'3P!>%#00!'6#3B/#00!-.#!ADS =5-!P'7'!/0!>&$:/B:(!'1'/:'$:#!23![^A=0!H#$!0/7#!'74!HHH0B%#P0$#0!

[^A=!P#@/3#0!'!P/0'07#%!'0!'!3'7&%':!0/7&'7/23!2%!#1#37!H./B.!21#%H.#:?0!:2B':! B'>'B/7(I!3#B#00/7'7/36!'!%#e&#07!@2%!#U7#%3':!'00/07'3B#0!"2%!'!P/0'07#%!72!$#!#37#%#P!/372! 7.#!ADS=5-!P'7'$'0#!'7!:#'07!23#!2@!7.#!@2::2H/36!B%/7#%/'!?&07!$#!@&:@/::#P4!,R8!R*!2%! ?2%#!>#2>:#!%#>2%7#P!W/::#P`!,)8!R**!>#2>:#!%#>2%7#P!'@@#B7#P`!,V8!P#B:'%'7/23!2@!'!07'7#!2@!

[C] !_#7I!^'PP'7Z!,)**+8!B23B:&P#0!7.'7!23:(!'!0?'::!@%'B7/23!2@!7.#!2&7>&7!12:'7/:/7(!/3!'!7(>/B':!:2H!/3B2?#! B2&37%(!/0!#U>:'/3#P!$(!#U7#%3':!'P1%0#!0.2BW0!,H./B.!/3B:&P#!P/0'07#%080!

[T] !A07'$:/0.#P!/3!RJ+V!'0!'!323S>%2@/7!/307/7&7/23I![^A=!/0!$'0#P!'7!7.#!['7.2:/B!F3/1#%0/7(!2@!Y2&1'/3!/3!]#:6/&?0!

? #%6#3B(`!2%!,C8!B'::!@2%!/37#%3'7/23':!'00/07'3B#0[K]!-.#0#!P/0'07#%0!B'3!$#!.(P%2S ? #7#2%2:26/B':!P/0'07#%0 /3B:&P/36!@:22P0I!H'1#!0&%6#0I!072% ? 0I!P%2&6.70I!:'3P0:/P#0!'3P! '1':'3B.#0`!6#2>.(0/B':!P/0'07#%0 #'%7.e&'W#0I!70&3' ? /0!'3P!12:B'3/B!#%&>7/230`!'3P! $/2:26/B':!P/0'07#%0 B21#%/36!#>/P# ? /B0!'3P!/30#B7!/3@#07'7/230!,7.#0#!'%#! ? &B.! ? 2%#! /3@%#e&#3780!

-.#!' ? 2&37!2@!P' ? '6#!%#>2%7#P!/3!7.#!P'7'$'0#!B230/070!23:(!2@!P/%#B7!P' ? '6#0! ,#060!P' ? '6#!72!/3@%'07%&B7&%#I!B%2>0I!.2&0/368!'3P!P2!327!/3B:&P#!7.#!/3P/%#B7!2%! 0#B23P'%(!P' ? '6#0!h!'3!'77# ? >7!72!#07/ ? '7#!7.#0#!0#B23P'%(!#@@#B70!/0I!/3!>'%7I!2&%!'/ ? ! .#%#0! E #!&7/:/Z#!7.%##!%#>2%7#P! ? #'0&%#0!2@!7.#! ? '63/7&P#!2@!7.#!P/0'07#%4!,R8!-.#!3& ? $#%! 2@!>#2>:#!W/::#P!,= \ 9Y8`!,)8!7.#!3& ? $#%!2@!>#2>:#!'@@#B7#P!,= 5 " "8`!'3P!,V8!7.#!' ? 2&37! 2@!P/%#B7!P' ? '6#!,= = 5 D80!"2%!7.#!(#'%0!RJ+*S)**VI!H#!.'1#!P'7'!23!7.#!3& ? $#%!2@! >#2>:#!W/::#P!@2%!T*+!P/0'07#%!#1#370I!7.#!3& ? $#%!2@!>#2>:#!'@@#B7#P!@2%!CKK!#1#370I!'3P! 7.#!' ? 2&37!2@!P' ? '6#!/3!C)L!#1#3700!

M/3B#!H#!>%#0& ? #!7.'7!7.#!/ ? >'B7!2@!'!0>#B/@/B!3'7&%':!P/0'07#%!23!7.#! ? 'B%2S #B232 ? (!P#>#3P0!23!7.#! ? '63/7&P#!2@!7.#!P/0'07#%!%#:'7/1#!72!7.#!0/Z#!2@!7.#!#B232 ? (I!H#! 07'3P'%P/Z#!2&%!P/0'07#%! ? #'0&%#00! E #!P/1/P#!7.#! ? #'0&%#0!@2%!7.#!3& ? $#%!2@!>#2>:#! W/::#P!2%!'@@#B7#P!$(!7.#!>2>&:'7/23!0/Z#!/3!7.#!(#'%!>%/2%!72!7.#!P/0'07#%!(#'%`!'3P!P/1/P#! 7.#!P/%#B7!B207! ? #'0&%#!2@!7.#!P/0'07#%!$(!7.#!:'07!(#'%k0!m=Q!,0/3B#!7.#!B&%%#37!(#'%k0! >2>&:'7/23!'3P!m=Q!.'1#!$##3!'@@#B7#P!$(!7.#!P/0'07#%!/70#:@80!"&%7.#% ? 2%#I!0/3B#!/7!/0! :/W#:(!7.'7!'!P/0'07#%!7.'7!2BB&%%#P!/3!X'3&'%(!2@!RJJT!H/::!.'1#!'!$/66#%!/ ? >'B7!23!7.#! ? 'B%2S#B232 ? (!/3!7.#!0' ? #!(#'%!7.'3!'!P/0'07#%!7.'7!2BB&%%#P!/3!=#B# ? $#%I!H#!H#/6.!

[K]!-.#!3& ? $#%!2@!>#2>:#!W/::#P!/3B:&P#0!f>#%0230!B23@/% ? #P!'0!P#'P!'3P!>#%0230! ? /00/36!'3P!>%#0& ? #P! P#'Pj`!>#2>:#!'@@#B7#P!'%#!7.20#!f%#e&/%/36!/ ? ? #P/'7#!'00/07'3B#!P&%/36!'!>#%/2P!2@!# ? #%6#3B(I!/0#0! %#e&/%/36!$'0/B!0&%1/1':!3##P0!0&B.!'0!@22PI!H'7#%I!0.#:7#%I!0'3/7'7/23!'3P!/ ? ? #P/'7#! ? #P/B':!'00/07'3B#0j!

2&%! ? # ' 0&%#!$ ' 0#P!23!7 . #! ? 237 . !/3!H . /B . !7 . #!P/0 ' 07#%!2BB&%%#P! ,2%!$#6 ' 380[+]!M>#B/@/B ' : : (I! 7 . #!P/0 ' 07#%! ? # ' 0&%#0! , DMS 8!H#!# ? >:2 (!/3!2&%!0>#B/@/B ' 7/230! ' %#!B ' :B&: ' 7#P!$ ' 0#P!23! 7 . #!B207! ? # ' 0&%#! , DM 8! ' 3P!7 . #!230#7! ? 237 . ! , OM 84!!

$$DMS = DM\,,R) - OM\,8\,lR)$$!0! ! ! ! ,R8!

"%2 ? !7 . #!2&70#7I!/7!0 . 2&:P!$#!B:# ' %!7 . ' 7!P2&$70! . ' 1#!$##3!#U>%#00#P! ' $2&7!7 . #! ' BB&% ' B (!2@!P ' 7 ' !23!3 ' 7&% ' :!P/0 ' 07#%0`!#0>#B/ ' : : (!$#B ' &0#!2@7#3!7 . #! ? ' c2%!02&%B#!2@!7 . #0#! P ' 7 ' ! ,3 ' 7/23 ' :!621#%3 ? #3708! . ' 0! ' 3!/37#%#07!/3!/3@: ' 7/36!7 . #! ? # ' 0&%#P!/ ? > ' B70! - . /0! >%2$:# ? ! ? /6 . 7!$#!#0>#B/ ' : : (! ' B&7#!/3!P#1#:2>/36!B2&37%/#0!H . #%#!7 . #!%#>2%7#P! ? ' 63/7&P#! ? ' (! . ' 1#! ' 3!/ ? > ' B7!23!7 . #! ' ? 2&37!2@!0&>>2%7!>:#P6#P!$ (!7 . #!P232%!B2&37%/#0! ' 3P! 07 ' 7/07/B ' :!B2: :#B7/23!#@@2%70! ' %#!:#00!7% ' 30> ' %#370! _#7I!0/3B#!$/ ' 0#0!0 . 2&:P!$ (!0 (07# ? /BI! &0/36!P ' 7 ' !@%2 ? !23#!02&%B#!0 . 2&:P!>%21/P#!/3@2% ? ' 7/23! ' $2&7!7 . #!%#: ' 7/1#! ? ' 63/7&P#!2@! P/0 ' 07#%0! ' 3P!0 . 2&:P!7 . &0!$#! ' >>%2>%/ ' 7#!@2%!7 . #! . (>27 . #0#0!H#!#U ' ? /3#! . #%#0[L]! 5 ! ? 2%#! 6#3#% ' :!>%2$:# ? !H/7 . !%#6 ' %P0!72!7 . #!%#:/ ' $/:/7 (!2@! ? ' B%2#B232 ? /B!07 ' 7/07/B0!/3!P#1#:2>/36! B2&37%/#0! ? &07! ' :02!$#! ' BW32H:#P6#P0! E #! ' 00& ? #!7 . /0!02&%B#!2@! ? /0S ? # ' 0&%# ? #37!72!$#! &3$/ ' 0#P0!!

= ' 7 ' !23!m=Q!6%2H7 . I!>#%!B ' >/7 ' !/3B2 ? #!:#1#:0I! [Q9!/3@: ' 7/23I!&3# ? >:2 (? #37!% ' 7#! ' 3P!>2>&: ' 7/23I! ' 0!H#: :! ' 0!7 . #!27 . #%! ? ' B%2#B232 ? /B!B237%2:!1 ' %/ ' $:#0I!B2 ? #0!>%/ ? ' %/: (! @%2 ? !7 . #! E 2%:P!] ' 3Wk0! E 2%:P! =#1#:2> ? #37!93P/B ' 72%00!] #B ' &0#!2@!P ' 7 ' ! ' 1 ' /: ' $/:/7 (! B2307% ' /370I!2&%!> ' 3#:!B21#%0!7 . #! (# ' %0!RJ+*S)**V!@2%! ' : :!B2&37%/#0!@2%!H . /B . !P ' 7 ' !H ' 0! ' 1 ' /: ' $:#!/3!7 . #! E =90! "2%!7 . #!$#3B . ? ' %W!0>#B/@/B ' 7/230!H#! . ' 1#!P ' 7 ' !@2%!R*J!B2&37%/#0!

[+] ! 5 !P/0 ' 07#%! ? # ' 0&%#!7 . ' 7!2BB&%0!#' %:/#%!/3!7 . #! (# ' %! ? /6 . 7!$#! ? 2%#!7 . 2%2&6 . : (!2@@0#7!$ (!7 . #!p/3B%# ' 0#!/3! /31#07 ? #37k!%#0>230#!7 . ' 7! ? ' (!@2: :2H!P/0 ' 07#%0! ' 3P!7 . &0!$/ ' 0!P2H3!2&%!B2#@@/B/#37!#07/ ? ' 7#00!m/1#3!7 . ' 7!7 . #! >200/$:#!#U ' 66#% ' 7/23!2@!7 . #!B207!1 ' %/ ' $:#! ' :02!$/ ' 0#0!P2H3!2&%!#07/ ? ' 7#0I!23#!B ' 3!B230/P#%!2&%!%#0&:70! ' 0! :2H#%!$2&3P0!72!7 . #! ' B7& ' :!2&7>&7!P#B:/3#!7 . ' 7!@2: :2H0! ' !P/0 ' 07#%0!

[L] ! "&%7 . #% ? 2%#I!/@!07 ' 7#P!P ' ? ' 6#0! ' %#!/3P##P!$/ ' 0#P!&>H ' %PI!7 . ' 3!7 . #!0/Z#!2@!7 . #!#07/ ? ' 7#P!B2#@@/B/#370!/0! $/ ' 0#P!P2H3H ' %P! ,0##!G ' &0 ? ' 3I!)**RI!@2%! ? 2%#!P#7 ' /:080!

,23!'1#%'6#!'$2&7!RT!'33&':!2$0#%1'7/230!>#%!B2&37%(80!AU'B7!P#7'/:#P!'%#!>%21/P#P!/3!7.#! P'7'!'>>#3P/U0!

-.#!P'7'!23!3'7&%':!P/0'07#%0!/0!P#0B%/$#P!/3!7'$:#0!R!'3P!)0!93!7'$:#!RI!H#!>%21/P#! 7.#!?'/3!07'7/07/B':!B.'%'B7#%/07/B0!2@!7.#!V!?#'0&%#0!2@!/37#%#07`!7.#!?#'3I!07'3P'%P! P#1/'7/23I!?/3/?&?I!'3P!?'U/?&?0!93!7'$:#!)I!H#!P/1/P#!2&%!0'?>:#!$(!/3B2?#!:#1#:! '3P!%#6/23':!:2B'7/23!'3P!P#0B%/$#!7.#!?#'30I!?#P/'30I!'3P!3&?$#%!2@!2$0#%1'7/230!H#! .'1#!@2%!#'B.!%#6/230!"%2?!7./0!7'$:#I!H#!327#!7.'7!P/0'07#%0!'>>'%#37:(!'%#!0/63/@/B'37:(! ?2%#!B207:(!@2%!P#1#:2>/36!B2&37%/#0!7.'3!7.#(!'%#!@2%!P#1#:2>#P!23#0[J]!=/0'07#%0!/3! M2&7.SI!M2&7.SA'07I!'3P!A'07!50/'!'%#!':02!?2%#!B207:(!,/3!$27.!.&?'3!:/@#!'3P!>%2>#%7(! P'?'6#8!7.'3!7.20#!2BB&%%/36!/3!7.#!D/PP:#!A'07I!'3P!Y'7/3!5?#%/B'0!-./0!?/6.7!$#!'7! :#'07!>'%7:(!'!%#0&:7!2@!7.#!./6.#%!>2>&:'7/23!P#30/7(!/3!50/'0!D2%#!07%/W/36!/0!7.#! P/@@#%#3B#!$#7H##3!/0:'3PS07'7#0!'3P!'::!27.#%!6#26%'>./B':!%#6/230!90:'3P0!'%#!'>>'%#37:(! 1#%(!1&:3#%'$:#!72!P/0'07#%0I!H/7.!B2070!72!:/@#I!7.#!3&?$#%!2@!>#2>:#!'@@#B7#PI!'3P!7.#! >%2>#%7(!P'?'6#!/3B&%%#P!'::!'%#I!23!'1#%'6#I!7H/B#!'0!:'%6#!'0!/3!'3(!27.#%!%#6/230!

!

! a&%!?'/3!'/?!.#%#!/0!72!P#0B%/$#!7.#!?'B%2S#B232?/B!B230#e&#3B#0!2@!3'7&%':! P/0'07#%00!E#!07'%7!$(!#U'?/3/36!7.#!?207!>'%0/?23/2&0!0>#B/@/B'7/234!

$$y_{i1t} = \alpha_i + \beta y_{i1t-R} + \gamma DMS_{i1t} + \phi X_{i1\bullet} + \varepsilon_{it} \quad ! \quad ! \quad ! \quad ,)8!$$

H.#%#! y_{i1t} /0!7.#!'33&':!m=Q!6%2H7.!%'7#I DMS_{i1t} /0!2&%!?#'0&%#!@2%!P/0'07#%!?'63/7&P#! P#0B%/$#P!/3!7.#!>%#1/2&0!0#B7/23I!'3P! $X_{i1\bullet}$!'%#!B237%2:!1'%/'$:#0!B2? ?23:(!&0#P!/3!7.#!

[J] !57!:#'07!02?#!2@!7./0!P/@@#%#3B#!I!7.2&6.I!B'3!>:'&0/$:(!$#!'BB2&37#P!@2%!$(!'!0#:#B7/23!$/'0!P&#!72!P/@@#%#37! %#>2%7/36!>%'B7/B#00!97!/0!:/W#:(!7.'7!@2%!P#1#:2>#P!B2&37%/#0I!0?'::#%!P/0'07#%0!,/3!7#%?0!2@!B2070!72!:/@#!2%! >%2>#%7(8!H/::!':02!$#!%#>2%7#P!72![^A=0!

0.2%7S%&3!6%2H7.!:/7#%'7&%#0!"2::2H/36!90:'?!,RJJT8!'3P!?207!0&$0#e&#37!#?>/%/B':! ?2P#:0!2@!0.2%7S%&3!m=Q!6%2H7.I!H#!'PP!72!7.#!0>#B/@/B'7/23!'!m=Q!6%2H7.!:'6!, y_{iIt-R} 80[R*]! [2&37%(S0>#B/@/B!#@@#B70!'%#!/37%2P&B#P!/3!2%P#%!72!'BB2&37!@2%!7.#!H/P#:(!1'%(/36!'1#%'6#! 6%2H7.!#U>#%/#3B#0!'?236!P/@@#%#37!B2&37%/#0!21#%!7.#!>'07!7H2!P#B'P#00!-./0!0#7&>! #U>:/B/7:(!%#?21#0!7.#!B%200S0#B7/23':!:236S%&3!P/@@#%#3B#0!H./B.!H#%#!7.#!@2B&0!2@! MW/P?2%#!'3P!-2('!,)**)80[RR]!

93!2&%!#07/?'7#0!H#!@2::2H!'!>%2B#P&%#!@/%07!0&66#07#P!$(!G'&0?'3!'3P!-'(:2%! ,RJLR8!7.'7!7'W#0!/372!'BB2&37!7.#!$/'0!/3!#07/?'7/23!2@!>'3#:0!H/7.!>%#P#7#%?/3#P!'3Pl2%! #3P26#32&0!1'%/'$:#00[R)]!-.#!G'&0?'3S-'(:2%!7.%##S07#>!#07/?'7/23!?#7.2P2:26(!/0!'3! /307%&?#37':!1'%/'$:#!#07/?'72%!7.'7!7'W#0!/372!'BB2&37!7.#!>200/$:#!B2%%#:'7/23!$#7H##3!7.#! P/07&%$'3B#!7#%?!'3P!7.#!1'%/'$:#0!0>#B/@/#P!'0!>%#P#7#%?/3#Pl#3P26#32&00!-.#!#07/?'7#P! #e&'7/23!/0!7.&04!

$$y_{iIt} = \alpha_i + \beta y_{iIt-R} + \gamma DMS_{iIt} + \phi^{R} X^{R}_{iI.} + \phi^{)} X^{)}_{iI.} + \varepsilon_{it} \qquad ,V8!$$

H.#%#! $X^{R}_{iI.}$!'%#!7.#!B237%2:!1'%/'$:#0!'00&?#P!72!$#!,H#'W:(8!#U26#32&0!'3P! $X^{)}_{iI.}$!'%#! '00&?#P!72!$#!>%#P#7#%?/3#Pl#3P26#32&0!'3P!7.&0!B2%%#:'7#P!H/7.!7.#!B2&37%(!0>#B/@/B! #@@#B700!m/1#3!7.#!B2307%&B7/23!2@!2&%!P/0'07#%!1'%/'$:#!'0!%'7/2!2@!7.#!>%#1/2&0!(#'%k0! P2?#07/B!>%2P&B7I!7./0!1'%/'$:#!/0!B:#'%:(!>%#P#7#%?/3#P`!H#!7.&0!B:'00/@(!/7!'0!0&B.0[RV]!

! 93!7.#!@/%07!07#>I!#07/?'7#0!@%2?!'!B2&37%(S@/U#PS#@@#B70!?2P#:!'%#!#?>:2(#P!72! 2$7'/3!B230/07#37!$&7!/3#@@/B/#37!#07/?'7#0!@2%!7.#!1'%/'3B#!B2?>23#370!@2%!7.#!

[R*]!-.#!0#!2@!23:(!23#!:'6!/0!0&>>2%7#P!$(!%#B#37!%#0#'%B.!,#060I!F%/$#!'3P!_&#I!)**KI!'3P!^'PP'7ZI!)**+80!

[RR]!-.#!G'&0?'3!'3P!-'(:2%!,RJLR8!':62%/7.?!H#!&0#!/312:1#0!$27.!'!@/%07S07'6#!@/U#P!#@@#B70!#07/?'7/23!'3P! '!@/3':!%'3P2?S#@@#B70!7./%P!07'6#0!

[R)]!"2%!'!%/62%2&0!@2%?&:'7/23!2@!7./0!$/'0!0#!!;/BW#:!,RJLR80!

[RV]!E#!327#!7.'7!B:'00/@(/36!7.#!P/0'07#%!1'%/'$:#!'0!#U26#32&0!P2#0!327!B.'36#!'3(!2@!7.#!%#0&:70!H#!%#>2%7! ,H.#3!/7!/0!B:'00/@/#P!'0!>%#P#7#%?/3#Pl#3P26#32&080!!E#!6#3#%'::(!'00&?#!7.#!27.#%!B237%2:!1'%/'$:#0!'%#! #U26#32&0!$&7!./0!'00&?>7/23!P2#0!327!B.'36#!'3(!2@!2&%!%#0&:70!23!7.#!P/0'07#%!B2#@@/B/#3700!

B2#@@/B/#370! 2@! 7.#! 7/?#S1'%(/36! 1'%/'$:#00! 93! 7.#! 0#B23P! 07#>I! '3! "mYM! >%2B#P&%#! /0! #?>:2(#P!72!2$7'/3!1'%/'3B#0!@2%!7.#!7/?#S/31'%/'37!1'%/'$:#00!-.#!7./%P!07#>!/0!'!H#/6.7#P! 9n!#07/?'7/23!&0/36!P#1/'7/23!@%2?!?#'30!2@!:'66#P!1':&#0!2@!7.#!7/?#S1'%(/36!1'%/'$:#0! '0!/307%&?#3700!9P#37/@/B'7/23!/3!7.#!G'&0?'3S-'(:2%!>%2B#P&%#!%#e&/%#0!7.'7!7.#!3&?$#%! 2@! #U26#32&0! 1'%/'$:#0! $#! '7! :#'07! '0! :'%6#! '0! 7.#! 3&?$#%! 2@! 7/?#S/31'%/'37! >%#P#7#%?/3#Pl#3P26#32&0!1'%/'$:#00!-.#!#U26#3#/7(!'00&?>7/23!%#e&/%#0!7.'7!7.#!?#'30! 2@!7.#!#U26#32&0!1'%/'$:#0!, $\overline{X}_i^R$ 8!H/::!$#!&3B2%%#:'7#P!H/7.!7.#!B2&37%(!#@@#B70!, α_i $80^{RCI!RT}$!

-.#!G'&0?'3S-'(:2%!?#7.2P2:26(!/0!/37#3P#P!72!21#%B2?#!7.#!>200/$:#! B2%%#:'7/23!$#7H##3!7.#!B2&37%(!0>#B/@/B!#@@#B70!'3P!7.#!/3P#>#3P#37!1'%/'$:#0!/3!'!>'3#:! 0#7S&>!7.'7!'%/0#0!$#B'&0#!2@!#3P26#3#/7(!2@!02?#!2@!7.#!B237%2:!1'%/'$:#00!_#7I!/3!2%P#%!72! P#%/1#!'3(!B'&0':!/3@#%#3B#0!23!7.#!#@@#B7!2@!7.#!P/0'07#%!1'

'3P!MW/P?2%#!'3P!-2('I!)**)80[RK]!-2!1#%/@(!7.'7!7.#!H'(!H#!B2307%&B7!7.#!P/0'07#%! ?#'0&%#!&0/36!:'66#P!m=Q!:#1#:0!,0##!#e0!R8!P2#0!327!/30#%7!'3(!#3P26#3#/7(!/372!2&%! ?#'0&%#!H#!':02!%&3!7.#!0'?#!0>#B/@/B'7/230!&0/36!'!$/3'%(!/3P/B'72%!2@!P/0'07#%! 2BB&%%#3B#!'3P!@/3P!7.#!e&':/7'7/1#!%#0&:70!/P#37/B':0!5!@&%7.#%!/3@2%?':!7#07!2@!7.#! #U26#3#/7(!'00&?>7/23!/0!72!B2?>'%#!7.#!P/07%/$&7/23!2@!7.#!/3P#>#3P#37!1'%/'$:#0!@2%!7.#! P/0'07#%!'3P!32SP/0'07#%!2$0#%1'7/2300!E#!@/3P!32!07'7/07/B'::(!2$0#%1'$:#!P/@@#%#3B#!/3! 7.#/%!?#'300!

!

-.#!>%#:/?/3'%(!%#0&:70!>%#0#37#P!/3!7'$:#!VI!H/7.2&7!7.#!B237%2:!1'%/'$:#0I!>2/37!72! 7H2!6#3#%':!B23B:&0/2300!-.#%#!/0!32!#1/P#3B#!2@!'3(!B2%%#:'7/23!$#7H##3!7.#!P/0'07#%! >2>&:'7/23!1'%/'$:#0!,3&?$#%!W/::#P!2%!'@@#B7#P8!'3P!m=Q!6%2H7.!,7'$:#!V!B2:&?30!)!q! V80!G2H#1#%I!H#!2$7'/3!07%236!/3P/B'7/23!7.'7!7.#!'?2&37!2@!>%2>#%7(!P'?'6#!/3B&%%#P! P&%/36!7.#!P/0'07#%!/0!'!3#6'7/1#!P#7#%?/3'37!2@!m=Q!6%2H7.!>#%@2%?'3B#0!-./0!/0!327!'3! /37&/7/1#!%#0&:7I!$&7!/0!1#%(!%2$&070!E#!.(>27.#0/Z#!7.'7!7.#!%#'023!@2%!7./0!/0!7.'7!7.#! 0.2%7S7#%?!/?>'B7!2@!'!P/0'07#%!/0!B'&0#P!?207:(!$(!P'?'6#!72!7.#!B'>/7':!072BWI!72! P#:/1#%(!'3P!7%'30>2%7'7/23!0(07#?0I!'3P!27.#%!/3@%'07%&B7&%#0!a3!7.#!27.#%!.'3PI!7.#! .&?'3!B207!.'0!'3!/?>'B7!H./B.!/0!?&B.!?2%#!:236!7#%?!/3!3'7&%#!'3P!?'(!23:(!$#! 07'7/07/B'::(!2$0#%1'$:#!/3!:236S7#%?!6%2H7.!0>#B/@/B'7/230!'0!/3!MW/P?2%#!'3P!-2('!

[RK] !^'PP'7Z!,)**+8!&0#0!7.#!3&?$#%!2@!:'%6#!P/0'07#%0I!>#%!(#'%I!7.'7!'%#!%#B2%P#P!/3!7.#!ADS=5-!P'7'0#70! Y'%6#!P/0'07#%0!'%#!#1#370!7.'7!'@@#B7!'7!:#'07!.':@!'!>#%B#37!2@!'!B2&37%(00!>2>&:'7/23I!B'&0#!P'?'6#0!2@!'7! :#'07!.':@!'!>#%B#37!2@!m=QI!2%!%#0&:70!/3!?2%#!7.'3!23#!@'7':/7(!@2%!#1#%(!R*I***!>#2>:#0!MW/P?2%#!'3P! -2('!,)**)8!&0#!7.#!@%#e&#3B(!2@!P/0'07#%0!,7.#!3&?$#%!2@!P/0'07#%0!2BB&%%/36!21#%!7.#!>#%/2P!RJK*SRJJ*8! '0!7.#/%!P/0'07#%!1'%/'$:#!/3!7.#/%!B%200!0#B7/23':!P'7'0#70!^'?B.'%'3!,)**+8!&0#0!'!$/3'%(!/3P/B'72%!@2%! H.#7.#%!'!P/0'07#%!2BB&%%#P!/3!7.#!'3(!B2&37%(S(#'%!2$0#%1'7/230!

,)**)80! E#!':02!@/3P!7.'7!:'%6#%!P/0'07#%0I!2%!7.20#!7.'7!.'>>#3!#'%:/#%!/3!7.#!(#'%I!.'1#!'! ?2%#!'P1#%0#!'@@#B7!,7'$:#!V!B2:&?3!R80[R+]!

-2!@&%7.#%!/31#07/6'7#!H.#7.#%!7.#%#!'%#!'3(!%#'0230!72!0&0>#B7!7.#!H'(!H#! B2307%&B7#P!7.#!P'?'6#!1'%/'$:#0!B%#'7#P!'3(!#3P26#3#/7(!>%2$:#?I!H#!B231#%7!7.#! P/0'07#%!?#'0&%#0!H#!.'1#!/372!$/3'%(!/3P/B'72%0!,RrP/0'07#%I!*r32!P/0'07#%8!72!#U'?/3#! H.#7.#%!7./0!B.'36#0!2&%!%#0&:700[RL]!56'/3I!H#!@/3P!'!0/63/@/B'37!B2#@@/B/#37!@2%!7.#!P'?'6#! 1'%/'$:#!/3!7.#0#!0>#B/@/B'7/230!,7'$:#!V!B2:&?30!CSK80!

;#U7I!H#!#U'?/3#!0>#B/@/B'7/230!7.'7!':02!/3B:&P#!27.#%!B237%2:!1'%/'$:#0! B2??23:(!@2&3P!/3!7.#!#?>/%/B':!6%2H7.!:/7#%'7&%#0!-.#!'PP/7/23':!P#7#%?/3'370!2@!2&7>&7! /3!7./0!?2P#:!'%#!'!0#7!2@!P2?#07/B!>2:/B(I!07%&B7&%':I!'3P!#U7#%3':!@'B72%0I!'0!H#::!'0! B2&37%(S0>#B/@/B!#@@#B70!'3P!7.#!:'66#P!2&7>&7!6%2H7.!':%#'P(!/3B:&P#P!/3!7.#! 0>#B/@/B'7/230!>%#0#37#P!/3!7'$:#!V0!-.#!P2?#07/B!>2:/B(!@'B72%0!'%#!B.'36#0!/3! 621#%3?#37!$&P6#7!0&%>:&0#0I!/3@:'7/23I!/31#07?#37I!'3P!B%#P/7!6%2H7.0!AU7#%3':!@'B72%0! /3B:&P#!7.#!B&%%#37!'BB2&37!'3P!@2%#/63!P/%#B7!/31#07?#37!/3@:2H0`!'3P!7.#!07%&B7&%':! @'B72%0!H#!B230/P#%!'%#!7.#!2>#33#00!2@!7.#!#B232?(!72!/37#%3'7/23':!7%'P#!,/?>2%7!%'7/28I! '!?#'0&%#!2@!/307/7&7/23':!e&':/7(!'3P!'!$/3'%(!?#'0&%#!@2%!@/3'3B/':!B%/0#00[RJ]!5::!2@!7.#! 1'%/'$:#0I!H/7.!7.#!#UB#>7/23!2@!@/3'3B/':!B'>/7':S@:2H0S072>!B%/0/0!?#'0&%#I!'%#! /37%2P&B#P!H/7.!'!23#S(#'%!:'6!/3!2%P#%!72!B'>7&%#!7.#!P#:'(#P!%#0>230#!2@!2&7>&7!72! ?'B%2#B232?/B!P#1#:2>?#3700!AU'B7!P#7'/:0!23!?#'0&%#?#370!'3P!02&%B#0!'%#!/3B:&P#P! /3!'!P'7'!'>>#3P/U0!

[R+] -./0!?/6.7!$#!B2307%&#P!'0!.'%P:(!0&%>%/0/36I!'3P!/0!/3!:/3#!H/7.!7.#!^'PP'7Z!,)**+8!B23B:&0/230!]&7I!7!/0! P/07/3B7!@%2?!7.#!B23B:&0/230!>%#0#37#P!/3!MW/P?2%#!'3P!-2('I!,)**)8!/3!7.#/%!%#0#'%B.!23!7.#!:236S%&3! #@@#B7!2@!P/0'07#%0I!'3P!/0!':02!/3B237%'07!H/7.!02?#!2@!7.#!P#0B%/>7/1#!B'0#!07&P/#0!,#06I!G2%H/B.I!)***80!

[RL]]#B'&0#!7.#!$/3'%(!'>>%2'B.!?'0W0!7.#!P/07/3B7/230!$#7H##3!7.#!?'63/7&P#0!2@!P/@@#%#37!P/0'07#%0I!H#! 23:(!%#B2%P!,$/3'%(!1'%/'$:#!rR8!7.20#!P/0'07#%0!H.20#!?'63/7&P#!/0!$/66#%!7.'3!7.#!?#'3!@2%!7.'7!7(>#!2@! P/0'07#%!P'7'0!

[RJ] !"2%!'!P/0B&00/23!2@!0&PP#3!B'>/7':!/3@:2H!072>0!,@/3'3B/':!B%/0#08I!'3P!7.#/%!#?>/%/B':!/?>2%7'3B#!/3! 6%2H7.!P(3'?/B0I!0##!G&7B./023!'3P!;2(!,)**K80!

M/3B#!2&%!>%#:/ ? /3 ' %(!/31#07/6 '7/23!/3!7 '$:#!V!23:(! (/#:P#P!0/63/@/B ' 37!%#0&:70!@2%! 7 . #!>%2>#%7(!P ' ? ' 6#! ? # ' 0&%#!2@!B%/0#0I!H#!@2B&0!23:(!23!7 . /0! ? # ' 0&%#!/3! ' ::!7 . #!@2::2H/36! 0>#B/@/B '7/2300!93!2&%!$#3B . ? ' %W!0>#B/@/B '7/23!,7 '$:#!C!B2:& ? 3!R8I!H#!/3B:&P#!7 . #!P/0 ' 07#%! ? # ' 0&%#! ' 3P!7 . #!27 . #%!1 ' %/ '$:#0!>%#1/2&0:(!P#0B%/$#P0!"2%!7 . #!B237%2:!1 ' %/ '$:#0I!$#77#%! /307/7&7/230I!:2H#%!B%#P/7!6%2H7 . I! ' ! . /6 . #%!B&%%#37! ' BB2&37!0&%>:&0I!: ' %6#%!" = 9!/3@:2H0! ' 3P! 7 . #! ' $0#3B#!2@! ' !@/3 ' 3B/ ':!B%/0/0! ' %#! ' ::!0/63/@/B ' 37:(! ' 002B/ '7#P!H/7 . ! . /6 . #%!m = Q!6%2H7 . 0! Q ' 07!/31#07 ? #37!6%2H7 . I!7 . #!621#%3 ? #37!P#@/B/7I!7 . #!/3@: '7/23!% '7#I!2%!/ ? >2%70!P2!327!0## ? ! 72! . ' 1#! ' !P/0B#%3/$:#!/ ? > 'B7!23!2&7>&7!>#%@2% ? ' 3B#!/3!2&%!0>#B/@/B '7/2300! E #!327#!7 . '7! 0/3B#!7 . #!P/0 ' 07#%! ? # ' 0&%#0! ' %#! ? 207!:/W#:(!07%236:(!#U26#32&0I!H#! ' 3(H ' (!P2!327!#U>#B7! 7 . #/%!#07/ ? '7#P!B2#@@/B/#370!72!$#! '@@#B7#P!$(!7 . #!/3B:&0/23!2@!7 . #0#!B237%2:0!,B2 ? > ' %#! 7 '$:#!C!B2:& ? 3!R!72!7 '$:#!V!B2:& ? 3!R80!!

93!B2:& ? 30!) ! ' 3P!V!2@!7 '$:#!CI!H#!0>:/7!2&%!0 ' ? >:#!/372!P#1#:2>#P!B2&37%/#0! ,P#@/3#P! ' 0!RJ J*! ? # ? $#%0!2@!7 . #! a A [= 8! ' 3P!P#1#:2>/36!B2&37%/#0!,7 . #!%#0780! - . #! 2$1/2&0!B23B:&0/23!/0!7 . '7!7 . #!3#6 '7/1#!/ ? > 'B7!2@!3 '7&% ':!P/0 ' 07#%0!23!7 . #! ? 'B%2S#B232 ? (! /0!#37/%#:(!P&#!72!2&7>&7!P(3 ' ? /B0!/3!7 . #!P#1#:2>/36!B2&37%/#0!0 ' ? >:#0! - . /0!P#0B%/>7/23! P2#0!327! '>>:(!72!P#1#:2>#P!B2&37%/#00! a 3#!>200/$:#!%# ' 023!/0!7 . #! ' ? >:(!P2B& ? #37#P! '$/:/7(!2@!P#1#:2>#P!B2&37%/#0!72!>&%0&#!B2&37#%SB(B:/B ':!@/0B ':! ' 3P! ? 23#7 ' %(!>2:/B(! @2::2H/36! ' P1#%0#!0 . 2BW0!h! ' 3! '$/:/7(!7 . '7!P2#0!327!0## ? !72!$#!#3c2(#P!$(!:2H#%!/3B2 ? #! B2&37%/#0!H . 2!2@7#3!#3P!&>!>&%0&/36!>%2SB(B:/B ':!>2:/B/#0!/3!7 . #!@ 'B#!2@!#U7#%3 ':!0 . 2BW00!

E #!@&%7 . #%!/31#07/6 '7#!H . #7 . #%!$/6!#B232 ? /#0! ' %#! ? 2%#!2%!:#00!1&:3#% '$:#!72!7 . #! / ? > 'B7!2@!3 '7&% ':!P/0 ' 07#%00! E #!32H!0>:/7!7 . #!0 ' ? >:#!$(!7 . #! ? #P/ ' 3!0/Z#!2@!7 . #!#B232 ? (! , ? # ' 0&%#P!/3!B2307 ' 37! F Ms 80! E #!@/3PI! ? ' ($#!327!0&%>%/0/36:(I!7 . '7!0 ? ' ::!#B232 ? /#0! ' %#! ? 2%#!1&:3#% '$:#!72! ' 3!#1#37!2@!7 . #!0 ' ? #!0/Z#!,%#: '7/1#!72!7 . #/%!0/Z#80! - . /0! ? ' (!$#!P&#!72!

7.#!@'B7!7.'7!0?'::#%!#B232?/#0!'%#!:#00!P/1#%0/@/#PI!'3P!7.#/%!'$/:/7(!72!H/7.07'3P!#U7#%3':! 0.2BW0I!#0>#B/'::(!72!7.#/%!'6%/B&:7&%':!0#B72%I!/0!7.&0!P/?/3/0.#P0! E#!/31#07/6'7#!7.#0#! /00&#0!@&%7.#%!/3!7.#!3#U7!7'$:#00!

M/3B#!$(!/37%2P&B/36!7.#!P/0'07#%!1'%/'$:#0!0B':#P!$(!7.#!0/Z#!2@!#'B.!#B232?(!H#! ?'(!.'1#!/37%2P&B#P!#3P26#3#/7(!/372!2&%!>%#@#%%#P!?#'0&%#I!H#!'77#?>7!72!#U'?/3#!7.#! %2$&073#00!2@!2&%!%#0&:70!&0/36!'327.#%!>%2U(!@2%!7.#!?'63/7&P#!2@!7.#!P/0'07#%0!93! >'%7/B&:'%I!H#!&7/:/Z#!7.#!23:(!7H2!?'63/7&P#!?#'0&%#0!7.'7!'%#!'1'/:'$:#!/3!7.#!ADS=5-! P'7'0#74!7.#!^/B.7#%!0B':#!?#'0&%#!@2%!#'%7.e&'W#0!'3P!7.#!H/3PS0>##P!,/3!W?!>#%!.2&%8! @2%!072%?00! E#!%#>#'7!7.#!0>#B/@/B'7/230!/3!B2:&?30!,R8S,V8!2@!7'$:#!V!$(!%#>:'B/36!7.#! P/0'07#%!1'%/'$:#!H/7.!7.#!^/B.7#%!0B':#!'3P!H/3PS0>##P!?#'0&%#00!-./0!/3@2%?'7/23!/0! 23:(!'1'/:'$:#!@2%!'!0&$0#7!2@!2&%!P/0'07#%0!02!7.#!3&?$#%!2@!#1#370!/P#37/@/#P!/3!7.#! #07/?'7/23!/0!?2%#!:/?/7#P0!!

"2%!H/3PS0>##PI!H#!@/3P!32!#1/P#3B#!2@!'3(!B2%%#:'7/23!$#7H##3!H/3PS0>##P!'3P! 2&7>&7!6%2H7.0! D'($#!7./0!/0!327!0&%>%/0/36!0/3B#!7.#!:2B'7/23!,B:20#!2%!@'%!@%2?! >2>&:'7#P!'%#'8I!'3P!7.#!'%#'!B21#%#P!$(!7.#!072%?!'%#!327!'BB2&37#P!@2%0[)*]!"2%!7.#! ^/B.7#%!0B':#!?#'0&%#I!'!$#77#%!?#'0&%#!2@!P/0'07#%!?'63/7&P#I!H#!@/3P!%#0&:70!7.'7!'%#! 0/?/:'%!72!2&%!>%#1/2&0!%#0&:70!@2%!7.#!P'?'6#!1'%/'$:#0!h!/0#0I!'!3#6'7/1#!'3P!07'7/07/B'::(! 0/63/@/B'37!B2#@@/B/#37!0&66#07/36!'!3#6'7/1#!/?>'B7!23!m=Q!6%2H7.0!!

-.#!#B232?/B!/?>2%7'3B#!2@!7.#0#!07'7/07/B'::(!/P#37/@/'$:#!#@@#B70!/0!1#%(!%#':0! 5! 23#!07'3P'%P!P#1/'7/23!/3B%#'0#!/3!7.#!P/%#B7!P'?'6#0!2@!'!3'7&%':!P/0'07#%!/3!'!P#1#:2>/36! B2&37%(!H/::!%#P&B#!2&7>&7!6%2H7.!$(!'$2&7!J t 0! E#!2$7'/3!0/?/:'%!?'63/7&P#0!@2%!0?'::!

[)*] !93!7.#!F0M0I!@2%!#U'?>:#I!'!1#%(!:2B':!'3P!:/?/7#P!72%3'P2!B'3!.'1#!1#%(!./6.!H/3PS0>##P0!H./:#!'!?&B.! $/66#%!.&%%/B'3#!B'3!.'1#!?&B.!:2H#%!72>!H/3PS0>##P0!%#6/07#%#P0!

#B232 ? /#00! - . #!#@@#B7!23!P#1#:2>#P!B2&37%/#0!/0!07 ' 7/07/B ' :: (!0/63/@/B ' 37!$&7!7 . #!#B232 ? /B! / ? >2%7 ' 3B#!/0!23: (! ? ' %6/3 ' :!H/7 . !7 . #!2$0#%1#P!/3B%# ' 0#!:2H#%!7 . ' 3!R t 0!

- . #0#!/ ? > ' B70! ' %#!e&/7#!: ' %6#I! ' 3P! ' %#!H#::!$# (23P!H . ' 7!B2&:P!$#!>%#P/B7#P!@%2 ? ! 07 ' 3P ' %P!6%2H7 . ! ? 2P#:00! E #!0&0>#B7!7 . ' 7!7 . #!2%/6/30!2@!7 . #!: ' %6#!/ ? > ' B70!H#!@2&3P!/0!7 . #! P/0%&>7/230!7 . ' 7!P/0 ' 07#%0!B ' &0#!72!: ' $2%I!@/3 ' 3B/ ' :! ' 3P!2&7>&7! ? ' %W#700!M/3B#!P/0 ' 07#%0! /37#%%&>7!B2 ? ? &3/B ' 7/23I!7% ' 30>2%7 ' 7/23! ' 3P!P#:/1#% (!0 (07# ? 0I! ' 3P!P/1#%7!621#%3 ? #37! %#02&%B#0I!/7! ? ' (!$#!%# ' 023 ' $:#!72!#U>#B7!7 . ' 7! !07 ' 3P ' %P!6%2H7 . ! ? 2P#:I!7 . ' 7!/P#37/@/#0! P/0 ' 07#%0!H/7 . !P#07%&B7/23!2@!7 . #!B ' >/7 ' :!072BWI!H/::!327!@&:: (!B ' >7&%#!7 . #/%!/ ? > ' B70!23!7 . #! #B232 ? (0!!

93!@&%7 . #%!0>#B/@/B ' 7/230I!H#! ' / ? !72! ' 30H#%!0#1#% ' :!e&#07/230!%#6 ' %P/36!7 . #! P#7#% ? /3 ' 370!2@!7 . #!2&7>&7!P#B:/3#0!/P#37/@/#P!/3!7 . #!>%#1/2&0!7 ' $:#00!M>#B/@/B ' :: (I!H#! H2&:P!:/W#!72!#U ' ? /3#!H . #7 . #%!/307/7&7/23 ' :! ' 3P!07%&B7&% ' :! ' 0>#B70!2@!7 . #!, Z_{i1t} 8!2@!7 . #! #B232 ? /#0!07%&BW!$ (!P/0 ' 07#%0! . ' 1#! ' 3 (!$# ' %/36!23!7 . #! ? ' 63/7&P#!2@!2&7>&7!P#B:/3#!7 . ' 7! 7 (>/B ' :: (!@2::2H00! E #!7 . &0!#07/ ? ' 7#!7 . #!@2::2H/36!0>#B/@/B ' 7/234!

$$y_{i1t} = \alpha_i + \beta y_{i1t-R} + \gamma DMS_{i1t} + \delta , DMS_{i1t} \cdot Z_{i1t} 8 + \tau Z_{i1t} + \phi X_{i1t-R} + \varepsilon_{it} \;!\,! \qquad ,C8!$$

- . #!B2#@@/B/#37!23!7 . #!/37#% ' B7/23!2@!7 . #!3 ' 7&% ' :!P/0 ' 07#%! ? # ' 0&%#! ' 3P!7 . #! /307/7&7/23 ' :l07%&B7&% ' :! ? ' B%2#B232 ? /B!1 ' %/ ' $:#!, δ 8!H/::!P#@/3#!7 . #!#@@#B7!2@!7 . #0#! B . ' % ' B7#%/07/B0!23!7 . #! ? ' 63/7&P#!2@!7 . #!2&7>&7!:2000[)R]!

! E #!P#0B%/$#!2&%! . (>27 . #0#0! ' 3P!7 . #!%#0&:70!B23B#%3/36!07%&B7&% ' :l%# ' :! B . ' % ' B7#%/07/B0!2@!7 . #!B232 ? (!/3!7 ' $:#!T! ' 3P!@/3 ' 3B/ ' :!B . ' % ' B7#%/07/B0!/3!7 ' $:#!K0! E #!@/%07! #U ' ? /3#!H . #7 . #%!7 . #!:#1#:!2@! . & ? ' 3!B ' >/7 ' :! ' @@#B70!7 . #!/ ? > ' B7!2@! ' !@/3 ' 3B/ ' :!B%/0/0!97!/0!

[)R] ! E #! ' :02!/3B:&P#!7 . #!P/%#B7! ' @@#B7!2@!7 . #!/307/7&7/23 ' :l07%&B7&% ' :!@ ' B72%!, τ8!72!1#%/@ (!7 . ' 7!7 . #!/P#37/@/#P! /37#% ' B7/23!B2#@@/B/#37!/0!327!0/63/@/B ' 37!$#B ' &0#!2@!7 . #!P/%#B7!B2%%#: ' 7/23!2@!7 . #!/307/7&7/23 ' :l07%&B7&% ' :!@ ' B72%! ' 3P!2&7>&7!6%2H7 . 0!

:/W#:(!7.'7!/3!#B232?/#0!/3!H./B.!7.#!:#1#:!2@!.&?'3!B'>/7':!/0!./6.#%I!7.#!/?>'B7!2@!:200!2@!>.(0/B':!B'>/7':!23!7.#!?'B%2S#B232?(!H/::!$#!:2H#%0!E#!B23@/%?!7./0!/3!7'$:#!T!B2:&?3!R!/3!H./B.!H#!/3B:&P#!7.#!:#1#:!2@!/::/7#%'B(!/37#%'B7#P!H/7.!2&%!P'?'6#!1'%/'$:#0! E#!@/3P!7.#!B2#@@/B/#37!/0!3#6'7/1#!'3P!0/63/@/B'37!0&66#07/36!7.'7!B2&37%/#0!H/7.!./6.#%!:#1#:!2@!/::/7#%'B(!H/::!#U>#%/#3B#!'!?2%#!'P1#%0#!'@@#B7!23!2&7>&7!6%2H7.!'0!'!%#0&:7!2@!'!3'7&%':!P/0'07#%0[))]!

! 93!B2:&?30!)!'3P!V!2@!7'$:#!TI!H#!#U'?/3#!H.#7.#%!'!./6.#%!/307/7&7/23':!e&':/7(!,'0!?#'0&%#P!/3!7.#!*Institutional Country Risk Guides*8!'3P!./6.#%!>#%!B'>/7'!/3B2?#!:#1#:0!,/3!QQQs8!.'1#!'3(!/?>'B7!23!7.#!?'B%2SB207!2@!'!P/0'07#%0!E#!@/3P!7.'7!/3P##P!$27.!/307/7&7/23':!07%#367.!'3P!./6.#%!>#%!B'>/7'!/3B2?#0!'%#!'002B/'7#P!H/7.!'!07'7/07/B'::(!0/63/@/B'37!:2H#%!?'B%2#B232?/B!B2070!-.#!/?>2%7'3B#!2@!621#%3/36!/307/7&7/230!B'3!$#!'77%/$&7#P!#/7.#%!72!7.#!P/%#B7!#@@/B/#3B(!2@!7.#!>&$:/B!/37#%1#37/23!@2::2H/36!7.#!#1#37k0!230#7I!2%!72!7.#!/3P/%#B7!/?>'B7!2@!'3!#@@/B/#37!621#%3?#37!%#0>230#!/3!0.'>/36!>%/1'7#!0#B72%!%#0>230#!72!7.#!P/0'07#%0!a&%!B23B:&0/230!'$2&7!/3B2?#!:#1#:0!B2%%2$2%'7#!7.#!2$0#%1'7/230!H#!?'P#!/3!7'$:#!C!%#6'%P/36!7.#!P/@@#%#3B#!/3!2&7>&7!P(3'?/B0!$#7H##3!P#1#:2>#P!'3P!P#1#:2>/36!B2&37%/#0!-./0!%#0&:7!B'3!>:'&0/$:(!$#!'77%/$&7#P!':02!72!7.#!H/P#%!P/1#%0/@/B'7/23!2$0#%1#P!/3!./6.#%S/3B2?#!B2&37%/#0!'3P!7.#/%!'$/:/7(!72!B2&37#%!#U26#32&0!0.2BW0!H/7.!B2&37#%SB(B:/B':!@/0B':!>2:/B(!,H./:#!@/0B':!>2:/B(!/3!>22%#%!B2&37%/#0!/0!7(>/B'::(!>%2SB(B:/B':80!

! E#!3#U7!7&%3!72!27.#%!07%&B7&%':!'0>#B70!2@!7.#!P2?#07/B!#B232?(!'3P!@/3P!7.'7!'!$/66#%!621#%3?#37!,?#'0&%#P!'0!621#%3?#37!B230&?>7/23!'0!>#%B#37!2@!m=Q8!'3P!'!./6.#%!:#1#:!2@!#U>2%70!,'0!>#%B#37!2@!m=Q8!'%#!$27.!'002B/'7#P!H/7.!'!:2H#%!?'B%2SB207!

[))] !5!?#'0&%#!2@!/::/7#%'B(!/0!7.#!23:(!>%2U(!@2%!.&?'3!B'>/7':!7.'7!/0!'1'/:'$:#!/3!7.#!*World Development Indicators*!P'7'$'0#!/3!H/P#!#32&6.!B21#%'6#!72!?'/37'/3!2&%!0'?>:#!0/Z#0!

2@!'!3'7&%':!P/0'07#%0!]27.!@/3P/360!'%#!>:'&0/$:#`!/7!/0!:/W#:(!7.'7!'!$/66#%!621#%3?#37!H/::! $#!'$:#!72!?2$/:/Z#!?2%#!%#02&%B#0!?2%#!%'>/P:(!@2%!%#B2307%&B7/23I!'3P!7.'7!'!B2&37%(! 7.'7!/0!?2%#!2>#3!72!7%'P#!H/::!#U>#%/#3B#!'!0?'::#%!3#6'7/1#!0.2BW!72!7.#!P#?'3P!@2%!/70! >%2P&B700![2&37%/#0!2>#3!72!7%'P#!?'(!':02!$#!?2%#!:/W#:(!%#B/>/#370!2@!:'%6#%! /37#%3'7/23':!B'>/7':!/3@:2H0!72!'/P!/3!7.#!%#B2307%&B7/23!#@@2%70[)V]!

! 97!.'0!':02!$##3!.(>27.#0/Z#P!7.'7!6#26%'>./B':!:2B'7/23!?/6.7!$#!'!@'B72%!/3! P#7#%?/3/36!7.#!?'B%2S#B232?/B!0#B23P'%(!B2070!2@!P/0'07#%00!"2%!#U'?>:#I!'!7%2>/B':! B:/?'7#!?/6.7!$#!B23P&B/1#!72!0>%#'P/36!/3@#B7/2&0!P/0#'0#0!*ex post* '3P!7.&0!0:2H!P2H3! 7.#!%#B21#%(!>%2B#00`!#0>#B/'::(!H.#3!3##P#P!%#02&%B#0!.'1#!72!$#!0>#37!72!B2?$'7!7./0! >200/$/:/7(0!E#!?#'0&%#!7.#!>#%B#37!2@!7.#!:'3P!'%#'!/3!#'B.!B2&37%(!H./B.!/0!/3!7.#! 7%2>/B0!,$#7H##3!7.#!-%2>/B!2@!['3B#%!'3P!7.#!-%2>/B!2@!['>%/B2%3!S!))0T!P#6%##0!32%7.! '3P!02&7.I!%#0>#B7/1#:(80!a3B#!7./0!7%2>/B0!?#'0&%#!/0!/37#%'B7#P!H/7.!7.#!>%2>#%7(!P'?'6#! 1'%/'$:#I!H#!@/3P!#1/P#3B#!2@!7.#!2>>20/7#!#@@#B7!h!'!7%2>/B':!B2&37%(!/0!:/W#:(!72! #U>#%/#3B#!./6.#%!6%2H7.!7.'3!23#!H./B.!/0!:2B'7#P!2&70/P#!7.#!7%2>/B0!@2::2H/36!'! 3'7&%':!P/0'07#%0!5!>27#37/':!#U>:'3'7/23!/0!7.#!6%#'7#%!'$/:/7(!2@!'6%/B&:7&%#!72!%#$2&3P!/3! 7%2>/B':!B:/?'7#0!,H.#%#!7.#%#!?'(!H#::!$#!V!B%2>!B(B:#0!>#%!(#'%80!!

"/3'::(I!0/3B#!/30&%'3B#I!B%#P/7I!'3P!@/3'3B/':!@:2H0!'::!>:'(!'!%2:#!/3!P/0'07#%! %#B21#%(I!H#!#U'?/3#!H.#7.#%!@/3'3B/':!?'%W#7!B23P/7/230!?'77#%!@2%!7.#!B230#e&#3B#0!2@! 3'7&%':!P/0'07#%00!E#!07'%7!$(!#U'?/3/36!H.#7.#%!7.#!P#>7.!2@!7.#!@/3'3B/':!0(07#?!!?'77#%0! @2%!P/0'07#%!B20700!E#!>%2U(!7.#!@/3'3B/':!0(07#?!H/7.!7H2!?#'0&%#04!7.#!0/Z#!2@!7.#!

[)V] !_'36!,)**K8!&0#0!7.#!/3B/P#3B#!2@!.&%%/B'3#0!72!#U'?/3#!7.#!B230&?>7/23!0?227./36!%2:#!2@! /37#%3'7/23':!@/3'3B/':!@:2H0!'3P!@/3P0!7.'7!@2%#/63!'/P!/3@:2H0!/3B%#'0#!@2::2H/36!.&%%/B'3#!#1#370I!'3PI!@2%! >22%#%!P#1#:2>/36!B2&37%/#0I!02!P2!%#?/77'3B#00!-.#!3#7!'66%#6'7#!@:2H0!72!P#1#:2>#P!B2&37%/#0!P2!327! 0##?!72!B.'36#!@2::2H/36!.&%%/B'3#!#U>20&%#0!^'PP'7Z!,)**+8!@/3P0!7.'7!'/P!@:2H0!/3B%#'0#!'@7#%!B:/?'7/B! P/0'07#%0!$&7!P#B%#'0#!'@7#%!6#2:26/B':!23#00!
!

P2 ? #07/B!072BW! ? '%W#7!,072BW! ? '%W#7!B'>/7':/Z'7/23!h!7'$:#!K!B2:& ? 3!R8!'3P!7.#!:#1#:!2@! P2 ? #07/B!B%#P/7!,7'$:#!K!B2:& ? 3!)80! E #!@/3P!32!#1/P#3B#!7.'7!7.#!072BW! ? '%W#70!'%#! / ? >2%7'37!/3!/30&:'7/36!#B232 ? /#0!@%2 ? !7.#! ? 'B%2#B232 ? /B!/ ? >'B7!2@!P/0'07#%00! a 3!7.#! 27.#%!.'3P!!H#!P2!2$0#%1#!7.'7! ? 2%#!P2 ? #07/B!B%#P/7!'>>#'%0!72!%#P&B#!7.#!B2070!2@! P/0'07#%0!/3!7#% ? 0!2@!@2%#623#!2&7>&7!6%2H7.0!!

E #!3#U7!#U' ? /3#!H.#7.#%!7.#!P#6%##!2@!2>#33#00!2@!7.#!B'>/7':!'BB2&37! ? '77#%0! @2%!7.#!2&7>&7!P(3' ? /B0!@2::2H/36!7.#!P/0'07#%0!_'36!,)**K8!@/3P0!02 ? #!#1/P#3B#!2@! B'>/7':!@:/6.7!@2::2H/36!P/0'07#%!#1#370!h!/3!./0!>'>#%4!.&%%/B'3#00! E #!7.#%#@2%#!/3B:&P#!'! 1'%/'$:#!7.'7! ? #'0&%#0!7.#!P#6%##!2@!*de jure* 2>#33#00!2@!7.#!B'>/7':!'BB2&370!-./0! ? #'0&%#!#U7#3P0!$#7H##3!S)0T!72!u)0T!'3P!/0!P#0B%/$#P!/3!P#7'/:!/3![./33!'3P!972!,)**K80! D'($#!327!0&%>%/0/36:(!/3!:/6.7!2@!_'36k0!,)**K8!2$0#%1'7/230I!B2&37%/#0!H/7.!2>#3! B'>/7':!'BB2&370!0## ? !72!#U>#%/#3B#!:'%6#%!P%2>0!/3!7.#/%!2&7>&7!6%2H7.!@2::2H/36! P/0'07#%00!!

M/3B#!7./0!/0!23#!2@!7.#! ? 2%#!0&%>%/0/36!%#0&:70!/3!7./0!>'>#%I!H#!%#>#'7!7./0! 0>#B/@/B'7/23!&0/36!'!P/@@#%#37! ? #'0&%#!2@!B'>/7':!'BB2&37!2>#33#00!,B2:& ? 3!C80! a &%! 0#B23P! ? #'0&%#I!7'W#3!@%2 ? !APH'%P0!,)**+8I!/0!B2307%&B7#P!@%2 ? !P/@@#%#37!>%/ ? '%(! 02&%B#0!'3P! ? #'0&%#0!2>#33#00!$#7H##3!*SR**0!-./0! ? #'0&%#!1'%/#0!:#00!21#%!7/ ? #!7.'3! 7.#![./33S972!/3P#U0! b&':/7'7/1#:(I!H#!@/3P!7.#!0' ? #!%#0&:70!@2%!7./0! ? #'0&%#0!-.2&6.!7.#! /37#%'B7/23!7#% ? I!H./:#!3#6'7/1#I!/0!32!:236#%!07'7/07/B'::(!P/07/36&/0.'$:#!@%2 ? !7.#!3&::!2@! 32!#@@#B70!

"/3'::(I!H#!':02!#U' ? /3#!H.#7.#%!7.#!' ? 2&37!2@!.'%PSB&%%#3B(!%#0#%1#0!.#:P!$(! 7.#!B#37%':!$'3W! ? '77#%0!h!%#0#%1#0!B'3!$#!7.2&6.7!2@I!/3!7./0!B'0#I!'0!'!$&@@#%!072BW! '6'/307!7.#!B'>/7':!2&7@:2H0!P2B& ? #37#P!$(!_'36!,)**K80! E #!P2!@/3P!7.'7!B2&37%/#0!H/7.!

:'%6#%!072BW0!2@!%#0#%1#0!,?#'0&%#P!/3!?237.0!2@!/?>2%708!#U>#%/#3B#!:2H#%!2&7>&7! P#B:/3#0!@2::2H/36!7.#!P/0'07#%!#1#370!,7'$:#!K!B2:&?3!T80!

E#!@2&3P!32!#1/P#3B#!72!0&>>2%7!%#c#B7/230!2@!'!@&%7.#%!0#7!2@!.(>27.#0#00!]#B'&0#!2@!7.#!&0&':!07'7/07/B':!H#'W3#00#0!2@!?'B%2!>'3#:0I!H#!.#0/7'7#!72!B23B:&P#!7.'7! H#!B'3!B23@/%?!'3(!2@!7.#0#!.(>27.#0#0!$&7!%'7.#%!7.'7I!@2%!H.'7#1#%!%#'023I!H#!.'1#! $##3!&3'$:#!72!%#c#B7!7.#?0!E#!.'1#!#U'?/3#PI!'3P!@2&3P!32!#1/P#3B#I!7.'74!7.#!%#:'7/1#! 0/Z#!2@!7.#!'6%/B&:7&%':!2%!?/3/36l?/3#%':0!0#B72%0!?'77#%0`!7.'7!/0:'3P!#B232?/#0!'%#! ?2%#!1&:3#%'$:#!72!7.#!P/0'07#%0k!/3P/%#B7!B2070`!'3P!7.'7!$/6!B2&37%/#0!,/3!:'3P!'%#'8!'%#! :#00!1&:3#%'$:#!72!7.#!'P1#%0#!#@@#B7!2@!P/0'07#%0!23!7.#!?'B%2S#B232?(0!

!

-.#!02:#!@2B&0!23!P2?#07/B!2&7>&7!/3!7./0!>'>#%!/0!B:#'%:(!/3B2?>:#7#!'0!'!P#0B%/>7/23! 2@!7.#!?'B%2#B232?/B!'@@#B70!2@!3'7&%':!P/0'07#%00!93!7.#!%#0#'%B.!:#'P/36!&>!72!7./0!>'>#%I! H#!':02!#07/?'7#P!07'3P'%P!#e&'7/230!#U'?/3/36!7.#!/?>'B7!2@!P/0'07#%0!23!/3@:'7/23!'3P! 23!#?>:2(?#37!,&0/36!0>#B/@/B'7/230!&0#P!/3!>%#1/2&0!%#0#'%B.80!93!$27.!B'0#0I!7.#! P/0'07#%0!1'%/'$:#0!H#!#?>:2(#P!.%#!P2!327!0##?!72!.'1#!'3(!#@@#B7!2$0#%1'$:#!/3! B2&37%(SH/P#!'33&':!P'7'0!-./0!/0!$2%3#!2&7!$(!7.#!@'B7I!@2%!#U'?>:#I!7.'7!/3!93P23#0/'! @2::2H/36!7.#!)**C!70&3'?/!,B:#'%:(!23#!2@!7.#!?207!P#07%&B7/1#!3'7&%':!P/0'07#%0!/3!7.#! >'07!B#37&%(8!H./:#!/3@:'7/23!H'0!./6.#%!/3!)**T!$(!C>>I!/7!H'0!07/::!:2H#%!7.'3!7.'7!2@!)**)!2%!)**V!'3P!H#::!$#:2H!7.'7!#U>#%/#3B#P!@2::2H/36!7.#!RJJL!B%/0/0!,P'7'!@%2?!7.#!

*International Finance Statistics*80)C!97!'>>#'%0!7.'7!/3@:'7/23k0!12:'7/:/7(!/3!P#1#:2>/36!

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Variable:	Definition:	Source:
DDAMG	Damage from disaster (% of GDP)	EM-DAT and the WDI*
DAFFP	Number of people affected by disaster (% of population)	EM-DAT and the WDI
DKILP	Number of people killed by disaster (% of population)	EM-DAT and the WDI
WIND	Wind-speed for storms	EM-DAT
RICHTER	Richter scale magnitude for earthquakes	EM-DAT
GDPG	GDP growth	WDI
RR	Institutional strength	*International Country Risk Guides*
ILIT	Illiteracy (% of population)	WDI
CAPM1	*De jure* capital account openness index	Chinn and Ito (2006)
CAPM2	*De jure* capital account openness index	Edwards (2007)
GDPPC	GDP per capita (in constant 1995 US$)	WDI
GCON	Government consumption (% of GDP)	WDI
EXPORT	Exports of goods and services (% of GDP)	WDI
TROPIC	% of land area in the tropics	Gallup et al. (1998)
SMCG	Stock market capitalization (% of GDP)	World Bank’s financial dataset
FOREX	Foreign exchange reserves (% of imports)	WDI
DOMCRE	Domestic credit in banking sector (% of GDP)	WDI
GCFGL	Gross capital formation (annual % growth)	WDI
DOMCREL	Domestic credit provided by banking sector (% of GDP)	WDI
CAL	Current account surplus (as % of GDP)	WDI
BUDGETL	Government budget surplus including grants (% of GDP)	WDI
INFLL	Inflation rate (CPI)	WDI
IMPGL	Imports (% of GDP)	WDI
FDIL	Foreign direct investment (as % of GDP)	WDI
SSHNG	Financial crisis	Honig (2005)

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	Crisis measure in monthly shares			Binary crisis		
Variable	(1)	(2)	(3)	(4)	(5)	(6)
DDAMG	-86.956** 2.054			-9.564*** 4.800		
DAFFP		0.477 0.841			0.314 0.833	
DKILP			743.336 0.775			0.314 0.833
GDPGL1	0.255*** 10.435	0.259*** 10.594	0.259*** 10.584	0.161*** 5.428	0.259*** 10.613	0.259*** 10.613
Observations	1574	1574	1574	1574	1574	1574
Adj-R^2	0.13	0.13	0.13	0.13	0.13	0.13
F-test	3.02	2.96	2.96	72.93	2.96	2.96

; 27#4! - . #! 7'$

Variable	(1) All	(2) OECD	(3) Developing	(4) Small Econ	(5) Big Econ	(6) All	(7) OECD	(8) Developing
DDAMG	-82.546*	0.62914***	-84.894*	-89.579*	-44.231			
	1.927	2.539	1.785	1.756	0.142			
GDPGL1	0.174***	0.325***	0.181***	0.143***	0.306***	0.176***	0.294***	0.183***
	5.884	4.267	5.391	3.481	6.735	5.928	3.838	5.446
RR	0.043***	0.047*	0.073***	0.072***	0.041***	0.044***	0.043*	0.074***
	3.299	1.745	4.174	3.407	2.719	3.353	1.601	4.234
GCFGL	-0.002	-0.013	-0.003	-0.004	-0.002	-0.002	-0.008	-0.003
	0.274	0.693	0.364	0.480	0.187	0.319	0.418	0.419
DOMCREL	-0.009**	-0.010**	0.001	0.005	-0.018***	-0.009**	-0.011***	0.000
	2.175	2.373	0.218	0.766	4.024	2.330	2.552	0.063
CAL	0.039**	0.258***	0.037*	0.019	0.182***	0.040**	0.251***	0.037*
	2.040	7.164	1.699	0.784	5.351	2.073	6.902	1.716
BUDGETL	0.000	-0.076***	-0.003	0.040	-0.091***	0.000	-0.069**	-0.003
	0.013	2.539	0.075	1.002	2.432	0.015	2.274	0.083
INFLL	0.000	0.004	0.000	0.000	0.000	0.000	0.001	0.000
	0.457	0.255	0.500	0.473	0.820	0.466	0.039	0.503
IMPGL	0.011	0.026	0.008	0.008	0.009	0.011	0.033	0.008
	1.133	1.041	0.729	0.569	0.683	1.114	1.344	0.702
FDIL	0.135***	-0.038	0.138***	0.150***	0.092	0.134***	-0.039	0.136***
	3.514	0.811	3.055	2.984	1.549	3.482	0.817	3.018
SSHNG	-2.339***	-0.837**	-1.600**	-0.874	-1.627***	-1.490***	-0.889**	-1.633***
	2.667	2.233	2.536	0.977	3.575	3.113	2.351	2.590
WIND						0.000	0.001	0.000
						0.143	0.433	0.055
RICHTER						-0.165*	-0.140	-0.176*
						1.917	1.165	1.786
Observations	1574	374	1138	745	767	1512	374	1138
Adjusted-R2	0.16	0.36	0.14	0.10	0.29	0.15	0.35	0.14
F-test	3.38	7.45	2.84	2.05	5.98	3.19	6.96	2.82

; 27#4! - . #!7 ' $:#!%#>2%70!7 . #!B . '36#!/3!m=Q!6%2H7 . !@%2 ? !3 '7&%' :!P/0 '07#%0! '3P!27 . #%!B237%2:!1 '%/ '$:#0! ,P#>#3P#37!1 '%/ '$:#!/0!m=Q! 6%2H7 . 8!/3!%#0>230#!72! '!R!&3/7!B . '36#!/3!7 . #!1 '%/ '$:#00! ^#6%#00/23!/0!#07/ ? '7#P!H/7 . !7 . #!G '&0 ? '3S - ' (:2%! ,RJLR8!% '3P2 ? !#@@#B70! ' :62%/7 . ? 0! - . #! '002B/ '7#P!7S!07 '7/07/B0! '%#!327#P!$#:2H!#'B . !#07/ ? '7#P!B2#@@/B/#370!<<<I!<<I!<!/3P/B '7#!7 . #!0/63/@/B '37!:#1#:! '7!RI!TI! '3P!R*!>#%B#37!%#0>#B7/1#:(0!!

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Variable X^{R}_{i1t-R}:	(1)	(2)	(3)	(4)	(5)	(6)
	Illiteracy	Institutional strength	GDP per capita	Government consumption	Exports	Tropics
DDAMG	28.020	-48.246*	-69.527*	-149.446**	-337.973***	-162.378***
	1.228	1.779	1.887	-2.462	4.519	2.682
DDAMG*X	-7.645***	1.179*	1.483*	6.381**	5.829***	81.333*
	2.798	1.798	1.795	2.410	4.461	1.881
X	0.000**	0.044***	0.000***	-0.078***	0.031***	-0.029
	2.381	3.405	4.303	2.698	3.571	0.080
GDPGL1	0.105***	0.177***	0.164***	0.160***	0.180***	0.182***
	2.685	5.964	5.462	5.326	6.103	6.071
RR	0.079***		0.082***	0.064***	0.035***	0.044***
	3.500		5.176	4.422	2.715	3.436
GCFGL	0.005	-0.003	-0.002	-0.002	-0.002	-0.002
	0.540	0.368	0.228	0.326	0.249	0.304
DOMCREL	-0.010	-0.009**	-0.001	-0.010**	-0.009**	-0.009**
	1.233	2.261	0.272	2.177	2.313	2.147
CAL	0.062**	0.039**	0.053***	0.036*	0.036*	0.040**
	2.094	2.016	2.702	1.796	1.897	2.046
BUDGETL	-0.019	-0.002	-0.010	-0.013	-0.020	-0.003
	0.479	0.056	0.337	0.433	0.701	0.108
INFLL	0.000	0.000	0.000	0.000	0.000	0.000
	0.483	0.441	0.457	0.391	0.555	0.429
IMPGL	0.012	0.011	0.011	0.011	0.010	0.010
	1.003	1.162	1.095	1.106	0.997	1.079
FDIL	0.273***	0.135***	0.126***	0.123***	0.099**	0.130***
	3.967	3.526	3.245	3.132	2.524	3.380
SSHNG	3.487***	2.452***	-1.459***	-1.564***	-1.591***	-1.411***
	2.545	2.794	2.996	3.268	3.346	2.940
Observations	980	1512	1488	1496	1504	1500
Adjusted-R2	0.20	0.15	0.15	0.17	0.18	0.16
F-test	3.68	3.18	3.09	3.48	3.52	3.24

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Variable X_{iIt-R}^{R}:	(1) Stock market capitalization	(2) Domestic Credit	(3) Capital account openness I	(4) Capital account openness II	(5) Foreign Exchange Reserves
DDAMG	-63.983	-216.378***	-713.727***	-471.740	-219.313***
	0.371	3.370	7.681	0.595	3.384
DDAMG*X	147.943	228.482***	-611.937***	-98.289	71.252***
	0.442	3.309	7.702	0.562	3.359
X	1.002**	-0.042***	-0.109	-0.013*	0.031
	2.048	4.466	0.916	1.971	0.539
GDPGL1	0.130***	0.164***	0.176***	0.198***	0.176***
	3.243	5.549	5.297	6.498	5.873
RR	0.028*	0.056***	0.040***	0.052***	0.046***
	1.722	4.077	2.737	3.817	3.345
GCFGL	0.012	-0.002	-0.011	-0.006	-0.002
	1.129	0.305	1.588	0.829	0.297
DOMCREL	-0.022***		-0.005	-0.009**	-0.010**
	4.431		1.306	2.301	2.464
CAL	0.173***	0.032*	0.083***	0.041**	0.033*
	5.924	1.603	4.036	2.077	1.667
BUDGETL	-0.079**	0.011	-0.013	-0.007	-0.007
	2.204	0.384	0.445	0.229	0.228
INFLL	0.000	0.000	0.000	0.000	0.000
	0.151	-0.799	0.392	0.361	0.475
IMPGL	0.010	0.011	0.020**	0.008	0.009
	0.845	1.157	2.001	0.795	0.943
FDIL	0.031	0.116***	0.246***	0.127***	0.129***
	0.543	2.983	4.898	3.262	3.360
SSHNG	-1.783***	-1.563***	-1.657***	-1.433***	-1.648***
	4.021	3.273	3.316	2.935	3.419
Observations	867	1506	1225	1462	1491
Adjusted-R2	0.28	0.17	0.21	0.17	0.17
F-test statistic	5.07	3.53	4.27	3.36	3.45

; 27#4! -.#! 7'$:#! %#>2%70! 7.#! B.'36#! /3! m=Q! 6%2H7.! @%2?! 3'7&%':! P/0'07#%0! '3P! 27.#%! B237%2:! 1'%/'$:#0! ,P#>#3P#37! 1'%/'$:#!/0! m=Q! 6%2H7.8!/3!%#0>230#!72!'!R!&3/7!B.'36#!/3!7.#!1'%/'$:#00! ^#6%#00/23!/0!#07/?'7#P! H/7.!7.#!G'&0?'3S-'(:2%!,RJLR8!%'3P2?!#@@#B70!':62%/7.?0! -.#!'002B/'7#P!7S!07'7/07/B0!'%#!327#P!$#:2H!#'B.! #07/?'7#P!B2#@@/B/#370!<<<I!<<I!<!/3P/B'7#!7.#!0/63/@/B'37!:#1#:!'7!RI!TI!'3P!R*!>#%B#37!%#0>#B7/1#:(0!

!

!

!

5:$':'S]#%7%'3P!X!D0!Q2:/7/B':!#B232?(!2@!:'%6#!3'7&%':!P/0'07#%00!aU@2%P4![:'%#3P23!Q%#00`!RJJV0!

!

]':7'6/!]!G0!AB232?#7%/B!'3':(0/0!2@!>'3#:!P'7'0!E#07!M&00#U4!E/:#(!q!M230`!)**T0!

!

]'%%2!^0!=#7#%?/3'370!2@!#B232?/B!6%2H7.4!5!B%200SB2&37%(!#?>/%/B':!07&P(0!['?$%/P6#4!D9-!Q%#00`!RJJ+0!

!

]#3023![I!APH'%P!X![0!F3P#%07'3P/36!7.#!#B232?/B!'3P!@/3'3B/':!/?>'B70!2@!3'7&%':!P/0'07#%00!=/0'07#%!^/0W!D'3'6#?#37!M#%/#0!;20!C0!E'0./36723!=[4!E2%:P!]'3W`!)**C0!

!

[./33!DI!G/%2!90! E.'7! ?'77#%0!@2%!@/3'3B/':!P#1#:2>?#37w!['>/7':!B237%2:0I!/307/7&7/230I!'3P!/37#%'B7/2300!X2&%3':!2@!=#1#:2>?#37!AB232?/B0!)**K`LR,R8`!RKVSRJ)0!

!

APH'%P0!M0!['>/7':!B237%2:0I!B'>/7':!@:2H!B237%'B7/230I!'3P!?'B%2#B232?/B!1&:3#%'$/:/7(0!!X2&%3':!2@!937#%3'7/23':!D23#(!'3P!"/3'3B#!)**+`)K,T8`!LRCSLC*0!

!

m%##3#!E0!Y/3#'%!?2P#:0!@2%!>'3#:!P'7'0!934!Y9D=AQ!AB232?#7%/B!D2P#::/36!m&/P#!n2:&?#!R0!Q:'/31/#HI!;_4!AB232?#7%/B!M2@7H'%#I!93B`!)**)0!

!

m'::&>!X!YI!M'B.0!X!=I!D#::/36#%!5!=0!m#26%'>.(!'3P!AB232?/B!=#1#:2>?#370!;]A^!E2%W/36!Q'>#%!;20!KLCJ`!RJJL0!

!

G'::/P'(!-0!D/6%'7/23I!%/0W!'3P!:/e&/P/7(!B2307%'/370!/3!A:!M':1'P2%0!AB232?/B!=#1#:2>?#37!'3P![&:7&%':![.'36#!)**K`TC,C8`!LJV!SJ)T0!

!

G'&0?'3!X0!D/0?#'0&%#P!1'%/'$:#0!/3!#B232?#7%/B!'3':(0/04!Q%2$:#?0!@%2?!7.#!%/6.7!'3P!>%2$:#?0!@%2?!7.#!:#@70!X2&%3':!2@!AB232?/B!Q#%0>#B7/1#0!)**R`RT,C8`!T+SK+0!

!

G'&0?'3!XI!-'(:2%!E0!Q'3#:!P'7'!'3P!&32$0#%1'$:#!/3P/1/P&':!#@@#B700!AB232?#7%/B'!RJLR`CJ,K8`!RV++SRVJL0!

G23/6!50!=2!/?>%21#?#370!/3!621#%3?#37!e&':/7(!3#B#00'%/:(!%#P&B#!7.#!/3B/P#3B#!2@!M&PP#3!M72>0w!D'3&0B%/>7`!)**T0!

!

G2%H/B.!m0!AB232?/B!Y#00230!2@!7.#!\2$#!A'%7.e&'W#0!AB232?/B!=#1#:2>?#37!'3P![&:7&%':![.'36#!)***`!T)RSTC)0!

!

G&7B./023!DI!;2(!90!G2H!$'P!'%#!7H/30w!a&7>&7!B2070!2@!B&%%#3B(!'3P!$'3W/36!B%/0#00!X2&%3':!2@!D23#(I![%#P/7!'3P!]'3W/36!)**T`V+,C8`!+)TS+T)0!

!

G&7B./023!DI!;2(!90!M&PP#3!M72>0!'3P!7.#!D#U/B'3!H'1#0!X2&%3':!2@!=#1#:2>?#37!AB232?/B0!)**K`+J,R8`!))TS)CL0!

!

9Q[[0![:/?'7#![.'36#4!-.#!Q.(0/B':!MB/#3B#!]'0/00!m#3#1'4!937#%621#%3?#37':!Q'3#:!23![:/?'7#![.'36#`!)**+0!

!

9^9;0!=/0'07#%!^#P&B7/23!'3P!7.#!G&?'3![207!2@!=/0'07#%0!5BB#00#P!'74!.77>4llHHH0/%/33#H002%6`!)**T0!

!

90:'?!;0!m%2H7.!#?>/%/B04!5!>'3#:!P'7'!'>>%2'B.0!b&'%7#%:(!X2&%3':!2@!AB232?/B0!RJJT`RR*`!RR)+SRR+*0!

!

!

X2(B#!XI!;'$'%!D0!M&PP#3!M72>0I!$'3W/36!B%/0#0!'3P!/31#07?#37!B2::'>0#0!/3!#?#%6/36!?'%W#700!
E#::#0:#(![2::#6#!=#>'%7?#37!2@!AB232?/B0!E2%W/36!Q'>#%!x*R`!)**K0!

!

\'.3!D!A0!-.#!P#'7.!72::!@%2?!3'7&%':!P/0'07#%04!-.#!%2:#!2@!/3B2?#I!6#26%'>.(I!'3P!/307/7&7/2300!^#1/#H!2@!
AB232?/B0!'3P!M7'7/07/B0!)**C`L+,)8`!)+Rh)LC0!

!

;'%'('3!Q!\0!D'B%2#B232?/B!/?>'B7!2@!3'7&%':!P/0'07#%0!23!'!0?'::!/0:'3P!#B232?(4!#1/P#3B#!@%2?!'![mA!
?2P#:0!5>>:/#P!AB232?/B0!Y#77#%0!)**R`R*`!+)RS+)V0!

!

;/BW#::!M0!]/'0#0!/3!P(3'?/B!?2P#:0!H/7.!@/U#P!#@@#B700!AB232?#7%/B'!RJLR`CJ,K8`!RCR+SRC)K0!

!

;2(!9I!;&:'0%/!50!E.'7!P2!#U26#32&0!0.2BW0!7#::!&0!'$2&7!6%2H7.!7.#2%/#0w!D'3&0B%/>7`!)**+0!

!

Q'U023![!G0!F0/36!H#'7.#%!1'%/'$/:/7(!72!#07/?'7#!7.#!%#0>230#!2@!0'1/360!72!7%'30/72%(!/3B2?#!/3!-.'/:'3P0!
5?#%/B'3!AB232?/B!^#1/#H!RJJ)`L),R8`!RTSVV0!

!

^'PP'7Z![0!5%#!#U7#%3':!0.2BW0!%#0>230/$:#!@2%!7.#!/307'$/:/7(!2@!2&7>&7!/3!:2HS/3B2?#!B2&37%/#0w!X2&%3':!2@!
=#1#:2>?#37!AB232?/B0!)**+`LC`!RTTSRL+0!

!

^'?B.'%'3!^0!=2#0!7.#!#UB.'36#!%'7#!%#6/?#!?'77#%!@2%!%#':!0.2BW0w!A1/P#3B#!@%2?!H/3P072%?0!'3P!
#'%7.e&'W#00!X2&%3':!2@!937#%3'7/23':!AB232?/B0!)**+`+V`!VRhC+0!

!

^'0?&00#3!-!;0!D'B%2#B232?/B!/?>:/B'7/230!2@!3'7&%':!P/0'07#%0!/3!7.#!['%/$$#'30!9D"!H2%W/36!>'>#%!
EQl*Cl))C`!)**C0!

!

MB.H'%7Z!A0!5!3##P:#00!72::!2@!3'7&%':!P/0'07#%00!]20723!m:2$#!Vl)Vl)**K0!

!

M#:B&W!"I!_#:P'3!A0!a3!7.#!?'B%2#B232?/B!/?>'B7!2@!7.#!5&6&07!RJJJ!#'%7.e&'W#!/3!-&%W#(4!'!@/%07!
'00#00?#370!5>>:/#P!AB232?/B0!Y#77#%0!)**R`L`!CLVSCLL0!

!

MW/P?2%#!DI!-2('!G0!=2!3'7&%':!P/0'07#%0!>%2?27#!:236S%&3!6%2H7.w!AB232?/B!93e&/%(!)**)`C*,C8`!KKCS
KL+0!

!

MW/P?2%#!DI!-2('!G0!AB232?/B!P#1#:2>?#37!'3P!7.#!/?>'B70!2@!3'7&%':!P/0'07#%00!AB232?/B!Y#77#%0!
)**+`JC`!)*S)T0!

!

-2:!^I!Y##W!"0!AB232?/B!'3':(0/0!2@!3'7&%':!P/0'07#%00!93!=2H3/36!-I!a:07.22%3!5I!-2:!^I!#P000![:/?'7#!
B.'36#!'3P!%/0W0!Y23P234!^2&7:#P6#`!RJJJ`!V*LSV)+0!

!

-2H30#3P!^0!^/0W!'3P!/30&%'3B#!/3!1/::'6#!93P/'0!AB232?#7%/B'!RJJC`K),V8`!TVJSTJR0!

!

FP%(![0!^/0W!'3P!0'1/36!/3!;2%7.#%3!;/6#%/'0!5?#%/B'3!AB232?/B!^#1/#H!RJJC`LT,T8`!R)L+SRV**0!

!

n20!^I!n#:'0B2!DI!P#!Y'$'07/P'!A0!AB232?/B!'3P!02B/':!#@@#B70!2@!A:!;/y2!/3!AB&'P2%I!RJJ+SRJJL0!937#%S
5?#%/B'3!=#1#:2>?#37!]'3W!-#B.3/B':!Q'>#%!Q a nSR*+`!RJJJ0!

!

_'36!=0![2>/36!H/7.!P/0'07#%4!-.#!/?>'B7!2@!.&%%/B'3#0!23!/37#%3'7/23':!@/3'3B/':!@:2H0I!RJ+*S)**)0!
D'3&0B%/>7`!)**K0!