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

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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 FSDFLW\ 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

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)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(XS ERPHV HYLGHQFH IRU WKHVH HIIHFVW KDV E
SDSHUV IRFXVHG RQ WKH ZHOO HVWDEOLVKHG UHVXOW RI C

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 SURYLG HPSLULF

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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 VHSDUDWH 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\

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LQFUHDVH RI D VWDWH DQG ZKDW LWV V\QWKHWLF FRQWURO FRXQWHU

GHWHUPLQHG E\ H[SHQGLWXUH RQ IXHO DQG 2SHUDWLRQV
LQYHVWPHQW DQG D UHDVQRDEOH 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
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7KH VKLIW WRZDUGV JDV ILUHG SRZHU SODQWV LV QR
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7KH DGRSWLRQ RI QHZ FRPELQHG F\FOH WHFKQRORJ\ DQC
FRVW HIIHFWLYH UHODWLYH WR FRDO DQG QXFOHDU 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

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'XULQJ WKH SHULRG XWLOLWLHV DFURVV WKH
WR LGOH FDSDFLW\ IURP WKH V :KLOH LWV GLIILFXOW
ZDV GXULQJ WKLV WLPH 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
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

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
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,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
LQGXVWU\ LQVLGHUV WR SUHGLFW LW (DFK \HDU WKH (,\$
IURP ERWK DYDLODEOH GDWD DQG LQGXVWU\ H[SHUWV DQG

GHPDQG 7KH HVWLPDWHV DUH DGMXVWHG DQQXDOO\ WR U
XSGDWHG HVWLPDWHV E\ (,\$ VWDII \$V LV HYLGHQW LQ 7DE
WKURXJK ZHUH LQFUHDVHG FRQLQXRVO\ WKURXJKRX
XQGHUHVWLPDWHG HDFK \HDU

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ILUVW PRYHU DGYDQWDJH DQDO\]H KRPRJHQRXV JRRG PDU
SRVVLEOH ~~RXWFRU~~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

\$VVXPSWLRQ (QWU\ VXIIHUV IURP D FRRUGLQDWLRQ IDLO
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)RU WKH HOHFWULFLW\ LQGXVWU\ XWLLOLWLHV WUDGLWLR
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)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 ^ēEQ 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 HQUU\ 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 HQUU\ 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 HQUU\ 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 WUDQVPLVVLRQ 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
WRSRJDUSK\ WUDQVPLVVLRQ DQG SLSHOLQH FDSDFLWLHV
REXHUYDWLRQ

)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

)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
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IXWXUH)LUP L FKRRVHV WKH OHYHO RI LWV LQYHVWPHQW

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7KH FKRLFH RI VLJH SULPH PRYHU DQG IXHO W\SH RI
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'DPVJDDUG \$UGRLQ DQG *UDG\ 7KHUH LV QR HV
VWUXFWXUH DQG SUHIHUUHQFH IRU JDV ILUHG FDSDFLW\ VR
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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 VHOOLQJ WKH DGGLWLRQDO HOHFWULFLW\ WKH QHZ
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DPRXQW RI GDWD RQ WKH LQGLYLGXDO VWDWH OHYHO IURP
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UHSRUWV RQ QDWXUDO JDV FRDO QXFOHDU JHRWKHUPDC
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7KH UHVWUXFWXULQJ YDULDEOH XVHV GHWDLOHG LQIR
WKH (,\$ DQG LQGLYLGXDO VWDWH UHJXODWRU\ FRPPLVLR
VWDWHV LQLWLDWHG DORQJ WKH UHVWUXFWXULQJ SURFH
SURJUDPV OHJLVODWLYH DFWLRQ GLYHVWLWXUH RI DVVHV

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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
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DIWHU UHVWUXFWXULQJ DQG QRQH[LVWHQW LQ D SHULRG F

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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 ERF
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

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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[SDQD
(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 RULHQWV H[DVSHQWLY
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[SDLQ W
ZHUH FRQVWUXFWHG LQ -DSDQ WKH 8. DQG WKH 86 EHJLQ
FRQWULEXWHV WR H[SDLQLQJ 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 SODQQ
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 (,\$

: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 WKLV 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 V

ORGHO)LUVW ORYHU

,Q WKH HOHFWULFLW\ JHQHUDWLRQ VHFWRU LQYHVWP
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\ GHUHJXODWH
 VWUDWHJ\ OHG WR H[FHVV FDSDFLW\ LQ UHVWUXFWXUHG V

7DEOH ORGHO 3UHGLFWLRQ 2XWFRPHV

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&]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 5XVVD VCLIWHG 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

6\QWKHWLF &RQWURO

7KH VWDJJHUHG DQG LQFRPSOHWH DGRSWLRQ RI UHV
FRXQWHUIDFWXDO IRU WKH UHVWUXFWXUHG VWDWHV +RZH
LQ D PRUH SUHFLVH PDQQHU \$SSO\LQJ WKH PHWKRG SUH
\$EDGLH DQG *DUGHDJDEDO \$EDGLH HW DO %XFKPX
GLYLGHG LQWR UHVWUXFWXUHG DQG GRQRU JURXS)RU F
FRXQWHUIDFWXDO VWDWH IURP WKH GRQRU JURXS ZKLFK V
KDYH EHHQ DGGHG LQ WKH UHVWUXFWXUHG VWDWH LI UHV
LQ \$EDGLH HW DO FGDQJH LQ &&*7 FDSDFLW\ FDQ EH ZULW

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<LV WKH FGDQJH LQ &&*7 FDSDFLW\ IRU UHVWUXFWX
FRXQWHUIDFWXDO FGDQJH LQ &&*7 FDSDFLW\ WKH LPSDFW
UHVWUXFWXULQJ RQ LQYHVWPHQW LQ &&*7 FDSDFLW\ &DO
SDSHU UHTXLUH NQRZLQJ OHDWRFHQV (VW
UHTXLUH WKUHH LQSDXW ,PSRUWDQW IDFWRUV ZKLFK
UHODWLYH LPSRUWDQFH RI HDFK RI WKRVH IDFWRUV 7KH

7KH LPSRUWDQW IDFWRUV LQ FGDQJHV LQ &&*7 FDSDF
VWDWHV ZLWK WKH VWDWHV ZKLFK WKH\ PRVW FORVHO\ U
VHOHFWHG IURP LQVLJKWV LQ WKH LQGXVWULDO OLWHUDW
DQG LQFOXGH (56 SURMFWLRQV FDSDFLW\ WR (56 UDWL

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 RWWKLV OS DSHU2 pV pWKH J DGR SOWL R0 WYH DUX
7KHUHIRUH WKHUH LV QRW RQH VWDWH IRU ZKLFK WR FRQ
WKH UHVHDUFKHU WZR RSWLRQV HVWL PDWH 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 VQ DEWVKFMMX

)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 5HVVUXFWXUHG DQG 6\QWKHWLF &RQV

1RWHV 5XQQQLQJ YDULDEOH LV \HDUV VLQFH VWDWH VWDUWHG

6\QWKHWLF FRQWURO KDV PDWFKHG UHVWUXFWXUHG D
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 J
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 O ...pUHDWp €G URXS OLáH0 O ...pKHVW

\$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 VSHFLILFDWLF
ERRP DQG QRQ ERRP DOO RWKHU \HDUV 7KH LQV
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 [UHSODQH QW]HG E\D'
 FKDUJHV D XQLIRUP SULSHDQGUHDFK VSHULRULVH DEK JRRG 7
 ZHOIDUH IRU HDFK PDUNHW FDQ WKHQ EH ZULWWHQ DV IRO

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

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

¿9 L ± L₆ⁱ 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[FHVVLVLYH HQWU\ RQ ZHOIDUH VR RQO\ , DQG ,9 ZLOO EH H
DUH QRW GLUHFWO\ UHODWHG WR H[FHVVLVLYH HQWU\

(IIHFW ,

,Q RUGHU WR FDOFXODWH WKH WRWDO ZHOIDUH FKDQJH IU
JRRG PDUNHW LWV ZRUWK QRWLQJ WKDW WKH HFRQRP\ 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
UHVXRUFHV LW GLGQW KDYH WKH VDPH HIIHFW DV LQ WKH
:KLOH -RVNRZ ZDV FHUWDLQO\ FRUUHFW 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

(IIHFW ,9

7KH FKDQJH LQ ZHOIDUH IURP HIIHFW ,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 HIIHFW RQ HOHFWULFLW\ SULFHV RI U
DQG WKUHH LQFUHDVLQJ HIIHFWV

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

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

VDYLQJV RQ WR FRQVXPHUV LQ WKH IRUP RI ORZHU SULFHV

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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'HZVHUU
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-LVXUQDOHBDWLRQRIQJG
-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/HVVVRQV /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 (OHFWULF(LHWVQDRXUHQDOXULQJ 6X
-RVNRZ 3DXO DQG 0LVKNLQ)UHGHULF 3(OHFWULF 8W
6WDW,QWHUQDWLRQDO (FRQRPLF 5HYLHZ
-RVNRZ 3DXO DQG 6FKPDOHQVHH 5LFKDUG 30DUNHWV IRU
'HUHJXODWLRQ0;7&DUFHVLGJH
-RYDQRYLF %R\DQ 36HOHFWLRQFBQBPMKHU(LFBOOXWLRQ
-RYDQRYLF %R\DQ DQG 0DF'RQDOG *OHQQ 37KH /LIH
-RXUQDO RI 3ROLWLFDO (FRQRPLF

.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 XVWUL0,

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)QLVFXDWRUQRQDQGS6HFWRRU '

3HUU\ 0 . 36FDOH (FRQRPLHV ,PSHUIHFVRX&URQDSHRLW
,QG XVWULDO (FRQRPLFV

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

:KLFK FDQ WKHQ EH VHSUDUDWHG LQWR WKH IROORZLQJ ILY

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