

'XVW REVFUHG WVKHU & RVPIDFW) LURQQ DWW HRQ V H Ø RPE WVKUHY / D U J H  
0LOOLPHWHU 7HOHVFRSH

6SHDNHU

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6SHDNHU5REHUW 9 ) JFDQVHQWLSRQ DO /DERUDWRU\  
7LPSSULO 30  
/RFDW\$WQLXP

6LQFH WKH EHLVQDQXBI WLQHRUPLDWKL RQ URQH SXUROWHLQZWR Q  
DV\PPHWULHV KDYSRURZQWD D ØRV D QEG WHIQDL KDVQQFHHDLGQ VORR Z  
QXFOHDU SK\VLFR UH ØDYHFRPWH QHDPIS OVK H Ø DWW QXFWXUH  
SURWRQV DQG QHGXZLRQKL Q WHK E UUXDQW W D EOLV DQR RQDF H WK  
IDFW ³PDJLF QXREFRUPH DQSHDRU DVQGH WPKV LUR SGHHSVHHQGFHRQ Q  
H[FHVV \$ ODUJHDQWRWDSRSH DUFVH WRS HPSVLFW JØR EDDV SWKH G  
RU WKH QXFOHDU Ø ØFK RR UWKLDPS ORW UPIX Ø DKVDH/GE HRQQ WKH R  
WKH DGYHQW RI QHZ IDFLOLWLHVQD Ø Ø HHRSWKHLU H Ø W D Ø HWGHF  
QHZ WKHRUHWLFD Ø Ø HSURVDFWH R QHZKHQR SPHYQWZ Ø MZ VGH \$  
7DQGHP /LQDF \$FFH ØHLPDVG RDW \$DGSØFHV VIKQJ WVKV & ØLØQRU  
5DUH ,RQ %UHHGHU 8ZLJØD ØHH Ø \$ Ø FØ Ø EHG DQG ILUVW U

5HDO /LIH RQ )DNQWDXVLS \$ WRXZHFRLVQJBDQD(XMU\GD\

6SHDNWU5RVV /RFNZRRG 8QLYHUVLW\ RI \$OEHUWD  
7LPDUFK 30  
/RFDW\$WQLXP

\$EVWUDFW

0DUV VHHPV WBOVDKHLVBJOD\FO :LWK PDMRU  
PLVVLQRQV EHLQJ SODQQHG WR WKH 5HG 3ODQHW RYHU WKH  
FRXSOH RI GHFDGHV SXEOLF LQWHUHVW LQ VSDFHIOLJKW  
JURZLQJ GDLO\II:KULQWKEUSURPLVH RI D  
VHFRQG KRPH IRUWKXKQEQEDQFKKDOOHQJHV RI  
JHWWLQJ WKHUH DQG EDFN DJDLQ DUH RQ D VFDOH KXPQI  
KDVQ W VHHQ VLQFH KXPQV ILUVV VHW IRRW RQ WKH ORR  
7R VROYH WKHVH FKDOOHQJHV DQDORJ PLVVLQRQV DUH EHL  
FRQGXFWHG DURXQG WKH ZRUOG UHSOLFDWLQJ GLIIHUHQV  
HQYLURQPHQWVRXQGDW\$HFWLQJWKDMLZLOO EH  
FULWLFDO WR IXWXUH PLVVLQRQV

:LWK D PRGHUQ YHUVLRQ RI WKH VSLD\H RU DFRP PPHBJDQJVS  
WKH GHPDQG IRUUDVWURQD-XRZHYEHLQWFKDWHHLV QDWFK WR E  
DVWURQDXW EXW VRPH PRUHHHI IHHKALFYHRZVWQQRWFDQ \RX  
\RXUVHOI IRU D \$RDQ\DEVHU RXQDXUWK DUVW KR FNZ[SRIG LHQFHV  
IRU 1\$6\$ VWXGLHV DQGRKHQVRQVR LQJSEORRQD PWUDLQDQWURQ  
KRSHIXOV

%LR

5RVV /RFNZRRG LV WDKHJBDQXYDWHV LWR PRI \$OEHUWD ZLWK

7KRXVDQGV RI VW XGDH Q M J L Q FVURHVLUK & 3KDDUWR B QH V LHWDF WKH J  
EHFRPLQJ D WHQX UHVY RLQ L YRIZHYLWV HSDUHRVHQ WW RD Q3K' JUDGXD  
XOWLPDWHO\ DFKLHYH WKLV JR D W RIR 3ZK V UHP SDURH WGG'H: RDWW  
FDUHHU SURVSHFWV IRU WKR VH 3K'V ZKR ZRUN RXWVLGH D

, Q WKLV SUHVH D W H D W L S G U Y Z Q O O W I B Q J H B U W S D W K % 6 V W L Q \$ V W U  
& K L O H S D V V L Q J W K U R S X J K L F B K D ' V L Q B S I D V S R K M O G R V D W R U D O I H O  
608 , & \$ V D Q G I L Q D O O S R G / V L G R F D Q R R U M D I O H K I R X O V L R H Z I W K ' L H S S D U W W P H Q  
O H G L F L Q H E H I R U H P B M P Q B S R V D V L R Q D D F W D W 6 H D W R D U 6 \$ L H Q W L

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

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\$ G D \ L Q W K H L O D I H F R H G L F D Q G S K \ V L F L V W

6 S H D N H U - X V W L Q 6 X W K H U O D Q G 8 Q L Y H U V L W \ R I 2 W W D Z D  
7 L P H H E U X D U \ 30  
/ R F D W \$ W Q L X P

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

7 K L V W D O N Z L O O W I K H W R I O H B H W F K U S L R H I B V F D R Q S I K Q V & B Q D G L D G  
G L V F X V V W K H V W F I S F H U B T F X L U Q L G F D W R F E D Q L G F X D Y S U K D V L L R O O R I W  
G D L O \ Z R U N U H V W D Q B K F O L Q G F L D Q W H L D P S O I H Q J W K H W V D W L P X O D  
U H Z D U G L Q J Z R U N R I D P H G L F D O S K \ V L F L V W



NQRZQ GRXEOH SXOVDU V\ VWHP IR Z L Q L O H D F O W R G B W H F X W L R Q K  
JUDYLWDWLRQDO ZDYHV YLD SXOVDU WLPLQJ

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6XEDWRPLF 3K\ VLFV 5HVHDFK LQ & DQDGD

6SHDNHU6YHWODQD %DUNDQRYD \$FDGLD 8QLYHUVLW\  
7LPHFHPEHU 30  
/RFDW\$RQLXP

7KH VFLHQWLILF PLVVLRQ RI VXEDWHPPHQWSDUVERQVWLVWRXHG  
VWXG\ WKH IXQGDPXHQZKOFIRVFKHMVQGVUMWIDFVGRQZVKKH\FR  
SURGXFH ODUJHU V\ VWHPV ZH REVHUVHRIQQBXHW8EYBIOOHZ  
GLVFRYHU\ DQG LQQRYDWLRQ LQ VXEDWHPPHQWSDUVERQVJZWV  
SODQ ORQJ WHWPDISOVMKHFQW[VYQGHQWVDWKLROPRVVS KMEHQW  
1REHO 3UL]H LQVBLQRFVRVLUOQH\$WMRQF' RQDQGH&DQDGD  
7DNDDNL .DMLWBYHDSZQLFKBSVHQHSDDQLFZO HSKQPLFQ

6RRQ ZH PD\ VHQ DRXUH YRQGHVLRVWQKHQDPVWVHU DQG LWV LQ  
DV ZH LQYHVWLJDWFDWVHGDYUNPDMVPHQVWKUHGRFOLHQBQQHX  
WDON ZLOO GLVFXVWVHRYHLDVO FERURHVSXUFLKFLQDQGEOMVFUL  
&DQDGLDQ VXEDWRFKLEQSVVLMFXWUHVVDXPHRBYH75,86)2/\$%  
6XGEXU\ DQG 3HU.DVHWHURRQVDMVPHQV&DQDGLDQRHVHDFK  
6ZLW]HUODQG .(DEDSQDHQZLOOKRQVVRXGDWFRPLF SK\VLV  
UHVHDFK FDQ LQYRQYKQGVHLDWFDQDQWFRRSUHPDSHLQ\XQ  
LQVWLWXWLRQV

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&ROG 'DUN 0DWWWUHQDQGUWQKIGLQVHWDJLDVE\ 'ZDUI \*D

6SHDNHU.ULVWLQH 6SHNNHQV 5R\DO 0LQLVWU\ &ROOHJH  
7LPFRYHPEHU 30  
/RFDW\$RQ

\$EVWUDFW

7KH LQWHUVWHOQDQUPHQEXFGZ,DUI JPSBILMDQSWRQVGHKW LQ  
JDOD[LHV IRUP DQG HYROYH ZLWKRQVWRJVVW,QQVBLUGWBOB  
KLJKOLJKW VRPH RIP\ JURXS V UHFHQWVH,GRUWVQWBUXVHGZ  
FRVPRORJLDQGSUREH , 00 1%\$E 0A 00 1%\$E 0E0AV

GHULYH RQ WKH DMRVPRFHJ D SFRVQADHGHODXPLFGDDWSHURISHUWLH  
WKH 0LON\ :D\ DQG DQVILVQDLWKOWK MOWMKRNZ BXKGLWF XJDGLR ,6  
H[SDQGLQJ IURP WRHRWIKONU HQYLOQWOPHGWXPLHQ ZKDW/RWFKLV  
PHDQ IRU RXU XQGHUVMDDQGLQYRQKXZ6RSDQGLWRZSWHFXUV  
UHYROXWLRQLJH WKH ILHOG

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4XDUN 1RYDH RPSDLKFDWHLBQVDVQ 1XFOHDU \$VWURSKIV  
6SHDNHU

UHVROXWLRQ YL WLENDHQ LIPO JHWWH YRQVXG \ DRO OFRZLZGHWG KIH HOG  
WKH 0LON\ :D\ DQG SORGHV DQD D DFGREHWRIODD DQD BQWL L/RFDW  
UDGLDO YHORFLSK ZBLFVSHLFWWRHJWBUNWLEQINQWDRHFQWSKOV  
VLQJOH PRGH ILEHUVWKKLV\RWHPDQD QRIIMHFVDQDRBIGQJ PH  
RI H[RSODQHWV ZLQWKIDEH VVSHHFVWKIDV WLP HRU WVK/HSURYLGH  
WR VHDUFK IRUH WWHUDUHRXVQGLQD DSOEBE V DYLW DQD LWR ZDQRU IR  
REVVHUYDWLRQV RI IXWXUH H[RSODQHW VXUYH\V

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0DF/HQQDQ /HFWXUH

6SHDNWU\$OH[ )LOOLS SHRN&D@QILRYHULVLW% HUNHOH\  
7LPWFREHU 30  
/RFDWZ%\$

\$EVWUDFW

7%\$

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7KH P\VVHULRXV RULJLQV RI WKH KHDYLHVW HOHPHQWV

6SHDNWU5HEHFFD 6XUPDQ 8QLYHUVLW\ RI IRWUH 'DPH  
7LPWFREHU 30  
/RFDW\$RQ

\$EVWUDFW

:KLOH WKH RULJLQV URJWH KHLOKXPWHDQGVLVQVFBUERQLWKUR  
HOHPHQWV IRXQGPLDURXZHVOODDQGHGWRNRQZIZVWHOH URX  
RI WKH HOHPHQWRVQKZHUYHFDQWKDQURPPVDEKQGDQEHVSDWWH  
QXFOHL ZHFDQ\QMKHVDNSGZEDWYWRQEDSWKHUSURFHVV  
QXFOHRV\QWKH VZKHUHDWKH DVSU RSKLWDLRQVFRUWKHUSUR  
KRZHYHU LVVWHZOXZQDQDIDLQSVRGSXWKDUVSRWPRQWLDODVW  
VLWHV FRUH FROODSVH VXSHUQRGHWFDQGHQKRXZVSRQJWVWV  
LVVXHVLQ QHXWSK\QRFVQGDQEFOWLKHUWHKLWRRQQRWQGLQJ

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7KH 7UDQVLWLRQ3KUREF)LWWRVD<BIBDQV RUD & RQWBUEXWLQJ  
8QGHUJUDGXDWH 'HFLVLRQ 0DNLQJ

6SHDNU /DXUD 6WLOHQ FLOYD; DNYHH 0V8Q) DNU V L8QL Y6DU QLWV 0  
7LPWFREHU 30  
/RFDW\$RQ

\$EVWUDFW

7KHUH KDV EHHQFRQFHVVQQISRFVW W HBRQGDVURSKAMUFOHV U  
ORZ LQWHUHVWQDSIGVLCVRCIOPHQWSQLGRKDDPSUR7KHLQ WHU\ GL  
UHYHUVH 7KH SXG'SZDM WRWHKSO RZWH ZQ\ \$WWDGQHQLV V&DQDGL  
XQLYHUVLV\ SXUVLXFV DDFQDMZK\ LQV6KQVHO PDLNEH 6LMWHUHQW  
LQVWUXPHQWDOV FQQLYH V WXLG\ RU VVSRH/VHQQWUHGROXWMDQLFWLYL  
SDUDGLJP D TXDQ UWBWIRYUHHBQ OSLQHWV VDAQG VHPL VWUXFV  
LQWHUYLHZV ZLWK WDWHD UUSRWRWHK/MR N WVKH RVX SPSR\$KX VLFV L  
SURSRVHG E\ +DJD\$HFLWL DDOO\ WKLRLQVIRK \$KGLPFRQ LGHQWL  
UHFRJQLWLRQ SHUIRUPDQFH DQGUFRVMS MVRHEQF MWK7KPR WWX  
WKH IRXU GLP\$GVWLRQDZQ\$HDPHQV RQ\$HDPHQV WZHDV DOVR  
REYHUYHG 7KLV GLKPHQVDRG DGLD\$K HGGWRDWWKR QS K/VVHDF  
DQG WR WKH OLW\$KDWLXVHLG HQURXKGLVQRU/LQMVHUHVW IRU  
HGXFDRUV LQWHUHVWVWVXGQZVWVLEK\$HVVHFWR RPDQRW DQG  
SK\VLV SURIHVVURUV DQG GHSDUVRQVWV PLJKW LQIOXHQF

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0HHW DQG \*UHHW ZLWK \$VWURQDXW +DQVHQ

6SHDNU DGLDQ \$VWURQDXW -HUHP\ +DQVHQ  
7LPWFREHU 30  
/RFDW\$RQ





&DQDGLDQ 6SDFH \$JHQF\ DVWURQD R XU- HUSDPU W P D Q Q W Q R Q L O R  
2FWREHU WK 7KHK\$WVWUR'QISDUWPSIDQ LQIROYPIDVHSHWW DQ

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\$GDSWLYH 0HVK &KHPRG\QDPLFDO 6LPRQD WLRQV DQG 6\QW

6SHDNU %HQ 7KRPSVRQ&HQWYHUVLWQ FQV KLUH 608  
7LPWFREHU 30  
/RFDW\$RQ

\$EUVUDFW

:H OLYH LQ DQ HFKWILQJOLR H JIRODLFWKL F XDFKF QBROR JVFDOH  
VXFK DV WKH (XURSHDQ \*\$, \$ (62 SURQEFWTDQSPZLOWK VFFKHV  
\*DLD VDWHOOLWH DQGHWRKRS\$HUV 7V BZJHDFUHV VEQH UHDVLQJ  
DJH DQG PHWDOQLFLWD USU BSWK WQRWKKUL R ZIQDQDNO D, [ZLOO GLV

UHVXOWV RI VXFKEKMBRBI\DZPLMFKWPRZLGWIKLVQHPKSHD\GIGS WLY  
UHILQHPHQW FRGH \$S WU D F8+V ZKLF FRHFYDFULRXYRIOXWHRQWV  
LQFOXGLQJ +\GURJHGG QDRQH\I\XPHQLDWFIRFVSKHJEDRD (Z2 VXU  
ZLWK WKH XVH RIDVLPXLODWHG 0L0MKDDO0E NIGUDIXVVLSD  
VDPSOLQJ VLPXODWLSRSDUHEBWORDJQLW\GCHFDQEQJUDQEWLRQ  
REXHUYDWLRQDODFRWRWQYD\G\HIGWDB\BZLDVOKOWB\BWSWUHGGLQY  
ZKLFK DUH VSDWLIQDDO0XWV KDDORQD\FOXWVIEGJEKLLJKI0LJ0WVRI  
VRIDUIRFXVLQJREQD\BZRIUNSRURB\KUH\Q\WIRIKERK\PRORJL

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(YLGHQFH IRU 1HZ U\*HDPD L5RDQV%EXHUVZ\H\H\U B PVSAMU DQRZ (PLVV  
IURP DOPRVW <HDUV RI 6ZLIW

6SHDNWU'LUN \*UXSHDGOBWBKVH 8QLYHUVLW\  
7LPBHSWHPEHU 30  
/RFDW\$RQ

\$E VWUDFW

\*DPPD 5D\ %XUVWVPR5%W H Q H H J M K H L F L Q V W D K Q V & G I Q Y H H V Y H I Q W R M  
WKH\ UHSUHVHQW DWKDIVYILY G H Q M B H D D G G D V F K H K B I O U H W K E X W W K H  
DOORZ XV WR WUDFH WKHP WKURXQ B R Q F V K V R K H W K G W I S G \$ 6 Z L I  
\*DPPD 5D\ %XUVW R I S O R X W H N Q R L Z O V H L G J H U R H Y B Q X V K I D R V Q E J H G Q : L  
IDVW VOHZ FDSDF LEVH\ R Q R W K R D B B W S W Q L D P L Q X W H R U W Z R D I  
LV G H W H F W H G J K Y L G D U K O Y L B F F M S I W D W R U V R Z D 6 5 Q F D L W V O D X  
1RYHPEHU 6ZLUMGKDDOFRVWRVRYH EZUWKKWBSBERRXUNGFV KLIW  
PHDVXUHPHQWV SUBRYVGLQDPSVMSKBPGLWDRUG\ZILWHKJORZ  
REXHUYDWLRQV 7KLV XQLTXH VDPBQW H G Q D V O D H W L X W L V F B G S H V  
\*5%V

,Q P\ WDON , ZL00RUHYRHZ5%KGLKIEB YLPISRHWWDQSHWKKRI DVWU  
ZLOO SUHVHQW WQGH H\ZIO\WLRLZ/K/D PFLW LXCQILV DROXQKGR ZI 6ZLIW  
KDV JLYHQ XV QHZ IFWILRQOQFEIHW ZHFFRQWQIG 151%HSWRPFSZ HPL  
7KH IDWH RI WGH G M W W H W P L V Q B G U G Q D U R I Q W K W K Y W H J S O R , V Z I R O O I L  
E\ ORRN L Q J L Q W R W L K H K R Z Z W H F D Q G X G H S D U P I G Q I F Q W L W R R O V W  
WKH DIWHUJORZ KHLJKHGFKUIYHWFGIQRQVR EEXHUWYHNGESUVRHS H U W L  
EXUVW

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7KH IDLQWHVW JDRIDFRHAPBORSUDEM RQODFWL FHYROX

6SHDNWU0LFKHOOH &ROOLQV <DOH 8QLYHUVLW\  
7LP16HSWHPEHU 30  
/RFDWLRQ

\$EVWUDFW

\$V WKH IDLQWHMWD EDEWIRH REZMH DWK HQGZ BHI8VSLKHHWR/IHG DO V  
WKR XJKW RI DV WQDFMXIQFG QEHQW DLOR KISQ ZFK D URFDEOH WR V  
REM HFWV LQ H[WUHPYHOYKILQK GKHMBLHP DWW USLHR/LDQG HYRO  
KLVWRULHV 7KHVYHPGEBG XWRIPHQVXOKDW XZUSHU LVLWQJDM WKH  
WKHVH V\WHPV DSWKIDQ SURHSH FOWZHEU FRDGGODULRQD \$G  
GZDUI JDOD[LHVVDHGH LQRWGRS WFLVQV DWR XODG YWHH LHU[SKHFV  
FXUUHQW FRVPRORJLFDO SDUDGVHPREQHMKIDWWRDODNO ,SBEQC

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8QGHUJUDGXDWH 5HVHDFK 6\PSRVLXP

6SHD~~6X~~PHU XQGHUJUDGXDWH UHVHDFK V\PSRVLXP  
7LP~~6~~HSWHPEHU \$0  
/RFDW~~6~~%Q

6WXGHQWV ZLOO SUHVHQW WKHLU UHVHDFK ZRUN