

-RXUQDO RI \$QDO\WLFDO %LRDQDO
9RQGHUKHLGHWDQDO %LRDQDO
7HFKQLTXHV

5HVHDUFK \$UWLFOH

2 SHQ \$F

* OWFTUJHBUJPO PG 8BUFS 4PMVCMF 4JMWFS *
8PVOE %SFTTJOH VTJOH *\$1 .4

0 DWWKHZ : DQNGUHL 65DQKMLW & KDGWHSQWVH 9 RQGHUKLGH
'HS DUWPHQW RI & KHPLVWU\ & ROOHJH RI \$UWV DQG 6FLHQFH V 8QLYHUVLW\ RI & LQFLQQDWL 2KLR 86\$
'ULVWL //& & LQFLQQDWL 2KLR 86\$

& R U U H V S R Q G L Q S Q Q 3 1 9 W R Q R Q H U K H S G H W R B Q M P L V & V R I D O R H J S I D V Q G 6 F L H Q E N H B & L W F L Q & D R V S 7 H O
(PDL)OOOF WPOEFSIFJEF!VD FEV

5HEHLYHG GDWH

DOORZI

DQG WKH IRUP RI WKH VLOYHU WKDW LV PRVW HIIHFWLHY LV XQNQRZQ (YHQ WKRXJK PDQ\ P
LQFRUSRUDWH VLOYHU QDQRSDUWLFOHV LQ ZRXQG GUHVVLQJV WKHUH FXUUHQWO\ H[LVWV QR
EH XVHG QRU DW ZKDW FRQFHQWUDWLRQ 7KLV SDSHU H[SORUHV WKH ZDWHU VROXEOH IRUP
DYDLODEOH ZRXQG GUHVVLQJV ERWK WKURXJK VL]H FKDUDFWHUL]DWLRQ RI WKH LRQLF DQG QD
RI HDFK IRUP VLOYHU FRQFHQWUDWLRQV E\ ,& 3 06 7KH PHWKRG DV D ZKROH UHSUHVHQWV W
WR LQYHVWLJDWH WKH PRVW HIIHFWLHY IRUP DQG RSWLPXP FRQFHQWUDWLRQ RI VLOYHU IRU Z
PD[LXPXP KHDOLQJ

.H\ZRUGV 4JMWFS JPO 4JMWFS OBOPQBSUTUDMF \$PBMDHEJ@B@FTJOOH U@\$JS.4E SFTTJOH
UIF TJMWFS OBOPQBSUJDMF PS TJMWFS JPO
UIBU UIF EFHSFF PG PYJEBUJP@OPGJ@WF
,QWURGXFWLRQ

@ @U&F1JPG €FS
\$ISPOJD XPVOET PGUF EP OPU IFBM EVF UP UIF TFWFSJUZ PG UIF XPVOE
PUIFS IFBMUI JTTVFT PS UIF BHF PG UIF QBUJFOU *O UIF DBTF PUGBB Rpf,
SFDBMDJUSBOU XPVOE UIBU JT OPU IFBMJOH PS JO UIF DBTF PG B WFS \$7MDPNSQMB
XPVOE NFEJDBM QFSTPOOFM XJMM TPNFUJNFT FNQMPZ OFHBUJWF XEPVQEWFSZ
UIFSBQZ *O UIJT QSBDUJDF UIF XPVOE JT NBOVBMMZ TDSBQFE TP UOPW UFFU CF
CMPPE WFTTFMT BOE UJTTVF NBZ HSPX BHBJO OODF QFSGPSNFE UIF XPVOE
JT TVCKFDUFE UP NFDIBOJDBM TVDUJPO DPWFSEF XJUI B GPBN ESFTTJOH
CFDBVTF JU DBO IBOEMF NPSF GMVJ UIBO DPODQDBM SPBLVIFBOE PGUWFS DPOUBMTP
TJMWFs BOE UIJT JT LFQU JO QMBDF GPEO DPOZJEFJSJH DPTU BOE PWFSBMM U
XPVOE ESFTTDOHWFO XSFVBTET TFBIINFSCOF BODS F
5I HSFBUFTU CBSSJFS UP IFBMJOH MFBWDPMPQMSQH DPODPSQHSBQJFNT VOVTF
HSPXJJOH JO UIF CJPGJM QIFOPUZQJD TUBUF < > 4JMWFS IBT MPOH CFFO VTFE
JO NFEJDJOF BT BO BOUCJPUJD GPS DFSUBJO CBDUFSJB BOE IBT NPSF SFDFOU
CFFO JODPSQPSBUFE JOUP XPVOE ESFTTJOHT BT B NFBOT PG SFEVDJJOH
CBDUFSJB HSPXUI JO EFSNBM XPVOET PG WBSJPVT DBVTFT *U IBT CFFO
SFQPSUFE UIBU TJMWFS JPO GBDJMJUBUFT IFBMJOH CZ LJMMJOH CBDUFSJB UIBU
PUIFS XJTF JOGJMUSBU JOUP UIF UJTTVF DBVTJOH GVSUIFS JOGFDUJPO < >
\$VSSFOUMZ NBOVGBDUVSFST BSF QSPEVDJJOH ESFTTJOHT BOE PUIFS NFEJDBM
EFWJDFT XIIDI EJTUSJCVUF TJMWFS JPO BOE PS TJMWFS OBOPQBSUJDMFT UP UI
XPVOE JO B TVTUBJOFE SFMFBBT < >)PXFWFS UIF FYBDU NFDIBOJTN BOE
NPTU BDUJWF GPSN PG TJMWFS JO XPVOE IFBMJOH BSF TUJMM VODMFBS -JUFSBU
SFQPSUT EFTDSJCF TFWFSBM NFBOT CZ XIIDI TJMWFS DBO EFTUSPZ NJDSPCJBM
DFMMT

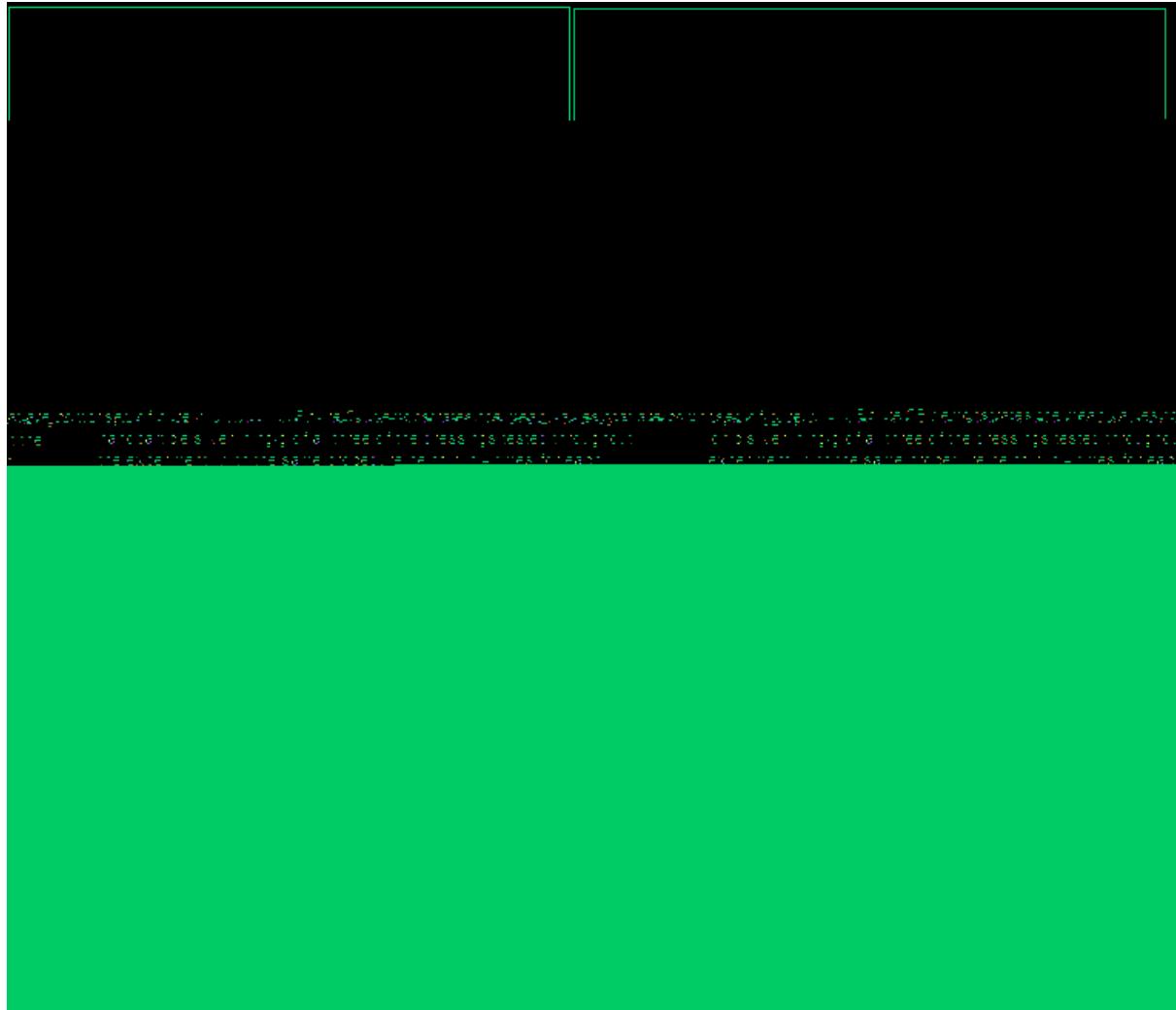
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#JOEJOH UP UIF DFMM T FO[ZNFT UIBU DPOUSPM SFTQJSBUJPO < >

"UUBDIJOH UP UIF DFMM XBMM DBVTJOH DFMM MZTJT < ^

.BOZ NBOVGBDUVSFST SFQPSU UIF JODM ØT WIPØT PSGF CIPBJS DTIJ MUWIF SB ØB APPSGTB \$ ØV B MUF
BOE TJMWFS JPO PYJEBUJPO TUBUF RHMBFOOFUS,EGMZM Z JMWIFSF QB S N JPDGM FTJ MBNOES TYMVK

OG JNQPSUBODF UP UIF QIZTJDJBO BK BGJFS TB BN E MFO UJM WFG & FF ON BDEFN QBSFE
SFHBSEJOH UIF UISFF DPNNFSDJBMMZ B WBBM B E MFS QESVDEW D SFTC MFTUF BJBT STP QD
HSBQIJDBMMZ JO 'JHVSF 1SPEVDU " S MFB SWFZE E B R P D P O S B U G E TU MFWIR SF B B DPLQ B S
BNPVOU PG TJMWFS BT JU XBT UIF Q S B D Q BXSLWID MIFF D B D FFTQU S B U BRMO TJJTM MAFIS I
DPODFOUSBUJPO BT XFMM BT IJHIFTU TXBNW B ST P RCOY C MUF NTBZM WIF SJ I BRUO U BJOTE G P JSNW M
OBOPQBSUJDMF DPODFOUSBUJPOT 1S D PWD B J T Q D SMTFES M ZF OP G G F S Y U SUBI U JPFQB TXLB T
BNPVOU PG UPUBM BOE XBUFS TPMVCM D PTN Q M F Y SF B TP SUMXBTTPWMB U CJTMWJDZB M JMZWUFIS E
JO BMM GSBDUJPOT "MM PG UIF QSPEVDUT IBE WFSZ TJNJMB S Q F S D FOUBHFT P



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