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**Excessive Entry and Investment in Deregulated Markets:  
Evidence from the Electricity Sector**

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([FHVVLYH (QWU\ DQG ,QYHVWPH  
0DUNHWV (YLGHQFH IURP WKH (

\$OH[ +LOO

7KHUH LV D VXEVWDQWLDO WKHRUHWLFD OLVHWDWXU  
LQ LQGXLVWULHV ZLWK IUHH HQWU\ 7KH UHVWUXFWXULQJ F  
PLG V SURYLGHV D XQLTXH RSSRUWXQLW\ WR HPSLULF  
LQYHVWPHQW LQ D ODUJH LQGXLVWULDO VHFWRU /HYHUDJL  
LGHQWLILFDWLRQ VWUDWHJ\ WKLV SDSHU VKRZV UHVWUXF  
DV UHWDLO VDOHV JURZWK DQG IXHO SULFHV ZDV DVVRF  
PHJDZDWWV RI VWDWH SRZHU SODQW FDSDFLW\ RYHU WKH  
VL]H DQG GXUHGe`0HD0à %—ñ `^ ZDV ODWHU DVVRFLDW

DOWHUQDWLYH WKHRUHWLFD PRGHV RI RYHULQYHVWPH  
LQGXLVWU\ LV PRVW FRQVLVWHQW ZLWK PDUNHW FRRUGLQD  
DQG D FRQWDLJRQ HIIHFV -( / / / / 4

,QWURGXFWLRQ

)UHH HQWU\ LV D QHFHVVDU\ EXW QRW VXIILFLHQW F  
PD[LPL]LQJ VRFLDO ZHOIDUH :KHQ IRU H[DPSOH FRPSHWL  
FDQ UHVXOW LQ LQDGHTXDWH RU H[FHVVLYH \$GGWMLRUHQDOO  
VLPXOWDQHRXV HQWU\ RI ILUPV LQWR D PDUNHW FDQ UHVX  
RSWLPDO R(XP)E)PHO HYLGHQFH IRU WKHVH HIIHFVW KDV E  
SDSHUV IRFXVHG RQ WKH ZHOO HVWDEOLVKHG UHVXOW RI C

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6HH 6SHQFH DQG 'L[LW DQG 6WLJOLW] IRU KWHURJHQHRXV  
DQG 0DQNLZ DQG :KLQVWRQ  
6HH 'L[LW DQG 6KDSLUR %ROWRQ DQG )DUUHO DQG &DEUD  
6HH -RYDQRYLF -RYDQRYLF DQG 0DF'RQDOG .OHSSHU  
DQG :DOGIRJHO LV RQH RI WKH IHZ SDSHUV WR SURYLGH HPSLULF



)LJXUH 8 6 \*HQHUDWLQJ &DSDFLW\ 0:



WKHUH ZDV H[FHVVLVYH HQWU\ DQG RYHULQYHVWPHQW LQ SRZHU SODQW FD  
PDUNHWV OHDG WR RYHULQYHVWPHQW LQ SRZHU SODQW FD  
FRPSDULVRQ WR QRQ UHVWUXFWXUHG VWDWHV DQG D VW  
SODQWV LQ UHVWUXFWXUHG PDUNHWV DUH IXUWKHU HYLGH

7KH GHWDLOV RI WKH JDV ERRP GXULQJ WKH UHVWUX  
&RQWDJLRQ PRGHO RI HQWU\ DQG H[LW ,Q WKLV PRGHO I  
WKH DFWLRQV RI RWKHU ILUPV UDWKHU WKDQ PDUNHW IX  
ILUPV LQ WKLV LQGXFVWU\ VXIIHUHG IURP D FRRUGLQDWLR  
SODQWV ODFN LQIRUPDWLRQ RQ PDUNHW GHPDQG SURMH  
QHWZRUNV ZKLFK FRQWULEXWHG WR D IDLOXUH E\ WKH PD  
DPSOLILHG WKH HIIHFW RI WKH SUHYLRXV WZR ZDV WKH D  
ORQJ UXQ JOREDO LQWHUHVW UDWHV

\$ IRUPDO ZHOIDUH DQDO\VLV RI WKH H[FHVVLVYH LQYHV  
UHVXOW RI WKLV SDSHU 7ZR VHSUDUDWH HIIHFWV RI IUHH H  
WKH LPSDFW RI UHVWUXFWXULQJ RQ WKH SULFH DQG TXDQ  
ORVV IURP RWKHU LQYHVWPHQWV FURZGHG RXW E\ WKH RY  
V\QWKHWLF FRQWURO WR HVWLPDWH FRXQWHUIDFWXDO SU  
JHQHUDWLRQ LV HVWLPDWHG WR KDYH OHG WR D WRWDO Z

7KH VWUXFWXUH RI WKLV SDSHU LV RUJDQL]HG LQ WK  
LQIRUPDWLRQ RQ WKH HOHFWULFLW\ PDUNHW VHWWLQJ RI  
HOHFWULFLW\ LQGXFVWU\ HQWU\ WKDW DUH WHVWHG LQ WK  
PRGHO XVHG WR DQDO\]H WKH UHVHDFK TXHVWLRQ LQ W  
SUHVHQWV WKH HPSLULFDO UHVXOWV RI WKH SDSHU 6HF  
6HFWLRQ VKRZV WKH UHVXOWV RI DOWHUQDWLYH VSHFLI  
UHVXOWV RI WKH ZHOIDUH DQDO\VLV RI H[FHVVLVYH HQWU\

%DFNJURXQG

3ULRU WR WKH PLG V HOHFWULFLW\ JHQHUDWLRQ L  
YHUWLFDOO\ LQWHJUDWHG SXEOLF XWLOLWLHV 3ULFHV ZH

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([FHVVLVYH HQWU\ DQG RYHULQYHVWPHQW DUH GHILQH LQ WKLV SDSHU  
LQFUHDVH RI D VWDWH DQG ZKDW LWV V\QWKHWLF FRQWURO FRXQWHU

GHWHUPLQHG E\ H[SHQGLWXUH RQ IXHO DQG 2SHUDWLRQV  
LQYHVWPHQW DQG D UHDVRQDEOH UDWH RI UHWXUQ RQ FD  
EXW IDFHG SUHVXUH LQ WKH V DV SULFHV URVH IRU F  
WKH UHVXOW RI LGOH FDSDFLW\ EXLOW WR PHHW HOHFWUL  
5LVLQJ SULFHV DQG WZR HQHUJ\ ODZV LQ 3XEOLF 8W





\$ V Q R W H G L Q D Q X P E H U D R F R S P E L H Q D W R B Q W R I H K F L J K V G M P D G

:KLOH WKH ERRP LV LGHQWLILDEOH LQ ERWK &&  
DPRXQW RI &&\*7 FDSDFLW\ DGGHG LQ UHVWUXFWXUHG VWD

7DEOH &&\*7 DQG \*DV &7 &DSDFLW\ \$GGLWLRQV E\

5HVWUXFW 1RQH 6RXWK  
&&\*7

&7

6RXUFH (,\$

([SODLQLQJ WKH \*DV %RRP

7KH VKLIW WRZDUGV JDV ILUHG SRZHU SODQWV LV QR  
OLWHUD)WXH)S)RPLQHGW H[SODQDWLRQV DUH RIIHUHG IRU

7KH DGRSWLRQ RI QHZ FRPELQHG F\FOH WHFKQRORJ\ DQC  
FRVW HIIHFWLYH UHODWLYH WR FRDO DQG QXFOH DU SODQ

V OLIWHG UHVWULFWLRQV RQ WKH XVH RI QDWXUDO JD  
HOHFWULFLW\ GHPDQG FUHDWHG D QHHG IRU QHZ LQYHVWPH  
RYHU FRDO SODQWV \*DV SODQWV FDQ EH EXLOW PXFK T

7KLV UDWLR LV VSOLW LQWR WKUHH JURXSU WR JDLQ SHUV  
VWDWHV 7KH 6RXWK LV VHSUDUDWHG IURP WKH 1RQH JURXS

)LJXUH &DSDFLW\ WR (56 5DWLRV E\ \*URXS

6RXUFH (,\$

'XULQJ WKH SHULRG XWLOLWLHV DFURVV WKH  
WR LGOH FDSDFLW\ IURP WKH V :KLOH LWV GLIILFXOW  
ZDV GXULQJ WKLV WLP SHULRG WKHVH DFWLRQV2FRQILUF  
WKH WKUHH VWDWH JURXSU WKH 1RQH JURXS KDV WKH OD  
VWDWHV OLNH :HVW 9LUJLQLD DQG :\RPLQJ ZKLFK DUH OD  
FHQWXU\ DOO WKUHH JURXSU RI VWDWHV FRQVWUXFWHG C  
WR (56 UDWLRV ZHUH WRR ORZ +RZHYHU ZKLOH WKH WZ  
OHYHOV WKHUH ZDV D PFK ODUJHU LQFUHDVH LQ WKH UH  
(56 LQ WKHVH VWDWHV UHDFKHG KLVWRULF KLJKV (,\$ \$QQ  
HYLGHQFH WKDW SULRU WR WKH \*UHDW 5HFHVVRQ LQ

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DUH DVVXPHG WR KDYH WKH SRWHQWLDO WR RSHUDWH DW WKH VDPH F  
FDSDFLW\ IDFWRUV GXH WR LQGLYLGXDO VWDWH ZHDWKHU SDWWHUQV  
-RVNRZ QRWHV WKDW WKH HDUO\ V ZHUH D SHULRG RI H[FHV  
DV D GUDZLQJ GRZ @ xHVZ OOP

WKHVH KLJK UDWLRV EXW DV )LJXUH VKRZV ORZ RU QH  
VWDJQDWH RU LQFUHDVH

)LJXUH \$YHUDJH \HDU (56 \*URZWK E\ \*URXS

6RXUFH (,\$

,QGLYLGXDO VWDWH (56 GDWD DUH QRW DYDLODEOH S  
VKDUS VORZGRZQ LQ (56 JURZWK VWDUWLQJ LQ WKH HDUO\  
\$(2 \$V WKH 86 HFRQRP\ JUHZ DW D IDVWHU UDWH L  
XQH[SHFWHGO\ ZKLFK DFFRXQWV IRU WKH GHFOLQH LQ LQ  
:KHQ DQDO\]LQJ WKHVH GDWD QRWH WKDW SRZHU SOD  
WKDW UDQJH IURP \HUV IRU JDV &7 DQG &&\*7 SODQWV  
QXFOHDU DQG LV KHDYLO\ UHOLDQW RQ H[SHFWDWLRQV DEF  
(,\$ 1XFOHDU (QHJ\ ,QVWLWXWH 3ODQWV WKDW FD  
FRQGLWLRQV LQ DQG

2QH LQWHUHVWLQJ DVSHFW RI WKH ERRP SHULRG LQ  
LQGXFVWU\ LQVLGHUV WR SUHGLFW LW (DFK \HDU WKH (,\$  
IURP ERWK DYDLODEOH GDWD DQG LQGXFVWU\ H[SHUWV DQG





)RXU 0RGHOV RI (QWU\

(DFK RI WKH IRXU PRGHOV LQ WKLV VHFWRU EXVLQHV  
ILUVW PRYHU DGYDQWDJH DQDO\]H KRPRJHQRXV JRRG PDU  
SRVVLEOH ~~RXWFRPH~~SRVH RI WKHLU LQFOXVLRQ LQ WKLV  
WKHRUHWLFDOO\ EXW UDWKHU WR SURYLGH WHVWDEOH S  
FRQVLVWHQW ZLWK HQWU\ DQG H[LW SDWWHUQV IROORZLO  
FULWLFDO WR WKH SUHGLFWLRQV WKDW RULJLQDWH IURP V

\$VVXPSWLRQ 7KHUH DUH PDQ\ HQWUDQWV LQWR HDFK PD

(OHFWULFLW\ LV D KRPRJHQRXV JRRG JHQHUDWHG DQG  
XWLOLWLHV SRZHU PDUNHWHUV IHGHUDO VWDWH DQG  
LQGXVWULFDO ~~IRUP~~IRVH D ODUJH QXPEHU RI ILUPV ZHUH DEO

\$VVXPSWLRQ )LUPV HQWHULQJ WKH PDUNHW PXVW FRQVW

:KLOH QRW DOO ILUPV HQWHULQJ UHVWUXFWXUH PDU  
SXUFKDVH WKH GLYHVVHG DVVHWV RI IRUPHU YHUWLFDOO\  
WKH QHZ FRQVWUXFWLRQ RI SRZHU SODQWV) ~~DUV RISSRWHGUV~~  
WKDW FKRVH WR FRQVWUXFW QHZ SODQWV WKH RYHUZKHO  
&&\*7 SODQWV :KLOH LQ D JHQHUDO EXLOG FKRLFH PRGHO  
ILUPV FKRRVH WKH WHFKQRORJ\ DQG IXHO RI WKH SODQW  
EXLOG WLPHV DQG LPSURYHG HIILFLHQF\ OHG QHZ EXLOGH

\$VVXPSWLRQ ,QFXPEHQWV KDYH D GLIIHUHQW FRVW VW  
LQYHVWPHQW FRVWV DQG ORZHU PDUJLQDO FRVWV

7KH VKDUH RI &&\*7 SODQWV LQ UHVWUXFWXUH VWDWH  
PDMRULW\ RI SODQWV LQ RSHUDWLRQ GXULQJ WKLV WLPH Z  
W\SHV KDYH KLJKHU FDSLWDO FRVWV DQG ORZHU IXHO FRV

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\$ ODUJH QXPEHU RI PRGHOV ZHUH FRQVLGHUHG LQ WKLV VHFWRU Z  
PDWFKHG HOHFWULFLW\ PDUNHWV LQ WKLV WLPH SHULRG +RPRJHQR  
,PSHUIHFW LQIRUPDWLRQ OHDGLQJ WR WKH SRVVLELOLW\ RI FRRUGLQD  
,QIRUPDWLRQ RQ SDUWLFLSDQWV LQ WKH JHQHUDWLRQ DQG UHWDLQ  
IRUP DQG (\$ IRUP UHVSHFWLYHO\  
6HH ,VKLL DQG <DQ IRU DQ H[SODQDWLRQ RI WKH EXLOG RU EX\

\$VVXPSWLRQ (QWU\ VXIIHUV IURP D FRRUGLQDWLRQ IDLO  
&RRUGLQDWLRQ IDLOXUHV FRPH LQ VHYHUDO IRUPV U  
6FKHOOLQJ¶V ZKHUH WR PHHW SUREOHPV WR PXOWLS  
)RU WKH HOHFWULFLW\ LQGXVWU\ XWLLOLWLHV WUDGLWLR  
DZDUH RI DOO SODQWV EHLQJ SODQQHG DQG EXLOW DV  
UHVWUXFWXUHG PDUNHWV WKLV LQIRUPDWLRQ ZDV PRUH  
ZHUH PRVW OLNHO\ XQDZDUH RI WKH LQWHQWLRQV RI RWKH



)ROORZLQJ WKH DQDO\VLV LQ 0DQNLZ DQG :KLQVWRQ  
WKH EXVLQHVV VWHDOLQJ PRGHO DSSOLHG WR WKH HOHFV  
WKH SURFHVV RI UHVWUXFWXULQJ ILUPV HQWHU WKH PDUN  
VWUXFWXUH DQG SUHYLRXV SULFHV LQ WKH PDUNHW

DYDLODEOH LQIRUPDWLRQ IRU WKHVH IDFWRUV DQG EDVH V  
ILUPV REVHUYHG LQYHVWLQJ <sup>ē</sup>EQ LWKWSHQUNHLW 2Q FHRQQLGPI



SHULRG WKH PDUNHW ZLOO EH RSHQ WR FRPSHWLWLRQ 2)  
SHULRG ,Q SHULRGV WKURXJK 7 ILUPV FRPSHWH ZLWK V  
HQUUDQWV PDNH DQ LQYHVWPHQW WR HQWHU LQ WKH IRO  
HQUU\ SULFHV IDOO )DOOLQJ SULFHV RU ULVLQJ FRVWV C  
WKH LQG XVWU\

3URSRVLWLRQ 8QGHU FRQWDLQRQ HQWU\ DQG H[LW  
D )LUPV FRQWLQXH WR LQYHVW LQ PDUNHWV ZKHUH ODUJ  
E ([LW RFFXUV E\ ILUPV SUHYLRXVO\ SURGXFLQJ LQ WKH I  
F 1RQ IXQGDPHQWDOV GHFLVLRQ PDNLQJ OHDGV WR H[FH

\$W WLPH WKH LQFXPEHQW LV VWLOO RSHUDWLQJ XQ  
RQ FRVW RI VHUYLFH UHJXODWLRQ )LUPV REVHUYH WKH K  
DVVXPH WKH\ ZLOO FRQWLQXH EDVHG RQ WKH H[LVWHQFH  
PDQ\ UHVWUXFWXUH VWDWHV DQG UXOHV SXW LQ SODFH  
WKHLU ~~YXOX~~HQFRXUDJHV WKH HQWU\ RI D ODUJH QXPEHU  
&&\*7 SODQWV DQG FRPSHWH ZLWK WKH LQFXPEHQW ,Q WKH  
KDYH UHPDLQH KLJK DQG GXH WR WKH FRRUGLQDWLRQ ID  
ILUPV VHH D VXUSULVH QXPEHU RI ILUPV HQWHULQJ WKH P  
LQYHVWLQJ LQ D PDUNHW ZKHUH ODUJH LQYHVWPHQWV LQ  
WHVWDEOH SUHGLFWLRQ \$V &&\*7 FDSDFLW\ ULVHV ILUPV  
UHVWUXFWXUH PDUNHWV )DOOLQJ SULFHV OHDG VRPH ILU  
RU GHFODULQJ EDQNUXSWF\ 7KLV LV WKH VHFRQG WHVWDE  
RWKHU ILUPV OHDYLQJ WKH LQG XVWU\ LQYHVWPHQW GHFO  
FDSDFLW\ GXH WR H[FHVVLVH HQWU\ ZKLFK LV WKH WKLUG

)LUVW 0RYHU \$GYDQWDJH

&RQVLGHU D PRGHO RI VHTXHQWLDO HQWU\ ZLWK LP

(QWU\ LQ WKLV PRGHO LV LJQLWHG E\ WKH RSHQLQJ RI  
RI YDULDEOH SURILWV LQ H[QHSWURRGQYHQWPHUHQJFRUWV  
EXLOG ODUJH SODQWV GXH WR WKH FRPELQDWLRQ RI LQFU  
SUHYLRXV LQYHVWPHQW

0HWKRGRORJ\ DQG 'DWD

7KH LPSDFW RI HOHFWULFLW\ PDUNHW UHVWUXFWXULC  
WKURXJK WKH YDULDWLRQ LQ LQYHVWPHQW GHFLVLRQV W  
WR

HOHFWULFLW\ SULFHV IXWXUH H[SHFWDWLRQV RI IXHO DQG  
WKH ORFDWLRQ RI H[LVWLQJ WUDQVPLVVLQRQ OLQHV ZLWK V  
SRVVLELOLW\ RI IXWXUH UHJXODWLRQ WKH SUREDELOLW\ I  
DQG ZDWHU

7KLUG PRGHOLQJ GHFLVLRQV E\ ILUPV DV LI WKH\ RFF  
WKH LQIOXHQFH RI HDFK VWDWH RQ WKH GHFLVLRQ PDNLQJ  
PD\ OHDG WR ELDVHG FRHIILFLHQWV DV ZHOO DV ELDVHG  
RQO\ RFFDVLRQDOO\ PDNH FDSDFLW\ PL[ GHFLVLRQV GLU  
WRSRJUDSK\ WUDQVPLVVLQRQ DQG SLSHOLQH FDSDFLWLHV  
REYHUYDWLRQ

)RXUWK WKH DXWKRUV ZHUH UHWLFWHQW DERXW HPSOR  
DFWXDO SODQW GDWD DQG VXSSOHPHQWHG ZLWK EHVW HV  
ODUJHO\ GXH WR WKH ODFN RI DYDLODEOH H[SHFWHG FRVW  
VWXGLHV 7KHVH GDWD DUH HVVHQWLDO LQ D VWDWH OHY

QRWHV XVLQJ RQO\ DFWXDO GDWD FDQ OHDG WR WUX  
H[SHQVLYH SODQQHG SODQWV

7KLV VHFWRQ ZLOO ILUVW PRWLYDWH WKH LQYHVWPH  
FRQVWUXFWLQJ D VWUXFWXUDO IUDPHZRUN WR HVWDEOLVK  
SODQW LQYHVWPHQW 7KH UHVXOW IURP WKLV VHWXS ZLO  
XVLQJ D UHGXFHG IRUP SDQHO DSSURDFK )LQDOO\ WKLV  
SRZHU SODQW LQYHVWPHQW WR PRWLYDWH WKH UHVXOWV

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)RU H[DPSOH FRQVLGHU WKH GHFLVLRQ RI ZKHUH WR VLWH ZLQG WXU  
ZLQG OHYHO LQ WKH DUHD ORFDWLRQ RI H[LVWLQJ RU SODQQHG WUDQ  
VWDWH 536 FRVW RI PDWHULDOV DQG ODERU DYDLODELOLW\ RI VXEVL  
RI VLWLQJ FRQFHUQV H[SODLQH LQ 36& \$ PRGH EDVHG VROHO\  
IDFWRUV EXW QRW DOO RI WKHP DQG DV D UHVXOW RIIHU SRRU SUHG  
FRQVLGHU WKDW LQ WKH ODVW GHFDGH VWDWHV VXFK DV 1HZ -HUVH\  
LQYHVWPHQWV LQ VRODU HQHUJ\ SURGXFWLRQ IDFLOLWLHV GHVSLWH C  
FRDO RU QDWXUDO JDV UHVRXUFHV (,\$ 7KHLU FRPSHWLWLRQ ZLV  
UHQHZDEOH HOHFWULFLW\ UHWDLO VDOHV WR VDWLVI\ VWDWH 536 SUR  
KDYH EHHQ SUHGLFWHG LQ D PRGH EDVHG RQ FRVW



0RGHO 6HWXS

)ROORZLQJ WKH VWDQGDUG QHRFODVVLFDO PRGHO RI L  
DQG ,VKLL D ILUP HQWHUV WKH HOHFWULFLW\ PDUNH  
E\ FRQVWUXFWLQJ D SRZHU SODQW 7KH ILUP LQYHVWV LI  
HDUQHG IURP WKH RSHUDWLRQV RI WKH SRZHU SODQW H[FH  
ERWK WKH LPSDFW RI WKH SRZHU SODQW RQ SURILWV LQY  
IXWXUH )LUP L FKRRVHV WKH OHYHO RI LWV LQYHVWPHQW

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A<sub>2</sub> a<sub>2</sub> a<sub>2</sub>

DQG 0D, 0G IJXODWRU\ HQYLURQPHQW 5 DQG HQYLURQPHQW  
D ZRUNDEOH HPSLULFDO PRGHO WKH VSHFLILF VWUXFWXUH

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GLIIHUHQW VWDWHV PDNLQJ GDWD VHWV LQFRQVLVWHQW  
LV D SUREOHP ZLWK LGHQWLI\LQJ WKH FRUUHFW HOHFWUL  
IORZ GDWD IURP LQGLYLGXDO SODQWV LV QRW DYDLODEOH





<H DU H I I H F W V D U H D O V R L Q F O X G H G W R F D S W X U H E U R D G W  
W L P H S H U L R G V X F K D V F K D Q J H V L Q W H F K Q R O R J \ D Q G E R R I

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, Q W K H H T X D W L R Q D E R Y H V L Q G H [ H V V W D W H V D Q G W L  
F D S D F L W \ R I D S O D Q W L Q P H J D Z D W W V 0: D Q G L V P H D V X U H  
D J L Y H Q \ H D U





RIWHQ HQGRJHQRXV )DEUL]LR HW DO 'DYL V DQG :ROIU  
WKDW WKH VWUXFWXUH DQG H[SHUWL VH RI VWDWH OHJLV  
ZHUH FRUUDODWHG ZLWK VWDWH GHFLVLRQV WR UHVWUX  
'DPVJDDUG \$UGRLQ DQG \*UDG\ 7KHUH LV QR HV  
VWUXFWXUH DQG SUHIHUUHQFH IRU JDV ILUHG FDSDFLW\ VR  
OLQN EHWZHHQ HOHFWULFLW\ SULFHV DQG UHVWUXFWXULQ  
QRWLQJ KRZ WKHVH DXWKRUV DV ZHOO DV 'DYL V DQG :ROI  
7KH UHVWUXFWXULQJ HQGRJHQHLW\ FRQFHUQ LV WKHU

DYHUDJH FDSDFLW\ IDFWRUV IRU SRZHU SODQWV 7KH RQO  
LI WKHVH VWDWHV ZHUH ODUJH H[SRUWHUV RI HOHFWULFLW  
SULRU WR UHVWUXFWXULQJ EXW WKHLU ORZ FDSDFLW\ IDF  
QRW VHOOHQJ WKH DGGLWLRQDO HOHFWULFLW\ WKH QHZ  
IROORZLQJ )DEUL]LR HW DO 'DYLW DQG :ROIUDP  
DVVXPHG WR EH H[RJHQRXV ZLWK WKH DGGLWLRQ RI \HDU D

'DWD DQG 6XPPDU\ 6WDWLWLVFV

7KH DSSURDFK XVHG LQ WKLV SDSHU WR DQDO\]H FKDQ  
DPRXQW RI GDWD RQ WKH LQGLYLGXDO VWDWH OHYHO IURP  
DQDO\VLV

UHSRUWV RQ QDWXUDO JDV FRDO QXFOHDU JHRWKHUPDC  
QXFOHDU SRZHU 9HQW\[ DQG 15(/

7KH UHVWUXFWXULQJ YDULDEOH XVHV GHWDLOHG LQIR  
WKH (,\$ DQG LQGLYLGXDO VWDWH UHJXODWRU\ FRPPLVLR  
VWDWHV LQLWLDWHG DORQJ WKH UHVWUXFWXULQJ SURFH  
SURJUDPV OHJLVODWLYH DFWLRQ GLYHVWLWXUH RI DVVHV



&&\*7

7DEOH VKRZV WKH LPSDFW RI HOHFWULFLW\ PDUNHV  
YDULDEOH EHLQJ H[SODLQHG LV WKH FKDQJH LQ &&\*7 FDSDI  
DUH GLIIHUHQWLDWHG E\ WKH QXPEHU RI \HDUV DIWHU UHV  
LQWHUDFWLRQ EHWZHHQ UHVWUXFWXULQJ DQG WKH SRVW

DGGLWLRQDO FDSDFLW\ HDFK \H DU FRPSDUHG WR QRQ UHV  
\$V WKH QXPEHU RI \H DU V LQ WKH SHULRG LQFUHDVHV WKI  
DIWHU UHVWUXFWXULQJ DQG QRQH[LVWHQW LQ D SHULRG F



&ROXPQV LGHQWLI\ WKH WLPLQJ RI WKL V HIIHFV &F  
EHWZHHQ SUH DQG SRVW ZLWK WKH VLJQLILFDQFH  
QHJDWLYH HIIHFV DIWHU LV VWLOO VWURQJ &ROXPQ  
ZLWK VLPLODU UHVXOWV &OHDUO\ WKHUH LV D QHJDWL  
FRQVWUXFWLRQ SRVW +RZHYHU WKL GRHV QRW OHDY  
ZDV DOVR VXEVLWXWLQJ IRU &7 SODQWV GXULQJ WKH ER  
ERRP SHULRG DQG WKH QRQ ERRP SUH DQG S  
RQ WKH UHVWUXFWXULQJ YDULDEOH VKRZV WKHUH LV QRW  
SODQWV 7KHUHIRUH LWV VDIH WR FRQFOXGH WKDW &7 S  
EHFDXVH RI WKH H[SDQVLRQ LQ &&\*7 SRZHU SODQWV

\$QDO\VLV

7KH UHVXOWV LQ 7DEOHV DQG DWWULEXWH D VLJQL  
ZLWK UHVWUXFWXULQJ OHDGLQJ WR DQ H[FHVV LQ &&\*7 FD  
IRFXVHG RQ WKH DGRSWLRQ RI QHZ WHFKQRORJ\ WKH LPS  
QDWXUDO JDV PDUNHWV LQFUHDVLQJ HOHFWULFLW\ GHF  
FRQVWUXFWLRQ WLPH RI JDV SODQWV :KLOH PDQ\ IDFWRU  
WKH JHRJUDSKLF GLIIHUHQFHV RI WKH SUHYLRXV H[SODQD  
(DFK RI WKHVH LVVXH DUH DGGUHVHG LQ WKH IROORZLQ

7KH LQWURGXFWRQ RI ERWK FRPELQHG F\FOH DQG M  
PDUNHWV KDG DQ LPSDFW RQ WKH FRVW RI SRZHU SODQW  
FRVW RI FDSLWDO GHFOLQHG GXH WR WKH RULQIUHODVH  
LQWURGXFWRQ RI MHW HQJLQH WHFKQRORJ\ QRW RQO\ UH  
EXW DOVR GHFUHDVHG WKH VWDUW XS WLPH ZKLFK LV LPS  
WKHVH WHFKQRORJLHV ORZHUHG WKH OHYHOLJHG FRVW RI  
IRU WKH ILUVW WLPH +RZHYHU WKL GRHVQW H[SODLQ W  
ZHUH FRQVWUXFWHG LQ -DSDQ WKH 8. DQG WKH 86 EHJLQ  
FRQWULEXWHV WR H[SODLQLQJ ZK\ WKH PDMRW\ RI SRZH





7KH DELOLW\ RI JDV ILUHG SRZHU SODQWV WR EH EXLO  
WKH FKRLFH RI IXHO DQG WHFKQRORJ\ 7KLV LV HVSHFLDO  
ORDG YDULDQFH DQG IRU WKRVH ZKRVH PDUNHWV DUH OLE  
&7 SODQW LV \HDUV ZKLOH D JDV && SODQW FDQ EH EXLO  
ZKLFK FDQ WDNH RU PRUH \HDUV DQG QXFOHDU ZKLFK



VXSSRVHG WR SURYLGH -RVNRZ 6HFWLRQ SURYLGH  
FRXOG KDYH OHG WR RYHULQYHVWPHQW LQ QHZO\ OLEHUDO

([SODLQLQJ WKH &7 %RRP  
7KH LQFUHDVH LQ &&\*7 FDSDFLW\ ZDV WKH PRVW VLJQ

7KH W\SLFDO FRQVWUXFWLRQ WLPH IRU D &7 SODQW LV \H  
DQG QXFOHDU \$V )LJXUH VKRZV WKHUH ZDV D ODUJH  
\$VVXPLQJ D \H DU ODJ EHWZHHQ WKH VWDUW RI SODQQL  
RSHUDWLRQ WKH UHOHYDQW WLPH SHULRG ZKHQ DQDO\]LQ  
7KH WLPLQJ DQG SDWWHUQ RI WKH &7 EXLOGRXW VKR  
DVVXPSWLRQ WKDW XWLWLHV DGG SHDNLQJ FDSDFLW\ D  
DGGLWLRQV WKURXJKRXW WKH \H DU V ZKLFK ZRXOG DSSH  
DFWXDO EXLOGRXW GLIIHUV IURP WKLV OLQH DU SURMHFWL  
SULRU WR PRUH DGGHG EHWZHHQ DQG DQG OH  
SHULRG LV PRVW HDVLO\ H[SODLQHG DV LW ZDV LPSDF



\*DV &7 SRZHU SODQWV DUH EXLOW WR PHHW SHDN ORD  
VXPPHU LQ WKH ODWH DIWHWERRRDDQVNDUKRXHYHRLWJKH G  
GHPDQG SHDNV DV IDPLOLHV UHWXUQ KRPH DQG WXUQ RQ  
LQYHVWPHQW LQ SHDNLQJ SODQWV E\ XWLOLWLHV LV VH  
H[SHFWDWLRQV (,\$ 2Q WKH RWKHU KDQG LQFUHDVHV  
WKH ORDG FXUYH DV WKH\ SHDN GXULQJ WKH ODWH PRUQL  
)LJXUH VKRZV WZR WUHQQV ZKLFK VLJQLILFDQWO\  
XWLOLWLHV 7KH ILUVW LV WKH LQFUHDVH LQ UHVLGHQWL  
FRLQFLGHG ZLWK D GURS LQ H[SHFWDWLRQV DERXW WKH  
GHPDQG GXULQJ WKH GD\ DQG H[SDQG LW DV HYHQLQJ DS  
SODQWV 7KH VHFRQG WUHQQ LV WKH ODUJH LQFUHDVH LQ  
DQG WKH EHJLQQLQJ RI WKH GHFOLQH LQ UHVLGHQWLD  
WKHVH IDFWRUV ZRXOG KDYH IODWWHQHG WKH ORDG FXUYH

)LJXUH (,\$ <H DU 3URMHFWLRQV RI (56 \*URZWK E\

6RXUFH (,\$

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:KLOH QRUWKHUQ 86 VWDWHV H[SHULHQFH D VXUJH LQ HQHUJ\ GHPDQ  
WKURXJK QDWXUDO JDV DQG SURSDQH (,\$





'HVSLWH FKDQJHV LQ (56 VHFWRU SURMHFWLRQV DQ L  
WKH RLO WR JDV IXHO UDWLR GXULQJ WKH V WKH ODFN

7KH FRPELQDWLRQ RI FKDQJHV LQ VHFWRU (56 JURZWK  
QDWXUDO JDV DORQJ ZLWK WKH LPSDFW RI WKH H[FHVV FD  
FRQVWUXFWLRQ ERRP RI WKH ODWH V DQG HDUO\ V

(QWU\ UHDFKHV DQ HTXLOLEULXP ZKHUH YDULDEOH SURILW  
LQ WKH LQGXTWU\ IROORZLQJ HQWU\

)LJXUH )LUP (QWU\ DQG &DSDFLW\ )DFWRUV LQ 5HVW

6RXUFH (,\$ )RUP

DQG \$XWKRU\ &DOFXODWLRQV

)LJXUH VKRZV WKH DYHUDJH FDSDFLW\ IDFWRU IRU D  
HOHFWULFLW\ SURGXFLQJ ILUPV LQ RSHUDWLRQ LQ WKDW  
SODQW VWDUWLQJ LQ DQG FRQWLQXLQJ XQWLO 7K  
QXPEHU RI ILUPV UHIOHFWV WKH OHYHO RI HQWU\ LQ WKL  
HOHFWULFLW\ ZDV LQVXIILFLHQW WR SXUFKDVH WKH HOHF  
WKH LQGXTWU\ 7KLV UHVXOW FRQILUPV D NH\ DVVXPSWLRO  
7KH VHFRQG SUHGLFWLRQ KDV D FULWLFDO LPSDFW R  
PD[LPL]LQJ GHFLVLRQ WR HQWHU WKH LQGXTWU\ ,Q RUGH  
LQGXTWU\ DW WKLW WLPH REVHUYHG ILUPV PXVW HDUQ D







7KLV PRGHO LV FRQVLVWHQW ZLWK ZKDW RFFXUUHG LQ  
WKH ODWH V ,Q SDUWLFXODU LW SURYLGHV DQ H[SODQ  
WKDW ILUPV FRQWLQXHG WR LQYHVW HYHQ DIWHU REVHUYL  
SURJUHVV EDVLF IXQGDPHQWDO DQDO\VLV ZRXOG KDYH FRQ  
VLJQLILFDQWO\ ZKLFK LV ZKDW RFFXUUHG /RZHU FDSDFLV  
SD\ WKH FRVW RI FDSLWDO FRQVWUXFWLRQ +RZHYHU LI  
HQWU\ ZRXOG FRQWLQXH \*LYHQ WKH HYHQWV LQ WKH W  
PDUNHWV LQ WKLV WLPH SHULRG WKLV VKRXOG QRW EH VX

ORGHO )LUVW ORYHU

,Q WKH HOHFWULFLW\ JHQHUDWLRQ VHFWRU LQYHVWPH  
HFRQRPLHV RI VFDOH \$V D UHVXOW D ILUP FRXOG JDLQ D  
PDNLQJ D ODUJH XSIURQW LQYHVWPHQW ,Q RUGHU WR SUH  
RWKHU ILUPV WKDW HQWHULQJ WKH PDUNHW ZLOO RQO\ LQ







/RYDOOR ILUPV DEDQGRQHG D IXQGDPHQWDO DQDO\VL  
 WKH IDG ZDV WDNLQJ DGYDQWDJH RI QHZO\ GHUHXODWH  
 VWUDWHJ\ OHG WR H[FHV FDSDFLW\ LQ UHVWUXFWXUHG V

7DEOH ORGHO 3UHGLFWLRQ 2XWFRPHV

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t œr}(r ššœ]š]9v	8	9	
}vš P}}v	9	9	9
&]œ•šrD}À œ 8	9	8	

:KLOH WKH FRPELQDWLRQ RI D FRRUGLQDWLRQ IDLOX  
 LPSRUWDQW IDFWRUV LQ WKH JDV ERRP LW¶V LPSRUWDQW  
 JDV ERRP WRRN SODFH LQ WKH 86 DW WKH HQG RI WKH 'R  
 EXEEOH 7KLV LV QRW D FRLQFLGHQFH 7KH SHULRG  
 WKH QDWXUH RI JOREDO ILQDQFLDO PDUNHWV 3ULRU WR  
 \$PHULFDQ DQG (DVW \$VLDQ HFRQRPLHV +RZHYHU WKH H[S  
 WKH 7HTXLOD &ULVLV LQ OH[LFR WKH \$VLDQ )LQDQFLDO &U  
 \$PHULFD 6RXWK \$PHULFD DQG 5XVLD VKLIWHG WKH IORZ  
 DQG LQWR WKH GHYHORSLQJ PDUNHWV RI (DVWHUQ (XURSH  
 DQG WKH 8QLWHG 6WDWHV (LFKHQJUHHQ 7KLV IORZ  
 UHGXFHG LQYHVWPHQW E\ WKH SUHYLRXVO\ ERRPLQJ \$VLDQ  
 H[FKDQJH UDWH YXOQHUDELOLW\ 7KH HIIHFW RI WKHVH FK  
 6WDWHV DQG ZDV GXEEHG WKH 3\$VLDQ 6DYLQJV \*OXW' E\ %  
 RI JOREDO UHDO LQWHUHVW UDWHV OHG WR D IORZ RI FKHI  
 FRXQWULHV LQFOXGLQJ WKH 86 \$W WKH VDPH WLPH D FRP  
 DQG WKH LQWURGXFWRQ RI QHZ WHFKQRORJ\ FUHDWHG D  
 8QLWHG 6WDWHV 7KHVH RSSRUWXQLWLHV ZHUH UHIOHFWH  
 6WDWHV LQ WKH ODWH V DQG HDUO\ V

7KH OLQN EHWZHHQ ORQJ UXQ LQWHUHVW UDWHV DQG  
 OLWHUDWXUH OXQGHOO \$V LQWHUHVW UDWHV GHFOLC  
 LQYHVWPHQW ERRP RFFXUV \$V &DEDOOHUR HW DO G

UHODWLRQVKLS EHWZHHQ ORZHULQJ JOREDO LQWHUHVW UD  
HOHFWULFLW\ LQGXVWU\ GHFOLQLQJ H[SHFWDWLRQV DERX  
IRU EXLOGQLQJ QHZ SRZHU SODQWV 7KLV LQFUHDVHG SUR  
HOHFWULFLW\ LQGXVWU\ LQ SDUWLFXODU WKRVH ZKRVH SU  
ORQJ UXQ 7KLV OHDYHV WKH LQGXVWU\ RSHQ WR VSHFXOD  
RQH RI WKH HIIHFWV +RZHYHU LI UDWHV EHJLQ WR ULVH  
0XFK KDV EHHQ ZULWWHQ DERXW WKH VXEVHTXHQW EX  
DQG KRXLQJ EXW WKH DYDLODELOLW\ RI FKHDS FUHGLW  
H[SDQVLRQ RI LQYHVWPHQW LQ WKH HOHFWULFLW\ LQGXV  
OLDQ DQG 6XIL 1RPLQDO \HDU VRYHUHLJQ \LHOGV  
FRXQWULHV DYHUDJHG QLQH SHUFHQW LQ DQG IRXU SH  
FLWH FKHDS FUHGLW DV IDFLOLWDWLQJ WKH LQYHVWPHQW  
&DOSLQH D ODUJH EXLOGHU DQG RSHUDWRU RI JDV ILUHG  
ERUURZLQJ GXULQJ D SHULRG ZKHUH FUHGLW ZDV FKHDS 7  
+RZHYHU ORZ LQWHUHVW UDWHV E VLZDU



WKH FKR VHQ FRXQWHUIDFWXDO VWDWHV DUH RI HTXDO LI  
FRXQWHUIDFWXDO VWDWH LV IRU PLV GPIHRODVND FIG UHVWUXFWX  
(VWL PDWLQJ WKH V\QWKHWLF FRQWURO JURXS UHTXLU  
SUHYLRXV VWXGLHV WKH RXWFRPH YDULDEOH KDV EHHQ  
VWUHQJWK RWW KLWOS DSHU2 pV pWKHJ DGRS WLBQ LR0 WYHVDWV  
7KHUHIRUH WKHUH LV QRW RQH VWDWH IRU ZKLFK WR FRQ  
WKH UHVHDUFKHU WZR RSWLRQV HVWLPDWH WKH DYHUDJH  
V\QWKHWLF FRQWURO RI WKH DYHUDJH UHVWUXFWXUH V  
UHVWUXFWXULQJ RFFXUUHG DW GLIIHUHQW WLPHV IRU GLI  
ZKHQ WKH WVE XFRQWUHGO LRU@LYHK&2 `UH PVLGLRQ VQ0EWWKFMX

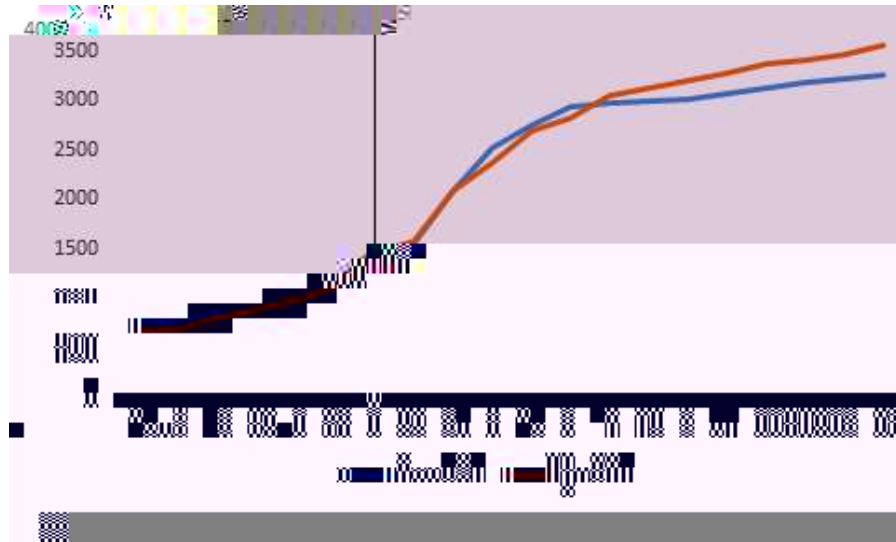
)LJXUH \$YHUDJH 5HVWUXFWXUHG DQG 6\QWKHWLF &RQW

1RWHV 5XQQLQJ YDULDEOH LV \HDUV VLQFH VWDWH VWDUWHG UH

)LJXUH VKRZV WKH DYHUDJH QHW FDSDFLW\ LQ 0: DGC  
FRPSDUHG WR WKH HVWLPDWHG FRXQWHUIDFWXDO 7KH WU  
EHJLQV DW WLPH ]HUR EXW LV ODJJHG WKUHH \HDUV )R  
GHSDUWXUH EHWZHHQ WKH RXWFRPHV IRU WKH WZR JURXS  
UHVWUXFWXUHG VWDWHV ZRXOG KDYH EHHQ H[SHFWHG WR

7DEOH FRPSDUHV WKH \QWKHWLF FRQWURO UHVXOWV ZL  
VKRZV WKH DPRXQW RI &&\*7 FDSDFLW\ 0: DGGHG LQ UHVW  
FRQWURO IRU WKH SHULRG GHILQH E\ WKH YDULDEOH 7K  
WKH \HDUV RXWVLGH WKH SHULRG VSHFLILHG 7KH WKLUG  
GLIIHUHQFH LQ GLIIHUHQFH 7KH PDLQ VSHFLILFDWLRQ RI  
YDULDEOH %RRP 7KLV LV VLPLODU WR ZKDW ZDV HVWLPDW  
7KH SHULRG UHVXOWV DUH LQFOXGHG WR DFFXUDWHO\  
VWDWHV VWDUWHG ~~UHVWUXFWXULQJ~~ UHVXOWV  
EHWZHHQ FDSDFLW\ DGGHG E\ UHVWUXFWXUHG VWDWHV D  
VWDWHV IRU IRXU \HDUV DIWHU UHVWUXFWXULQJ 3HULRGV  
\HDUV DIWHU UHVWUXFWXULQJ 7KH VHFRQG FROXPQ VKRZ

)LJXUH \$YHUDJH 5HVWUXFWXUHG DQG 6\QWKHWLF &RQWURO



1RWHV 5XQQLQJ YDULDEOH LV \HDUV VLQFH VWDWH VWDUWHG

6\QWKHWLF FRQWURO KDV PDWFKHG UHVWUXFWXUHG DQ  
 WUHDWPHQW )LJXUH 7KH FORVH UHODWLRQVKLS EHW  
 VXJJHVWLQJ WKDW UHVWUXFWXULQJ GLG QRW FKDQJH LQY  
 \HDUV DIWHU UHVWUXFWXULQJ WKH GLIIHUHQFH EHWZHHQ  
 &7 FDSDFLW\ ZLGHQV E\ D VPDOO DPRXQW 7KLV VXJJHVWV  
 SHULRG H[SHULHQFHG UHGXFHG \*DV &7 LQYHVWPHQW UH  
 UHVWUXFWXULQJ 7KH LQWHUSUHWDWLRQ RI WKH VPDOO JD  
 ELGGLQJ PDUNHWV RI WKH ODUJH QXPEHU RI &&\*7 SODQWV

\$ 1HZ \$SSURDFK WR 6\QWKHWLF &RQWURO

7R GDWH WKLV VWXG\ UHSUHVHQWV D QHZ XVH RI V\Q  
 WUHDWPHQW VWDWHV DQG LWV DSSOLFDWLRQ WR WKH HO  
 ZDV XVHG IRU RQH WUHDWHG JURXS OLNH WKH VWDWH RI  
 SUHYLRXVO\ WKLV LV D FRPSOLFDWLRQ IRU PXOWLSOH W  
 VWDWHV LQWR RQH JURXS DQG HVWLPDWLQJ WKH V\QWKHW  
 VWUHQJWK RI WKH DSSURDFK WDNHQ KHUH LV LW DOORZV  
 FRXQWHUIDFWXDOV DUH HVWLPDWHG XVLQJ VWDWH VSHFLI  
 \$V D UHVXOW WKLV SDSHU GRHVQ\W VXIIHU IURP WKH HVW



\$OWHUQDWLYH 6SHFLILFDWLRQV

7KH WKHVLV RI WKLV SDSHU LV QRW WKDW UHVVWUXFWX  
FDSDFLW\ EXW D WHPSRUDU\ VXUJH ZKLFK GHFOLQHG DV W  
UHIOHFWV WKLV G\QDPLF WUHQG EHWZHHQ SHULRGV +RZH  
ZKLFK FDQ EH XVHG WR DQDO\]H FKDQJHV LQ VSHFLILFDWLR  
ERRP DQG QRQ ERRP DOO RWKHU \HDUV 7KH LQ  
UHVVWUXFWXULQJ DOORZV WKH LPSDFW WR EH VHSDUDWHG  
UHVVWUXFWXULQJ YDULDEOH UHIHUV WR UHVVWUXFWXUH VV

1RW VXUSULVLQJO\ WKL V LV ODUJH LQ ERWK PDJQLWXGH  
GRHVQ¶W SURYLGH LQVLJKW LQWR LQYHVWPHQW SDWK &F  
VLJQLILFDQW LPSDFW RI UHVWUXFWXULQJ RQ &&\*7 LQYHV  
GHPDQG SURMHFWLRQV DQG FRVW UDWLRV DUH H[FOXGHG  
H[SODLQLQJ WKH ERRP YDULDEOH ZKLFK LV WKH DPRXQW





< < LQYHVWHG EH\RQG WKH PLQLPXP UHTXLUHPHQW LV D  
 E\ HDFK ILUP LQ HDFK SHULRG WKHUHIRUH LV 4 ; < ,W¶V  
 RSHUDWH ZLWKLQ WKH VDPH SHULRG 'HPDQG IRU DQG FWUL  
 GHPDQG IRU WKH DOWHUQDWLYH ZLWRRQ [UHSDQGHQW HG E\D'  
 FKDUJHV D XQLIRUP SULSHDQGUHDFK VSHULRULVH DEK JRRG 7  
 ZHOIDUH IRU HDFK PDUNHW FDQ WKHQ EH ZULWWHQ DV IRO

ē<sup>Ā</sup>

9<sup>Ē</sup> L ± &<sup>Ē</sup>:T<sub>5</sub>; FL<sup>Ē</sup> EĤ<sup>Ē</sup>:T<sub>5</sub>; @<sub>5</sub>TE ± &<sup>Ē</sup>:T<sub>6</sub>; FL

4

\$VVXPSW@:RQ@:1  
9-5 8 6

2QFH WKHVH DVVXPSWLRQV DUH LPSOHPHQWHG LQ WK  
\$SSHQGL[ IRU GHWDLOV WKH IROORZLQJ ZHOIDUH LPSDF

¿9 L ± L<sub>6</sub><sup>i</sup> F &

:HOIDUH (IIHFW; FQ@50@50U50U T50U F@50::50U :50U

7KLV LV WKH FKDQJH LQ ZHOIDUH IURP UHVVWUXFWXULQ  
LQ WKH SULFH RI HOHFWULFLW\ 7KH WZR FRPSRQH QWV R  
FRPSRQH QWV RI HOHFWULFLW\ SURGXFWLRQ ,I UHVVWUXFW  
LQWHQG HG WR GR FRQVXPHUV ZRXOG UHVSRQG E\ SXUFK  
GLIIHUHQFH DQG ZHHQ ;

:HOIDUH ,PSDFW (VWLDPDWLRQ

2I WKH IRXU ZHOIDUH HIIHFWV LGHQWLILHG DERYH W  
H[FHVVLVYH HQWU\ RQ ZHOIDUH VR RQO\ , DQG ,9 ZLOO EH H  
DUH QRW GLUHFWO\ UHODWHG WR H[FHVVLVYH HQWU\

(IIHFW ,

,Q RUGHU WR FDOFXODWH WKH WRWDO ZHOIDUH FKDQJH IU  
JRRG PDUNHW LWV ZRUWK QRWLQJ WKDW WKH HFRQRPL\ LV



DQ: 6

RI SODQW UHWHUHPHQWV &&\*7 ZDV QHZO\ LQWURGXFHG LQ  
&7 SODQWV ZHUH EXLOW XQWLO WKH V VR SODQW UHWH



RQ WR WKH FRQVXPHU LQ WQHWRILUPFDIVKILJKH SBVWHVRI W  
WKH ILUPV DV FRQVXPHUV ZHUH LQVXODWHG IURP LQYHV  
FRPSHWLWLRQ :KLOH WKH LPSDFW RQ ILUPV ZRXOG DIIH  
UHVXUFHV LW GLGQW KDYH WKH VDPH HIIHFV DV LQ WKH  
:KLOH -RVNRZ ZDV FHUWDLQO\ FRUUHFV WKDW &265 LQ  
LQWHQVLYH PHWKRGV RI HOHFWULFLW\ JHQHUDWLRQ WKHU  
FRVW RI H[FHVV LQYHVWPHQW FDQ EH ODUJH DV HYLGHQF  
WKH ODVW \HDUV 6HFRQG ZKLOH &265 LQFHQWLYL]HV  
HOHFWULFLW\ PDUNHWV HQFRXUDJH ILUPV WR XQGHULQYH  
H[SHFWDWLRQV SOD\ D ODUJH UROH LQ WKH FRQVWUXFWL  
PLQLPL]HG E\ WKH DELOLW\ RI XWLOLWLHV WR UHFRXS WKH  
7KLV LV SUHFLVHO\ ZK\ DQ\ QHZ QXFOHDU DGGLWLRQV DUH  
JXDUDQWHHV +RZHYHU PDNLQJ D ODUJH LQYHVWPHQW LQ  
YHQWXUH DQG ILUPV PD\ RSW IRU OHVV FDSLWDO LQWHQV  
KLJKHU OHYHOL]HG FRVW ,WV QRW VXUSULVLQJ WKHUHF  
FKRVHQ RYHU FRDO DQG QXFOHDU SODQV :KLOH WKHVH  
ZKHQ JDV SULFHV ZHUH ORZ WKH KLJK JDV SULFHV RI WKH

(IIHFV ,9

7KH FKDQJH LQ ZHOIDUH IURP HIIHFV ,9 LV GHSHQGH  
HOHFWULFLW\ SULFHV DQG WKH HODVWLFLW\ RI HOHFWULF  
KDYH LQFUHDVHG RU GHFUHDVHG DV D UHVXOW RI UHVWUX  
DQG FRQVWUXFWLRQ PDWHULDOV SULFHV LV GLILFXOW V  
LVRODWH RQO\ WKH HIIHFV RQ HOHFWULFLW\ SULFHV RI U  
DQG WKUHH LQFUHDVLQJ HIIHFV

7KHUH DUH WZR FKDQQHOV IRU UHVWUXFWXULQJ OHDG  
UHGXFWRQ LQ FRQVWUXFWLRQ DQG RSHUDWLRQ FRVWV IU  
\*LYHQ D GRZQZDUG VORSLQJ GHPDQG FXUYH DQG FRPSHW

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\$V SUHYLRXVO\ GLVFXVVHG LQ WKLV SDSHU WKH FRVW RI QXFOHDU S

VDYLQJV RQ WR FRQVXPHUV LQ WKH IRUP RI ORZHU SULFHV

T<sub>5T</sub>









5HIHUHQFHV

%HUU\ 6WHYHQ DQG :DOGIRJHO -RHO 3)UHH (QWU  
%URDGFDSWLRQXUQDO RI (FRQRPLFV  
%HUJHO <RUDP 37KH 3URGXFWLRQ )XQFWLRQ DQG 7  
,QGXVWRXUQDO RI 3ROLWLFDO (FRQRP\



)HGHUDO (QHUJ\ 5HJXODWRU\ &RPPLVVLRQ )(5& ZZZ I  
)LQDQFLDO &ULVLV ,QTXLU\ &RPPLVVLRQ 38KH )LQD  
\*RYHUQPHQW 3XEODVWKLQJWZRQFH  
)RZOLH 0HUHGLWK 3(PLVVLRQV 7UDGLQJ (OHFWULF  
3ROOXWLRQ \$FHDWLFHQ (FRQRPLF 5HYLHZ  
\*HURVNL 3 \$ DQG 0D]]XFDWR 0 30RGHOOLQJ WKH '\  
,QWHUQDWLRQDO -RXUQDO RI ,QG XVWULDO 2UJDQLJDWLRQ  
\*LOEHUW 5LFKDUG DQG 9LYHV ;DYLHU 3(QWHUXL'HZHUU  
RI (FRQRPLF 6WXGLHV  
+LONH -RKQ 3([FHVV &DSDFLW\ DQG-RQWQDO6RPHQ(PXSV  
(FRQRPLFV  
+REEV %HQMDPLQ 32SWLPLJDWLRQ 0HWKRGV IRU (C  
(XURSHDQ -RXUQDO RI 2SHUDWLRQDO 5HVHDFK  
,QWHUQDWLRQDO \$WRPLF (QHUJ\ \$JHQF\ ZZZ LDHD RUJ  
,VKLL -XQ DQG <DQ -LQJPLQJ 3'RHV 'LYHVWLWXUH &U  
%X\ 'HFLVLRQ LQ WKH 8 6 (OHFWULF-LVXUQDOHBDWLRQRIQJ  
-RVNRZ 3DXO 35HVWUXFWXULQJ &RPSHWLWLRQ DQG  
6HFW-RXUQDO RI (FRQRPLF 3HUVSHFWLYHV  
-RVNRZ 3DXO 3,QFHQWLYH 5HJXODWLRQ LQ 7KHRU\ D  
7UDQVPLVVLRQ (1HVVZRUNLQJV :RUQWQ&HDSHU  
-RVNRZ 3DXO 3/HVVRQV /HDUQHG IURPQ(HUJFWRB&EIQDO  
6SHFLDO ,VXXH  
-RVNRZ 3DXO 3&RPSDULQJ WKH &RVWV RI ,QWHUPLWW  
7HFKQRSPJLWVFDQ (FRQRPLF 5HYLHZ 3DSHUV DQG 3URFHGG  
-RVNRZ 3DXO DQG .DKQ (GZDUG 3\$ 4XDQWLWDLWLY  
&DOLIRUQLD¶V :KROHVDOH (OHFWULFQHWVQDRXUHQDOXULQJ 6X  
-RVNRZ 3DXO DQG 0LVKNLQ )UHGHULF 3(OHFWULF 8W  
6WDW,QWHUQDWLRQDO (FRQRPLF 5HYLHZ  
-RVNRZ 3DXO DQG 6FKPDOHQVHH 5LFKDUG 30DUNHWV IRU  
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-RYDQRYLF %R\DQ 36HOHFWLRQFBQBPMKHU\FBOOXWLRQ  
-RYDQRYLF %R\DQ DQG 0DF'RQDOG \*OHQQ 37KH /LIH  
-RXUQDO RI 3ROLWLFDO (FRQRPL

.DKQ (GZDUG 35HJXODWLRQ E\ 6LPXODWLRQ 7KH 5R  
(OHFWULFLW\ 3ODQSHQDWDQFQYULHFVQDUFK

.DSODQ 6WDQ 3'LVSODFLQJ &RDO ZLWK \*HQHUDWLRQ  
3ODQV 5HSRUW IRUDQXQJUHVV

.OHSSHU 6WHYHQ 3(QWU\ ([LW \*URZWK DQG ,QQRY  
\$PHULFDQ (FRQRPLF 5HYLHZ

.OHSSHU 6WHYHQ DQG 0LOOHU -RKQ 3(QWU\ ([LW DQ  
0DQXIDFWXUH,QWURJQDFWLRQDO -RXUQDO RI ,QG XVUL0,

1DWLRQDO 5HQHZDEOH (QHUJ\ /DERUDWRU\ 15(/ /HY  
ZZZ QUHO JRY

1RUGLQ - \$ 31RWH RQ D /L(FRQRPLHV & RVW & XUYHY

1XFOHDU (QHUJ\ ,QVWLWXWH KWWS ZZZ QHL RUJ

3DXO \$QWKRQ\ 0\HUV (ULFD DQG 3DOPHU .DUHQ 3  
(OHFWULFLW\ 'HPDQG E\ 5HJL)QLVFXDWRQRQD QDS GHFWRRU '

3HUU\ 0 . 36FDOH (FRQRPLHV ,PSHUIHFWRX&URQDSHWRILW  
,QG XVWULDO (FRQRPLFV

3HWHUVRQ 3DXO DQG :LOVRQ 5DFKHO 3\$ %ULHI 6XUY  
5XOHV DQG 5HFWUHPDQ & OHDQ 6\$SHULQRXQG DWLRQ







:KLFK FDQ WKHQ EH VHSUDUDWHG LQWR WKH IROORZLQJ ILY

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