

H-RXUQDO RI 7D[5HVHDFK YRO QR SS

7D[SD\HU ZHDOWK DQG IHGHU
D WD[SROLF\ WKDW VKLHOG
IRU JURZWK IURP WD[HV

5REHUW ~~DQ~~~~SO~~~~R~~KQ % +XOO

\$EUVUDFW

7KLV DUWLFOH DGGUHVHV VKRUWFRPLQJ W/LQD 86 IDOR SRD LGHEWKHY HQWHHXH W
WD[WUHDWPHQW RI UHWDLQHG HDUQLQJV
ZHDOWK LV FDOFXODWHG XQGHU WKH DVVXPSWLRQ WKDW JURZWK LQFUHDV
7&-\$ ZKLFK LV DQ LQFUHDVH SURMHFWHG E\ WD[H[SHUWLQFUHQGVRYHU
EH\RQG LW SUH 7&-\$ YDOXH7) WROHDFU HDGHHUDO WDDQG YHQRW SRUDWLRQV
PRUH KHDYLO\ WKDQ SDVV WKURXJKV ,I Z Z€ EDU DVT DQ
7)75ULVHV ,I ZH UHSOD
D 576ZLW 570ZKHUH 5(LM VKLHOGHG IURP WD[HV ZH7)ZGGRWKDWHWWD[QBUHHD
7KH VZLW 576KXWWDHU VHUYHV WR HTXDOLVH WKH WD[LQJ RI SDVV WKURX
DQ76WR576GRHV QRW PDWHULDOO\ DOWHU WKH RSWLPDO GHEW WR ILUP YDOX

.H\ ZRUGD[SD\HU ZHDOWK IHGHUDO WD[UHYHQXH EXVLQHVV JURZWK IHGHU

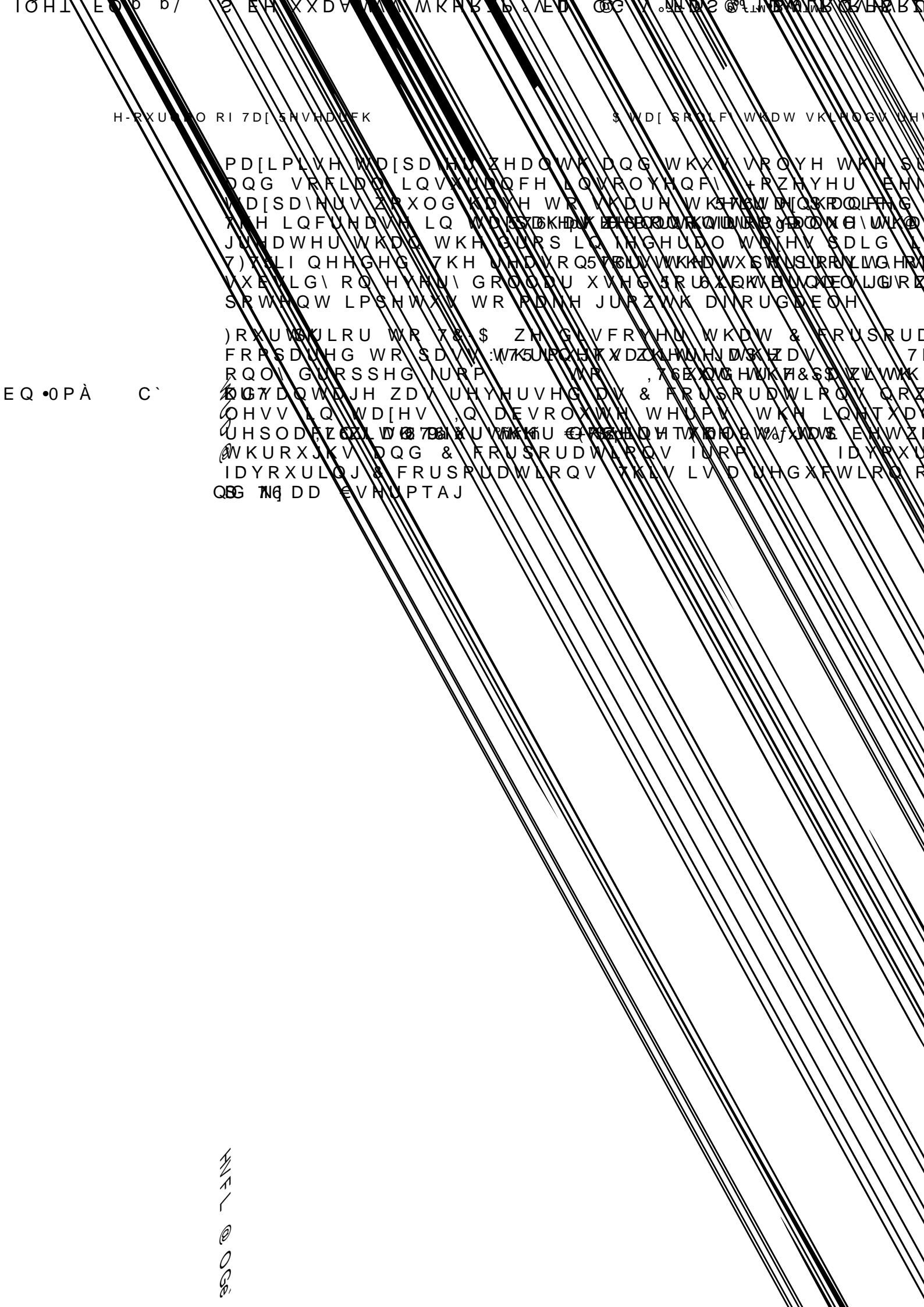
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86\$ URE KXOO#ZDVKEXUQ HGX
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86\$-KXOO#RQHGLJLWDO FRP

,1752'8&7,21

'XULQJ 'HFHPEHU WKH 86 &RQJUHVV SDVVHG WKH
 WKDW ORZHUHG WD[UDWHV HQDEOLQJ LQGLYLGXDO
 HDUQLQJV :LWK ODUJHU HDUQLQJV JUHDWHU FRQV
 ZRXOG IROORZ WKHUHE\ ERRVWLQJ JURZWK LQ UHDO
 3ROLF\ &HQWHU 73& UHSRUWV WKDW WKH HVWL
 DERXW IRU ERWK DYHUDJH RI VL[VRXUFHV
 ILYH VRXUFHV SRUWHG E\ 3DJH WKH -RLQW &RP
 H[SHFWHG DW WKH WLPH RI 7&-\$ LQ 'HFHPEHU D
 LQ IHGHUDO WD[UHYHQXH IRU WKH QH[W WHQ \HDUV
 LV RI WKH SURMHFWHG 86' WULOOLRQ LQ 86
 HVWLDPDWH RI LV FRQVLVWHQW ZLWK WKH SURMHF
 %XGJHW 2IILFH &%2 DV WKH DYHUDJH IRU

ORWLYDWHG E\ LQHIILFLHQFLHV LQ 86 WD[ODZV ZH V
 SUREOHP E\ H[SORULQJ D WD[ODZ FKDQJH ZKROBFDQ
 ZLWK D UHWDLQHG 506 ZKQJH WDWV KSHHGHUWDPJ
 GHGXFWLEOH H[SHQVH, QHWHKHEV DLQHVFOMWHDQ VXE
 RI JURZWK WKDW LV VXSHULRU WR DQ\ JURZWK UHODV
 H[LVW RYHU WLPH 7KH WD[ODZ FKDQJH WKDW ZH SUR
 HVSHFLDOO\ WKRVH UHODWHG, WRKDWKHDVW BXGMGXFEWL R
 DQG WKH WD[DWLRQ RI IXQGV XVHG IRU JURZWK

7R WHVW WKLV WD[506 HSKODFHZ ZKQJH WDW &DSLWDO
 ORGHO &60 GHYHORSHG E\ +XOO D 3ULI
 &60 +XOO XWLOLVHG D IUDPHZRUN VLPLODU WR
 XVLQJ PDUNHW DQG FRPSDQ\ GDWD IRU WKH \$XVWUD
 (QHUJ\ 7KH &60 HTXDWLRQV DV SUHVHQW, W606\+XOO
 576%\ LQFOXGLQJ &605HTXDQVEHROOLZKROH IREHIDQWD[V
 WD[HG ZH DGGUHVV WKH 76LKWDRUDYRQUSUGHEVWRHYGUE
 WD[DWLRQ RI IXQGV WKDW WRR RIWHQ PDNHV JURZWK
 HTXDWLRQV DUH FDSDEOH RI LGHQWLI\LQJ ZKLFK WD
 \LHOGV JUHDWHU PD[LPHILUVPSYDQXHWKDWUHDWHU
 UHYHQXH \$V UHTXLUHG E\ WKLV VWXG\ WKDW LQFOX
 &60 HTXDWLRQV FRYHU WKH WZR PDLQ)32 IRUPV RI R



H-RXU... RI 7D[5HVHDEFK

\$ WD[SROLF WKDW VKLPOGV OH

PD[LPLXH WD[SD\H\ZHDOWNK DQG WKXY VROYH WKH SU
DQG VRFLDO LQVXUDDQFH LOVROYHQFI +RZHYHU EHN
WD[SD\HUV ZRXOG KDYH WR VKDUN WKSTW DQCKDQFHG
7KH LQFUNDUH LQ WD[SD\HUV DQCKDQFHG
JHDWHU WKDO WKH GURS LQ INGHUDO WDIHV SDLG
7)ALI QHHGHC 7KH UHDXRQ576LVWKKHDXSUSURJLVGHRV
VXE\LG\ RO HYHU\ GROODU XVHG IRU BZKXENUQDEO\LGUR
SRWHQW LPSHWXY WR PDNH JURZYK DNRUGDEOH

)RXUSKLRU WR 78 \$ ZH G\VFRYHU WKDW & FRUSRUD
FRSDUHG WR SD\W :W5UPCHXDXZHUHJDSZDV 7I
RQO GURSSHG IURP WR 76XQGHUKH&SSZVWK
EQ • 0PÀ C` 7G7DQWDJH ZDV UHYHUVHG DY & FRUSPUDWLRQY QRZ
OHVV LQ WD[HV ,Q DEVROYWH WHUPV WKH LQHTXD
UHSODEZLW 78XUWKHU € 78H QHTWIRQWafJDE EHWZ
WKURXJKV DQG & FRUSRUDWLRQV IURP IDYRXU
IDYRXULOJ & FRUSPUDWLRQV 7KLV LV D UHGXFWRQ R
QBG 7G DD EVHUPTAJ

EQ • 0PÀ

C`

MFL @ OCS

H-RXUQDO RI 7D[5HVHDFK

\$ WD[SROLF\ WKDW VKLHOGV UH

H-RXUQDO RI 7D[5HVHDFK

\$ WD[SROLF\ WKDW VKLHOGV UH

)DLOXUH WR SURPRWH 576

H-RXUQDO RI 7D[5HVHDFK

\$ WD[SROLF\ WKDW VKLHOGV UH

IRU)32V EXW VRPH DOVR ZRUN IRU QRQ SURILWV DQG
IHGHUDO JRYHUQPHQWDO ~~QMYKHUVSH\$W RYDIPR WQVSLDRUJ~~
PRUH WKDQ WZLFH WKDW RI SDVV WKURXJKV DQG QHD

)LJ 6RXUFHV RI 86)HGHUDO 7D[5HYHQXH

6RXUFH)URP -&7

\$PDGHR

DQG *UHHQEHUJ

H-RXUQDO RI 7D[5HVHDFK

\$ WD[SROLF\ WKDW VKLHOGV UH

6HFRQZH FDQ DVVHV LI LW LV UHDVRQDEOH WR DGO
FRUSRUDWLRQV RU SDVV WKURXJKV RU ERWKWKUH PRV
SHUVRQDOVWUFDH ZUWK WKH SDVV WKURXJK VRXUFH
ERWK VRXUFHV SD\ WD[HV DW WKH SHUVRQDO WD[OHY
WKURXJKV DUH WKHROXUHSWUVRQDOVWUFDHUV

)RU WKL VVWXG\ ZH FKRRVH WRWKHRSJUDWUHQV
WKH SDVV WKURXJK VRXUFH RI UHYHQXH WR IRUP WKH
WKUHH FDWHJRULHV RI & FRUSWUVRQDOVWUFDHUV

H-RXUQDO RI 7D[5HVHDFK

\$ WD[SROLF\ WKDW VKLHOGV UH

OHYHO WD[UDWH KD W D O S R W L W K Q E M H H R S S R Q L W H H I I H
J W K H S R V L W L S Y G R I P I L H F D W H U R W K H Q H Z J C H Q L W K H H I E X F W Q I I
OHYHO WD[UDWH IDOOV

9DOXDWLRQ PRGHOV

9DOXDWLRQ PRGHOV FRPSXWH ZHDOWK 8VLQJ WKHV
PD[LPLVDWLRQ LV WKH EHVW ZD\ WR LQVXUH WKHUH L
LQIUVDWUXFWXUH DQG JRYHUQPHQWDO VHFUWLFH VVPD
SDULEXUHDWHU WD[SD\HU ZHDOWK OHDGV WR JUHDWH
ZLWK)32 EXVLQHVV ZHDOWK DV WD[SD\HUV RZQ WKHV
WKHP 7D[SD\HUV HYHQ WKRVH HPSOR\HG E\ QRQ SU
DQG IHGHUDO DUH OLQNHG WR EXVLQHVV ZHDOWK D
RQ)32V WR VXSSO\ WKHLU UHYHQXH VWUHDPV

,Q WKLW DUWLFOH WKH FRDPSWDS WFDJHLV XPD[LDPYV
ZHDOWK FRQVLVWV RI YDOXDWLRQ IURP WZR JHQHUD
VXSSO\ ILQDQFLQJ HTXLW\ DQG GHEWR7KKRHWHWKBF
VHFXULW\ PL[WR ILQDQFH SURMFWV ZLWK D SRVLW
PRGHOV DUH YDOXDWLRQ PRGHOV WKDW DGGUHVV W
ZLW 7KXV D VWDUWLQJ SRLQW IRU PD[LPLVLQJ WD

H-RXUQDO RI 7D[5HVHDFK

\$ WD[SROLF\ WKDW VKLHOGV UH

H-RXUQDO RI 7D[5HVHDFK

\$ WD[SROLF\ WKDW VKLHOGV UH

'DPRGDUDQ VXSSOLHV , & O D B W P H V O D K G H D E F W D Y G F U
'DPRGDUDQ & U L S R W W V P V R I U D Q J H V) R U R X U W H V W V

H-RXUQDO RI 7D[5HVHDFK

\$ WD[SROLF\ WKDW VKLHOGV UH

DV ORQJ DV WKH GLIIHUHQWLDO LV UHDVRQDEO\ FORV
ZLWK D GLIIHUHQWLDO ZRXOG JHQHUDWH VLPLOD
FORVH WR WKH SHUFHQWDJHV ZH XVH

:H FDOO WKH LQFUHDVH PDUJXPXQKDEFLDQXJRZWK
DV WKH ILUP VL]H DGMXWV D HGVHDVWURPULQHGDV VKRZ
VWHS SURFHGXUH LQ \$SSHQGL[

\$V GLVSOD\HG ODSYDOLQHXVDEDDQJH IURP WR
WHVWV 6LQFH SUH 7&-\$ WHVWV GR QRW\$KLDYHIVKH H
DOO SUH 7&-\$ WHVWV 7KH RXWFRPHV ZKHQ XVLQJ H
HTXLYDOHQW WR)P ROR 6\$SO\LQJ WELHWK)H \$D,S,OWFXDECOH
PXOWL\$Q\EQ6\$)ZKLOH PDUQWDLQLDQXVHV YDOXHV IRU
ZHDOWK DQG IHGHUDO WD[UHYHQXH R\$)F&PHQJWR E
HQKDQFHG JURZWK WR LQFUHDVH UHDVDD[9LDVQRWDVX
RQO\ FRQVLVWHQW ZLWK 73& EXW DOVR FRQVLV
VHFWLRQ WKDW ILQGV *'3 ULVHV ZKHQ WD[UDWHV

7\$;3\$<(5 :(\$/7+ \$1')('5\$/ 7\$; 5(9(18(5(68/76

7KLV VHFWRQ SUHVHQWV UHVXOWV IURP DSSO\LQJ W
:H UHSRUW UHVXOWV IRU WD[SD\HU ZHDOWK DQG IH
DQG WDEOH IRUPDWV :H ILQG WKDW D WD[SROLF\ DO
576 LV VXSHULRU WR WKH FXUUHQW WD[SRO:LF\ WKDW
DOVR VKRZ WKDW RZQHUVKLS IRUPV576DQWDPKHGWRVWK
FKRLFH,76R176GRHV QRW H[HUFLVH DQ LPSRUWDQW LQ
WR ILUP YD'OXH UDWLR

WU[SSKLFDO UHVXOWV IRU & FRUSRUDWLRQV DQG SDVV WKU

8VLQJ WKH &60 HTXDWLRQV ZH JHQHUDWH D VHULHV
WR ILUP YD'OXH)WRVLRKLV VHULHV9ZZHLFLGHQWVXUQ UH
2'9)URP WKH FDVK IORZV IRUPH[7ZV\FRQSGXGHEWDEOXH
WHQ WD[UHODWHG YDULDEOHV 2XWFRPHV IRU WKHV
)LXUHVZLWK WKH ILUVW IRXU RXWFRPHV LQYROYLQJ
ODVW VL[RXWFRPHV LQYROYLQJ IHGHUDO WD[UHYHQ
E\ GLYLGLQJ E\ 86' ZKLFK LV DPRXQW RI WKH E

H-RXUQDO RI 7D[5HVHDFK

\$ WD[SROLF\ WKDW VKLHOGV UH

H-RXUQDO RI 7D[5HVHDFK

\$ WD[SROLF\ WKDW VKLHOGV UH

WD[HV DUH GHWULPHQWDO WR JURZWK 1R JURZWK DO
WKH JUHDWHU HTXLW\ FDKV SD\RXV&5(BQDVQGH WH[WXU
WKDW RFFXU LQ WKH SUH 7&-\$ ZRUOG

7KH ODVW WZR FROXPQV) \$ 5ZKYHGH WKZR SYDHOXBVSIRDOX
DQG WKH 7&-\$ YDOXH LV 7)757RUV DLQGERDSRUVDWKE
± XQGHU 7)7-5UHWXOWHV GLVFORVH WKD
JURZWK RI IURP 7&-\$ FDQQRW PDNH XS IRU WKH
FRUSRUDWLRQV 7KXV 7&-\$ GRHV QRW VROYH WKH
FRUSRUDWLRQV %\ UXQQLQJ D GHILFD\ WSDHDFK WFDWKW
IHGHUDO GHEW ZKLFK LV VLPSON\ WKH DFFXPXODWLRQ

)LJXUH UHSHDWV)LJXUH EXW UHSODFHV & FRUSRU
ZKHUH WKH 9D\$)LWKURXJKRU WKH 7&-\$ WHVW /LNH &
WKURXJKV KDYH D PHD\HURHGLWRQSUJRZ&K WHVW ,Q W
WZR FROXPQV RI WKLW)LJXUH(%ZHWIHLQGXWKDWOVFRCS
DQG WKH%7&R\$OLG ILOO FROXPQ LV KLJKHU DW
FRUSRUDWLRQ UH(%XORU \$DV)LWKURXJKV LQFUHDVHV
YDOXHV LQ)LJXUH GHDOLQJ ZLWK FRUSRUDWH WD[
GR QRW SD\ FRUSRUDWH WDTDQIGDKHVVHKBODDQVIZKA
WKURXJKV 7KLV RXWFRPH RFFXUV EHFDDXQHWDVQGRV
DIWHU FRUSRUDWH WD[HV

\$V ZDV WUXH IRU & FRUSRUDWLRQV ZH(HD\$BBLQ YDOX
WKHDFWR RFFXUV IRU D OHYHUG QRQ JURZWK VLWXDV
FRUSRUDWH UHYH&X(HDFQGXPKDWHR]HUR YDOXHV EHF
WKURXJKV GR QRW SD\ FRUSRUDWH&5V D[VWDOMKH]BUR
EHFDPMHRRFFXUV IRU D OHYHUG QRQ JURZWK[VLWXDW
9) IRU SDVV WKURXJKV ZRXOG RFFXU IRU D OHYHUG C
LJ UHPDLQHG DW 7KXWRWKH LQFDIGGLMIRRQ WR O
LV FUXFLDO DW OHDVW IRU D WISLFDO ILUP IRU JURZ

)RU WKH WKUHH SHUVRQDO WD[UHYH&X5H5YDDXSV WCKMVKP ROLC
LV DERXW \$V IDU DV ZH FDQ GHWHUPLQH WKLW LV VLPLODU W
E\ -&7 +RZHYHU YDOXHV IRU WKH WKUHH FDWHJRU
SUHYLRXV IRRWQRWHV GLIIHUHQFHV LQ ERWK VRXUFHV RI HTXLW
VRXUFHV DUH WD[HG DW WKH VDPH UDWH

H-RXUQDO RI 7D[5HVHDFK

\$ WD[SROLF\ WKDW VKLHOGV UH

)LJ 3DVV 7KURXJK :HDOWK DQG)HGHUDO 7D[5HYHG

7KH ODVW WZR FROXPQV)R5L)MJXUH SULRYHU W&-\$WDQG
 XQGHU 7&-\$ 7KLV LV D IDOO RI RQO\ URXQGLQJ
 FRUSRUDWLRQ UHVXOWV LQ)LJXUH 7ZKHUH SDVHV L
 WKURXJKV LV QRW VXEWDQWLDOO\ DIIHFWHG E\ 7&-\$
 HUURU RI ZKHQ VXEWDQWLQJ IURP :
 WKH VPDOOHU IDOO LQ WKH WD[UDWHV IRU SDVV WK
 7&-\$ EXW DOVR WKH IDFW WKDW SDVV W(KURXJK WD[DE
 VOLJKWO\ JUHDWHU LQFUHDVH FRPSDUHG WR & FRUSR
 WKDW DUH SDVV WKURXJKV FDQ ZH VD\ WKDW WKH HC
 PDNLQJ XS IRU)75L)R5L)RZHUHQ RZHUHQ RI WD[UDWHV X
)LJXUH FKDUWV & FRUSRUDWLRQ VROLG ILOO FROX
 GLIIHUHQFHV WKDW LQYROYH 7&-\$ YDOXHV PLQXV SU
 GLIIHUHQFHV DUH IURP WKH WZR VHWV RI FROXPQV
 GLIIHUHQFHV DUH IURP WKH WZR VHWV RI FROXPQV LC

:KLOH QRW IRUPDOO\ UHSRUWHG WKHUH75L)R5L)RZHUHQ RZHUHQ RI WD[UDWHV X
 H[DPSOH ZKLOH WKH LQYROYHV WKURXJKV WKDW SDVV W(KURXJK WD[DE
 ILJXUHV DQG WDEOHV DUCHGLZKHQ DWHHV RGHVHSIDUDWHO\ FDQ \LH
 LQ)75L)R5L)RZHUHQ RZHUHQ RI WD[UDWHV X

H-RXUQDO RI 7D[5HVHDFK

\$ WD[SROLF\ WKDW VKLHOGV UH

LQGLFDWHV DQ LQFUHDVH FDXVHG E\ 7&-\$ ZKLOH D
DWWULEXWDEOH WR 7&-\$

)LJ & &RUSRUDWLRQ DQG 3DVV 7KURXJK 'LIIHUHQFH

)LJXUH UHYHDOV WKH IROORZLQJ & FRUSRUDWLRQ U
ODWWHU LQ)SDVW WKHWHV 6HFRQG LQFUHDVHV
(%7DQGDUH WKH VDPH DW IRU SDVV WKURXJK

H-RXUQDO RI 7D[5HVHDFK

\$ WD[SROLF\ WKDW VKLHOGV UH

UDW~~W~~3 IDOOV 7KH SHUVRQDO WD[UHY
SD\RXW LV JUHDWHU IRU SDVV WKURXJKV DV WKH\ SDV

7HQ~~W~~G ~~7~~75~~6~~IVFUHDVHV 7KH WZR IDFWRU
7)75IRU & FRUSRUDWLRQV DUH WKH GHFUHDVHV LQ FR
HTXLW\ FDV~~5~~(SD~~5~~5~~5~~VDV WKH WKUHH)R~~5~~DUHU SRR\UWFLYV
7KH IDFWRU UHVSRQV)Z~~5~~ORU ISDUV WKH GER\$SKVQLV WKH ID
WD[UHYHQXH IURP H~~5~~X~~1~~WD VF ~~W~~KKH S B XUX ~~W~~7~~5~~DU W RXUF

H-RXUQDO RI 7D[5HVHDFK

\$ WD[SROLF\ WKDW VKLHOGV UH

)LJ & &RUSRUDWLRQ 3DVV 7KURXJK DQG 63HUVRQDC

)LJXUH GLVFORVHV WKH IROORZLQJ ZKHQ ZH FRPSD
LDVZHOODKUMIZ 7DYHUDJH & FRUSRUDWLRQ DQG SDVV WKUR
DQG WKH ZHLJKWHG DYHUDJH & FRUSRUDWLRQ DQG 3
ODWWHU UHVXOWXU DUM LG`SDUMADWEH HVHV

H-RXUQDO RI 7D[5HVHDFK

\$ WD[SROLF\ WKDW VKLHOGV UH

)LJ & &RUSRUDWLRQ 3DVV 7KURXJK DQG 573HUVRQDO

)LJXUH GLVFORVHV WKH IROORZLQJ ZKHQ ZH FRPSDU
FRUSRUDWLRQV DQG SDVV WKURXJKV ZLWK WKDW EH
ODWWHU UHVXOWV LQ SDUHQWKHVHV

H-RXUQDO RI 7D[5HVHDFK

\$ WD[SROLF\ WKDW VKLHOGV UH

HTXLW\ SHUVRQDO WDF576FZKLVCH/ WKVXEVWDRQVLD DO IDO
RFFXUV E HIRUX576L V FRPSXWHG E(%ZEJW GR ZHGLQJ
WKHQ VXE WUD,FD,WL Q JQRXWDDW D[RGHGXFWLRQ EXW VXE M
ò576 7KLV H[SODQDWLRQ FDQ DOVR KH Q S Q B B R X Q W I F
GHVFULE 7KGL Q G L W V H V 7KH5 76FDXKVKI W B D
VPDOOHU LQF(UZ B VFKLQVWKKH FDSLWDO JDLQV FRPSRQ
WR SHUVRQDO HTXLW\ WD[\$ 5 H D M R Q @ B U D T V E P D O O H U

H-RXUQDO RI 7D[5HVHDFK

\$ WD[SROLF\ WKDW VKLHOGV UH

JUHDWHU SRWHQW)ZDI MKHUCFUMDKDGLQJ RI WKH L
ZHDOWK 7KLV FUHDWHV D SRWHQWLDO VRXUFH RI 86
VROYH RWKHU SUREOHPV VXFK DV WKRVH UHODWHG W

7DEOH & &RUSRUDWLRQ 3DVV 7KURXJK DQG 3HUVRO
YV 7&-\$

	& &I	3D WKU	& &RUS WKU	& &RUS
3DQH0&\$ Z,7 PLQX 7&-\$ Z,7				
(%				
1				

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H-RXUQDO RI 7D[5HVHDFK

\$ WD[SROLF\ WKDW VKLHOGV UH

ZKHQ JDXJLQJ WD[SD\HU DQG ZHDOWK DQG IHGHUDO W
LQ WHUPV RI FRPSDULQJ WKH H[DFW GROODU DPRXQW
VKLHOGV

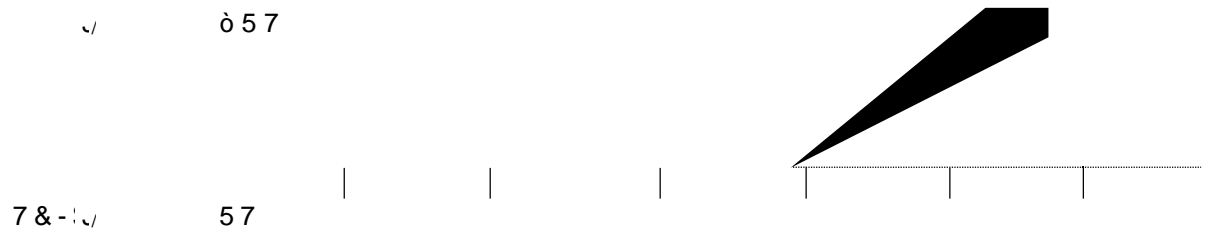
3DQHO \$ RI 7DEOH UHSRUWV UHVXOWV ZKHQ ERWK 7
DQ76 3DQHO % UHSRUWV UHVXOWV ZKHQ 76 Q&-\$ UYD0&-\$
YDOXH DUH, 76% RI Q KR Q HDV RI 7&-\$ UHVXOWV KDYH HQ

H-RXUQDO RI 7D[5HVHDFK

\$ WD[SROLF\ WKDW VKLHOGV UH

H[SHQGLWXUH LQ WKH 86 LV WKH H[FOXVLRQ RI HPSO
SUHPLXPV DQG PHGLFDO FDUH

7KH ILQGLQJV LOOXVWUDWHG LQ)LJXUHV 576QG FDS
DUH QRW RIIHUG DV WKH RSWLPDO ILQGLQJV DV PRU
EH VHHQ ODWHU LQ 7DEOH PFK PRU576WDSSDUWXZH
ZKHUH5000 RVHG DV D WD[VKLHOG LQV576GRZHUHQH K
7)75HYHQ PRU576KDQ D ò



H-RXUQDO RI 7D[5HVHDFK

\$ WD[SROLF\ WKDW VKLHOGV UH

H-RXUQDO RI 7D[5HVHDFK

\$ WD[SROLF\ WKDW VKLHOGV UH

WLP HV JUHDWHU WKDQ WKH IDOO LQ IHGHUDO W
ZHDOWK WKDW FRXO~~75~~ ~~5H~~ ~~XVHHG~~ ~~WGR~~ LQFUHDVH

7)75 UHVXOWV

\$V VHHQ~~75~~ WKH

H-RXUQDO RI 7D[5HVHDUFK

\$ WD[SROLF\ WKDW VKLHOGV UH

,76R576WD[ODZ ZLOO VKRRW IRU DQ LQYHVWPHQW
VSHFXODWLYH JUDGZREDOGEZKILWJHU)RU RXU WHVW

FODVVURRP DV ZHOO DV WKRVH WR KHOS SROLF\ PDN
VKLHOGV DQG JURZWK LQ *'3 7KXVH H[HUFLVHV DUH
FRPPLVVLRQHG WR SURSHUO\ WHDFK WKH UHODWLRQ
HVSHFLDOO\ WKRVH ,JRYG QULW DLOM B ,HWWQLXFWLRQ
H[HUFLVHV DUH DOVR YDOXDEOH WR SUDFWLWLRQHUV
SROLF\ DSSOLFDWLRQV WR JXLGH WKHP LQ WKHLU GH
ZLWKRXW XQGXFH WD[LPSHGLPHQV WKDW PDNH JURZ

)RU D VHFRQG WDVN ZH WDNH LQWR FRQVLGHUDWLRQ
,Q WKLV UHJDUG IXWXUH UHVHDFK FDQ H[SORUH RW
KRZ WD[UDWHV FKDQJH ZLWK OHYHUDJH 7KXVH WHV
LQFOXGH WD[UDWV VFHQDULRV EHORZ DQG DERYH W
DUWLFOH \$GGLWLRQDOO\ WKLV VWXG\ V WHVW DV
DUJXHG E\ +XOO D IRU GHEW IRU HTXLW\ WUDQV
IRUPXODWHG WR DSWKHRSIURR DQG XQIRUHVHDFK F
FRQVLGHU UHSHDWLQJ WKLV DUWLFOH V WHVW ZKH
OHYHUDJH ,Q RUGHU ZRUGV WKH H[SHFWHG OHYHU
DQ\ OHYHUDJH FKRLFH LQVWH 29 RIKWOM ZIKRZFXOWKO
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IURP WKH XQOHYHUHG WD[UDW RQH QHYHU NQRZV
FRQGXFWHG

)RU D WKLUG WDVN IXWXUH UHVHDFK PLJKW FRQVL
7KLV UHVHDFK FRXOG SRVVLEO\ VKHG 6WKDW RQJVS
MXVWL\ GHEW DV JURZWK HQKDQFLQJ DW OHDVW IRU
GHWHUPLQH WKH OLPLWV DQG DGHU ROKER WKK DQ\ WKDV
&DSLWDO 6WUXFWXUH ORGHO &60 HTXDWLRQV DQ
SORZEDFN%5E WLRUH GHEW LV XQG ULW DKKH DROG WRXU
JURZWK)RU WKH &6%5XV WX DQ JUHDWHU WKDQ WKH
RQ (IRU JURZWK WR DGG YDOXH DW WKH XQOHYHUHG
QRW PDNH JURZWK YDOXDEOH LI WKH EXVLQHVV WD[L
SRVLWV WKDW GHEW KDV QR SDUW LQ DIIHFWLQJ WKH
XQOHYHUHG JURZWK DMM DQG EHFRPHV WKKGHYHU
WKH UHWDLQHG HDUQLQJV LV DOUHDG\ IL[HG WKH
VKDUHKROGHUV WR WDNH RQ 5(UFKXLWNL QFW HHDVFKGGJ
IURP GHEW FRPHV ZLWK D SULFH 6XSSRVH GHEW DQG
VXSSOLHUV RI IXQGV IRU JURZWK 7KH UROH RI GHEW
RI FDVK IORZV DYDLODEOH WR WKH ILUP IRU LWV FKRY

H-RXUQDO RI 7D[5HVHDFK

\$ WD[SROLF\ WKDW VKLHOGV UH

DQ LQWHUHVY 76 WDR XCK HQ GVV JLYHQ LW GLVWRUWV V
GHEW RYHURRTOG W W DV SHJSDH[W@H DWD@UHDWPHQV
HDUQEQJWKDW LV FRQWUDU\ WR WKH UHVHDFK WKDW
IXQGV XVHG 5RU JURZWK

H-RXUQDO RI 7D[5HVHDFK

\$ WD[SROLF\ WKDW VKLHOGV UH

H-RXUQDO RI 7D[5HVHDFK

\$ WD[SROLF\ WKDW VKLHOGV UH

'RUDQ 0 μ0DQDJHUV VKDUHKROGHUUMJLDQD WKZHSRYSRZUD
QR SS

)UDQNHO 0 μ:KDWTV WKH DYBISD JRS \$PHULFDQVSYWIDQ DEDV
KWWSV ZZZ XVDWRGD\ FRP VWRU\ PRQH\ SHUVRQDOILQDQ
DPHULFDQV WD[UDWH

H-RXUQDO RI 7D[5HVHDFK

\$ WD[SROLF\ WKDW VKLHOGV UH

+XOO 5 D μ\$ FDSLWDO VWUXFWXUH, PRGHOPH&W ZLQWKJWPH
)LQDQFLDO , QROYDWLRQV SS

+XOO 5 E μ'HEW HTXLW\ GHFLVLRQ PDJHLQJZDYLQZGDIWK
SS

+XOO 5 μ&DSLWDO VWUXFWXUH PRGHO &60, QYFRUWHFWL
0DQDJPHQW DQG)LQDQFLDO , QRYDSLRLQV

+XOO 5 μ%XVLQHVV ZKHG WKWDLQOVDFRROLFF\Q/RWWSSV

+XOO 5 μ&UHGLW UDWLQVWPHQWIDURDYDHPHQW DQGO)LQDQ
QR SS

+XOO 5 3ULFH ' μ3DVWKWKXUQKYOYBOKDWLRSQHQHXQRDO
SS

+XOO 5 9DQ 'DOVHP 6 μ1RQSURILWV DQG ,SDWHUQWRWRQ
-RXUQDO RI)LQDQFLDO QWXGLSS

-HQVHQ 0 μ\$JHQF\ FRVWV RI IUHH FDVK\$IFRZLFDQJ(SRUORPHL
5HYLHZO QR SS

-HQVHQ 0 0HFNOLQJ : μ7KH RU\ RI WKH ILUP 0DQDJHUL
VWUXFWXUHRI)LQDQFLDO (FRPLSS

-RLQW &RPPLWVHH RQ 7D[DWLRQ -&7 μ2YHUYLHZ RI WKH
-&;)HEUXDU\

\$YDLODEOH DW KWWSV ZZZ MFW JRY SXEOLFDWLRQV KWPO"IX

-RLQW &RPPLWVHH RQ 7D[DWLRQ -&7 μ2YHUYLHZ RI WKH
-&; 0DUFK \$YDLODEOH DW

KWWSV ZZZ MFW JRY SXEOLFDWLRQV KWPO"IXQF VWDUWGRZQ

.LVJHQ ' μ&UHGLW UDWLQVWPHQWIDURDYDHPHQW VWUXFWXUH
SS

.QRWW \$ μ:K\ WKH 7D[&XWV DQG -REV \$FW 7&RUEHVWR
)HEUXDU\ \$YDLODEOH DW KWWSV ZZZ IRUEHV FRP VL
WD[FXWV DQG MREV DFW WFMD OHG WR EX\EDFNV UDWKH

.RUWHZHJ \$ μ7KH QHWREXHQDQWYRLODQFHJHSS

0DWWKHZV ' μ7KH WD[ELOO LV D JLDQW SHUPLVVLRQ V
'HFHPEHU \$YDLODEOH DW KWWSV ZZZ YR[FRP
UHSXEOLFDQ WD[ELOO H[SODLQHG

0F%ULGH : μ&56 DW RGGV ZLWK DFDGHPLF VWXGLHV FF
HDUQHUV WD[)RUEHVWRPEHU \$YDLODEOH DW KWWSV
RGGV DFDGHPLF VWXGLHV FRQWLQXHV FODLP QR KDUP UD

0HUWHQV . 5DYQ 0 μ7KH G\QDPLF HIIHFWV RI SHUVRQDQ
8QLWHG \$FWHUV (FRQYRLO 5HYLHZ SS

0LOOHU 0 μ'H-ERXUDQDQWYRLODQFHJH SS

H-RXUQDO RI 7D[5HVHDFK

\$ WD[SROLF\ WKDW VKLHOGV UH

ORGLJOLDQL) 0LOOHU 0 μ&RUSRUDWH LQFRPH WD[HV
\$PHULFDQ (FRQRPRG 5HYQRZ SS

0\HUV 6 μ'HWHUPLQDQWV- RXFRDWRU DWDEQRDZ (FRQRPL
SS

0\HUV 6 0DMOXI 1 μ&RUSRUDWH ILQDQFLQJ DQG LQY
LQIRUPDWLRQ WKDW LQYHQWRV)LQFRPH (FRQRPLSS

1RNHG 1 μ,QWHJUDWHG WD[SROLF\ DSSURDFK WR GHVLJ
9LUJLQLD 7DYRQYLHZR SS

1RUEIFN 3 - 3HUVVRQ / 7nJ - μ'RHV WKH GHEW WD[V
,QWHUQDWLRQDO 5HYLHZ RYRQRQR (DFUFQSS) LQDQFH

1XVVLP - 6RUHN \$ μ7KHRUL]LQJ9WDJLQDHTQYBCHMLHZU L

H-RXUQDO RI 7D[5HVHDFK

\$ WD[SROLF\ WKDW VKLHOGV UH

:LOVRQ 5RJHUV 1 3LQWR ' μ7D[UHIRUP \$ PDWWHU RI S
WKH UHYLHZ RI \$~~H~~VRXUQDOLOQIWD[~~ROH~~VHDFK SS

\$33(1',; (48\$7,216 86(' 72 *(1(5\$7(7\$; /\$: 287&20(6

7KH &DSLWDO 6WUXFWXUH 0RGHO &60 RI +XOO
OHYHJDHTXDWLRQV IURP*WKFXGOM OLYHHRQBLKDXP YDC
XQOHYHUHG9JLZRHMDLXWKH VDPH DV XQQ8HYFKUHVGHHTXL
*/ HTXDWLRQV LQFOXGH QRQ JURZWK DQG JURZWK HT
WKURXJKV 7KH\ DOVR FRQWDLQ HTXDWLRQV IRU WD[
,76 DQG D UHWDLQHG576U%HLVJGW D[WKHLHODGWWHU WD[
FDOOXKROD D WD[VKLHOG D SDUWLDO WD[VKLHOG
FRYHUHG E\ WKH &60 7KH SD576HTKDRXLRQM TXHDULLYHQ
DUH H[WHQVLRQV RI WKHLU UHV\$76HTXDWWR&RDRU
JLYHQ E\ +XOO D

\$V VKRZQ E\ +XOO WKH &60 HTXDWLRQV FDQ DO
ZLWK YDULDEOHV GHILQH GLIIHUHQWO\ EDVHG RQ RZ

*/ Å Uj ' Å J. Uj (8

ZKHUH

. 7(7& 7 ZLWK(DQG DV WKH OHYHUHG HIIHFWL
FRUSRUDWH HTXLW\ DQGLGHEWRLQFRSDVZIRKURXJK
& FRUSRUDWLRQVIRV SDZHUWKKRQJKV

. 7(7& 7(7& ZLWK(DQG DV WKH XQOHYHUHG HIIHF
RQ HTXLW\ DQG FRUSRUDWLRQGLDQFRIRURZKUSDDVVWKU
7(IRU & FRUSRUDWLRQVLS/DORZMKURKDIQV

U Uj DQG DUH UHVSHFWLYHO\ WKH FRVW RI GHEW W
HTXLW\ ZKLFK LV WKH BRFMQRV OMKYHDIHGHIHUXG WUR

WKH SUR\$RUWWWRQHRG ZLWK GHEW ZD,WKGMHQWPKLLJHGHVDW
9/

7KHUH DUH 3 ISRRVLEHVDHWKDW FRUUHVSRQG WR WKH
\$SSHQGL[\LHOG\$YDQX\$WZK\$HJ\$H7PHD\$, LV IRXQG IURP
DPRQJ DOQ MDDXLHEVZKHUH IHDVLEOH UHIHUV WR WHVY
WKH FRQVWUDLQWV JLYHQ[9EGH\$WQOPLQH\$ MKRLRHSWLP
IURP ZKLFK WKH RSWLPDO2GHEVDQWRHIFURP\$XWQX\$ U\$HWL
9/ (8 PD[/ ERVQK / DQD\$, LGHQWLI\

3ORWQWYDQXHV3DFJRLQFHW \LHOGV D FRQFDYH3VKDSH
FKRL\$HYDOXHV URLVPH IEVIRHUIHFPHDQ, IZQDFH KQLYDQGHV
IDOQ\$KXRLFHV LQFUHDVH 7KHUH LV BQGW\$H\$V\$H\$SRVL\$BQ3W
ZKHQHLQFUHDVHV PVDL\$K\$W\$Q\$D\$F\$M\$H\$G\$ D\$V\$W\$ WKDW WHVW
DQ XQVXW\$W\$DILQDE\$DQ\$G\$ VR LV FRQVLGHUHG XQIHVLEO
FRQVWUDLQWV RQPD[WDW\$H\$V\$S\$K\$F\$D\$D\$%\$D\$H\$G\$ B\$Q\$D\$W\$K\$ D\$
WD[UHYHQXH RXWFRPHV JLYHQ LQ)LJXUHV DQG 7D

\$33(1',;) ,9(67(3 352&('85(72 &20387(%2552:,1* &2676

:H FRPSXWH ERUURZLQJ FRVWV IRU GHEW DQG HTXLWY
6WHS\$H\$W\$ D ORQJ WHU\$R\$ULV\$N\$G\$M\$X\$W\$W\$D\$Q\$W\$H\$R\$U\$ WKH GR
D UDW\$H\$ RI LV FRQVLVWHQW ZLWK \H\$D\$U\$J\$R\$Y\$H\$U\$Q\$P\$H\$
\H\$D\$U\$V\$D\$V\$ JLYHQ E\)HGHUDO 5HVHUYH (FRQRPLF 'DWD
6WHS\$H\$W\$ DQ HTXLW(5B\$X\$W\$L\$S\$W\$H\$D\$Q\$X\$P\$V\$W\$L\$P\$D\$W\$H\$ RI

H-RXUQDO RI 7D[5HVHDFK

\$ WD[SROLF\ WKDW VKLHOGV UH

ILUWUJ ILUVW VSUHDG

H-RXUQDO RI 7D[5HVHDFK

\$ WD[SROLF\ WKDW VKLHOGV UH

DOG 7KH ZHLJKW&5G VDYHUDJH
6LQFH WKJ&5W RDUHDFK RI WKH WKUHH F
FRPSXWH ZHLJ&5WIG DYHUDJH

H-RXUQDO RI 7D[5HVHDFK

\$ WD[SROLF\ WKDW VKLHOGV UH

YDOXPHD(V)RU DOO RI RXU QRQ[JDOZWKVRHFWUVWRUHW
3 FKRLFH WKDW FRUUVSRQGV WR D ORRG\TV FUHGLW
FRPPRQ FUHGLW UDWLQJ)RU H[DPSOH IURP -XQ
ORUQLQJVWDU UHSRUWV WKDW QHDUO\ RI DOO
LQYHVWPHQW JUDGH ,* FUHGLW UDWLQJ RI \$ HYHQV
WR FKRRVH IURP)XUWKHUPRUH RI WKH QHZO\ U
,* FUHGLW UDWLQJ WV WKDQ RQH ILIWK RI WKH UDWLQ
QRQ ,* UDWLQJV

6WHS

6W HSH FRPSXWH WKH ILYH WD[DEOH DPRXQWV RQ ZKL
DUH SDLG 7KH\ FRQVLVW RI WKH IROORZLQJ DPRXQW
DPRXQW

5(IRU 6WD[ODZ 576WD[ODZ (SBUWLDO) 576WD[ODZ
FRUSRUDWH WDRG VSKDLG(SRUWD[DEORH LQFRPH WKDW
JDLQ V ZLW, KERO LQWZUWKTROU ERDQG ZLWK D SDUWL
576

(3 (% , 7 5(IRU 6WD[ODZ (%U7 , IRU 6WD[ODZ RU
(% , 7 5(SDUWLDO) 576WD[ODZ 576DZ FRUSRUDWH WDRG VSKDLG
SRUWL (RQ) WKDW LV GLVWULEXWHG DV DQ HTXLW\ FDV
, SHUVRQDO WDWZLV 576DZ (32V DQG IRU SDVV
373 WHVW 576 ISW K VRO DO WD DW DUH SDLG RQ

5(SHUVRQDO WDRG VSKDLG D W (JDLQ VUZIKOHUHU IRU S
WKURXJKV DQG

(3 > 7& (% , 7, @±5 (IRU 6WD[ODZ >RU & (% , 75(±, @±
5(IRU 6WD[ODZ >RU & (% , 75(SDUWLDO) 576WD[ODZ 576DZ
ODZ SHUVRQDO WDRG VSKDLG D W (JDLQ VUZIKOHUHU IRU S
WKURXJKV DQG IRU SDVV WKURXJK DQG 373 WHVW

L

7KH ILUVW WZR WD[DEOH DPRXQWV DUH DSSOLFDEOH
IRU SDVV WKURXJK DQG 373 WHVW 7KH ODVW WZR D
KDYH ORZHU SHUVRQDO WD[UDWHV DV GLVFXVVHG L
LQFRPH FDQ EH WD[HG PRUH WKDQ RQFH)RU H[DPSON
ZKHUH HDUQLQJV DUH WD[HG DW ERWK FRUSRUDWH D
KDYH IRU WD[HG PRUH WKDQ RQFH GHSHQGLQJ RQ WKH
SDUWLDO 3DVV WKURXJK DQG 373 WHVW WDRG VSKDLG D W (JDLQ VUZIKOHUHU IRU S
WKURXJKV DUH, WDRG VSKDLG D W (JDLQ VUZIKOHUHU IRU S

6W HSH RWLQJ WKDW WKH ILYH WD[DEOH DPRXQWV RQ Z
DUH SDLG UWB WDRG VSKDLG(SRUWD[DEORH LQFRPHDFK RI WKHVH ILYH
E\ WDRG VSKDLG(SRUWD[DEORH LQFRPHDFK RI WKHVH ILYH ZHLJKWV

6W HSH PXOWLSO\ WKHVH ZHLJKWV E\ WKHLU UHVSHFW
WKHVH Vxã, vR` G` 'TMWP WKH` @0