## MEMORANDUM RE: Sale of Stock to Employees of the Company

This memorandum does not deal with reality but with an abstract tax question and will be discussed here only from the tax point of view without any reference to other concentrations.

Assume that I, Leo Szilard, own $100 \%$ of the shares of the company, say a total of $1,000,000$ shares, and assume further for the sake of simplicity that the company's net earnings after taxes is $\$ 1$ per share at this time. Assume further that I adopt the policy of paying henceforth $\$ 1$ dividend per share and finance expansion either by earnings which exceed a total of $\$ 1,000,000$ or taking up long term loans. There appears then, from a tax point of view, to be no objection to do the following:

I may sell to my employees who are in low income tax brackets, or preferably to their wives who have no income whatsoever, all my shares on the installment basis as follows:

Let us assume that the value of each share is assessed by the Treasury at seven times earnings, i.e., \$7.00. An employee who buys shares from me would be required to pay $\$ 00 \times$. plan basis either $\$ 4,000,000$ at the rates defined further below and $80 \%$ of the value of the share on the stock market after these $\$ 4,000,000$ have been paid or else he will be required to pay $\$ 14,000,000$ at the rate to be defined below. The employee has a choice between these two alternatives after he has paid on the installment plan $\$ 4,000,000$ in cash, but he can choose the first mentioned alternative only if the price of the stock on the stock market
at the time when he had paid the first $\$ 4.00$ exceed $\$ 6,000,000$. Otherwise the second alternative holds.

The rate at which the employee pays the installments of the purchase price is up to him except that he cannot pay in any one year less than $80 \%$ of the dividends he receives. It is advisable but probably not necessary to provide for some interest payment on the part of the purchaser, say at the rate of $3-1 / 2 \%$ per year, the interest to be paid on the difference between the $\$ 7,00$ assumed value of the share less the amount that he has already paid toward the purchase price.

The above scheme is a modification of the one I discussed with you in Princeton. I made this modification after discussing the problem with Joe in order to avoid the possibility that an employee purchases shares below their present value and as a result of this is held to have received a taxable income. Joe thinks that there is no doubt that the amount I would receive under this scheme is capital gain rather than income and he also thinks xikere the would be no difficulty to get a ruling from the Treasury on this aspect of the transaction. Finally, for other reasons which I may discuss with you, he believes that in the real case in which I am concerned other methods of proceeding would achieve the same purpose and would achieve it better. This I may discuss with you if the occasion arises.

The above represents my understanding of Joe's response to my presentation and I can show him a copy of this memorandum so that he can verify whether my understanding is correct.
that the total payment of the university is in excess of $\$ 8.00$, otherwise the final payment of the university is deferred from year to year after a total of ten years, at such time as a market value of the shares reaches $\$ 7.00$.

Mr. Walter Bloom
The Law School
University of Chicago
Chicago, Illinois
Dear Walter:


Do you see any objection from point of view to the following procedure?
$A$ closely Held Corporation is reorganized/so that, say, one-quarter of the shares are $A$ shares and three-quarters of the shares are $B$ shares. For the first three years dividend is paid only on $A$ shares and after that the $B$ shares are converted into $A$ shares, so that there is only one kind of share after the lapse of three years..


At the time when it is already clear what this year's profits will be, host of the stockholders, or all of them, decide to sell their A shares to a non-profit corporation, say to a university on the following terms:

The university will pay a pertain amount of cash and every year thereafter for two years a certain amount, either in cash or in nontransferable interest bearing notes serving as security. These notes are due six months after the B stocks are converted into A stocks. At that time the university is free to sell its holding of stock on the stock marked and will make final payment to bring up the total payment, excluded of interest, to twice the market price of the stock.

Yours truly,

I shall assume for the sake of argument that a long term loan running 10 or 15 years taken by the corporation in 1953 and that it is the policy of the corporation to finance further expansion of the corporation out of the loan. It is further assumed that under the terms of the loan, the corporation remains free to distribute, in the next three years, all of the net profits in the form of dividend. I hall further assume know/ for the sake of example that the corporation expects to make a net profit of $\$ 1.00$ per share year (on the average) in the next three years.

The majority the stockholders and awe number of stowe other stockholders and perhaps all stockholders of the corporation sell their A shares in 1953 to a non-profit corporation, for instance a university, to which I shall simply refer to below as "The baniversity", at a time when it is already known how much profit the corporation is going to make in 1953. The terms of the sale are as follows:

The university pays $\$ 1.00$ per share in cash at time of the sale. After the lapse of three years, the stock is introducedrax the stock market (at) that time the $B$, stock has been converted into A stock) that is only one kind of stock? At the rs that time the university will make its final payment which is twice the value of its shares less the cash payment made at purchase, provided however, that the total payment of the university exceeds $\$ 8.00$ per share, otherwise the final payment is deferred until the next year, provided that at that time the university will pay the market value for the shares, provided once


# By Leo Szilard 

In the following is described a corporation which two kinds of shares issued, $A$ shares and $B$ shares. The $B$ shares are convertible to $A$ shares, and the
(ivorepses according tolfixed rule oxelz River conversion ratio ahanges from year to year/when dividend is paid. Another fixed rule governs how much dividend may be paid on $B$ shares depending on how much dividend is paid on $A$ shares. These rules are so 錐前ec. that for those who are in lower income brackets and want a high dividend, it is of advantage to hold A shares and for those who are in the higher income tax brackets and want capital gain, it is of advantage to hold B shares.


The rules are such that if for instance p company consistently plows back we Mean
half of its net profits and pays out the otherhatifin the form of dividends those Mined at twice the level that
Who hold A shares can look forward to a dividend maintained at twice the level that
the company would have paid on ordinary common stock, They can also look forward to the market price of their/stock remaining at the same level (if there is no change in business conditions, If the company remains moderately prosperous) and if there is 19 inflation they could look forward to rising price of the stock on the market if there is inflation, but in the absence of inflation and unchanged business conditions with the company doing average business they cannot look
 forward to capital gain in the company if it plows back half of its net profits.

Those holding B stock cannot look forward to any dividend but they can look forward to realizing twice as much capital gain (whenever after holding the some of stock B stock long enough they sell/their B stock on the/market or convert some of pubs their B stock into A stock and sell this A stock on the market) than they could realize by holding ordinary common stock in a company that pours out in general half of its net profits in the form of dividends. $/$ We have assumed here for the sake of argument that both the $A$ stock and the $B$ stock are traded on thestock market. If that is the case it is almost certain that the holder of $B$ stock a will get the higher price for his B stock by selling it on the market than he could get by converting his $B$ stock into $A$ stock and selling the $A$ stock on the market.

In addition to $A$ and $B$ stock there might be on the stock market also a composite stock consisting of one A share and one B share. Those who hold such composite stock as do those who hold an equal number when of $A$ and $B$ shares are essentially in the same position as if they were holding ordinary common shares of the corporation stine they are practically unaffected by the rules which
define the privileges of the two kinds of shares. Obviously those who hold the and
composite shares lose befit equally by and any of the rules which favor the $A$ or $B$ shares with respect to each other.

We shall now assume for the sake of illustration that we have to deal with a closely held corporation that has one million shares issued. This corporation shall now be reorganized to have $10,500,000 \mathrm{~A}$ shares of which 500,000 shares will be
the del issued to stockholders and 500,000 B shares all of which shall be issued to the stockholders. $10,000,000 \mathrm{~A}$ shares are thus retained by the corporation in its treasury.
inky lives
$B$ stock can be converted $b 0$ A stock every year in the (interval stretching from the seventh day after dividend has been paid to one week before the next declaration of dividend is due. It is assumed for the sake of discussion that dividend will be paid once a year. The conversion ratio of $B$ stock to $A$ stock is one A stock for one B stock (prior to the payment of the first dividend and thereafter it is increased according to/ predetermined formula to be described below each time when dividend is declared. This conversion ratio i.e. the number of the A stock that can be obtained from the corporation by surrendering one B stock does not change in between of declarations of dividends. Notwithstanding the formula given below, there is however an upper limit set for this conversion may not
ratio and in our example it बexwhix exceed 20 A shares for one B share. Moreover, after 25 years all B shares are automatically converted into $A$ shares at the then prevailing conversion ratio which may not exceed 20 A shares for one B share.

Irrespective of the existence of these two kinds of shares, the company decides freely each year how much of its net profit it wishes to pay out in share holders
dividends. The B xhareses/will however not receive any dividends on their B shares until the A share holders have received on their A shares a dividend which corresponds to their stake in the company. The stake of the A share holders in the company is $50 \%$ prior to the first dividend ${ }^{2}$ and it will change after each dividend payment according to predetermined formula given further below. According $y$ to the above rule the B share holders will therefore receive no dividend unless the A share holders have received in dividend one-half of the first year's net profit. This preference of the A share holders in regard to dividends is cumulative in the sense that the B share holders will receive no dividends until the A share holders have received in the aggregate for \&ll the preceding years a dividend given by the formula

$$
P_{1} X_{1}(\text { before })+P_{2} X_{2} \text { (hate) }+P_{3} X_{3} \text { (leelore) } \not X_{1}
$$

where $A_{1}, B_{2}, B_{3}$, etc. represent the/profits of the first, second, third years, etc. and $X_{1}$, (before), $X_{2}$ (before), $X_{3}$ (before), etc. represent the stakes of the $A$ share holders in the company during the week prior to the declaration of the dividend of the first, second and third years, etc. respectively.

To illustrate the above ruled, let's assume that no B shares are converted into A shares so that the relative stakes of the A share holders remain at $50 \%$. Wee for further assume that the net profits of the corporation in the se first year amounted to one million dollarsqand if the company plows back one-half million dollars of the net profit, the $\mathbb{Z}$ A share holders will receive in dividends $\$ 500,000.00$ and the $B$ share holders will receive nothing. If the company plows back one-quarter of the net profits, then the A share holders will receive $\$ 500,000.00$ and the B share holders will receive in dividends $\$ 250,000.00$.

Let us now assume that the company plows back $75 \%$ of the net profit of the first year and pays the A share holders in dividends $\$ 250,000.00$, the $B$ share holders receiving no dividend. If now in the next year the company makes again a net profit of one million dollars and if it decides to plow back one-quarter of this, it will have to pay the A share holders (because of cumulative rule, on dividends payable to A share holders) $\$ 750,000.00$ and will not pay any dividends $\$ 500,000$ paid to A share holders represents a/ dividend of $\$ 1$ per share, Since we
assumed that 500,000 A shares were initially issued and no B shares were converted into A shares.

In order to make it easier to understand the rules which govern the conversion of $B$ shares into $A$ shares and yules from which one may calculate at anytime the relative stake of the \& A share holders and the $B$ share holders, it is advisable to introduce a few concepts and designations.

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G(A n)
$$

We shall designate the number of A xsmuss shares issued one week before the nth dividend is declared $\left(A_{n}\right)$ and similarly the number of $B$ shares issued one week before the $n$th s dividend is declared ( $n_{n}$ ). If the relative stake of bun
immeritady the A share holders/after the nth dividend has been declared is fixed at $X_{n}$ (after) and similarly the relative stake of the $B$ share holders immediately after the dividend is declared is fixed at $y_{n}$ (after the relative stake of one $A$ share is given by $X_{n}$ ) $\left(A_{n}\right)$ and similarly the relative stake of one $B$ share is given by $\left(X_{n}\right)\left(B_{n}\right)$. The relative stakes of these shares does not change after the nth dividend has been declared until the next dividend is declared. that during this nay
interval the number of A shares which ba be obtained by surrendering one B share to the company is given by $\frac{1 / y \text { loafer) }[A n] \text { stares for one } B \text { shang. }}{\lambda x(a p t o r y[B n]}$. This past expressed the ae that the A shares obtained in exchange for one B share gust represent the same stake in the company as/the $B$ share peppesentsts Which is surrendered. During the time interval between the nth dividend and the next dividend the stake of the $A$ share holders and $B$ share holders

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changes, eventhough the stake of one A share and one B share remains unchanged simply because B shares are surrendered and A shares are issued in exchange.

For this reason the stake of the B share holders just prior to the declaration mich is desfgxehed
of the next dividend with be given by $Y_{n+1}$ (before) is given $y_{y}$ smevedend $Y_{m+1}$ ( Hufne $=Y_{n}(a / h e r)\left[B_{n}\right]=A B b 4$ minder of $B x$ hes es similarly just before the declaration of the next dividend the drake of the A share holders $\mathrm{X}_{\mathrm{n}-1}$ (before) is given by

for which we can also write

This formula teaches how to compute from the stake of the A share holders and B share holders after the declaration of a dividend the atake of the share holders. before the declaration of the next dividend. Now we must see how does the stake of the A share holders and B share holders change at the time that the dividend is declared during which time there is no change in the number of $A$ shares and $B$ shares issued, Since no B shares will be converted from one week before the declaration of dividend until one week after the payment of the dividend.

The change in the stake of the $A$ share holders and $B$ share holders at the time dividend is declared should reflect the fact that the a share holders have received more than their fair share of the profits in the form of dividends to the detriment of the $B$ share holders. If when the nth dividend is paid the total dividend paid to the $A$ share holders is given by $a_{n}$ (the total dividend paid to the $B$ share holders is represented by $b_{n}$ then the expression ${ }^{2}$ represents the amount/which the $B$ share holders received in excess of their due. If an equal amount were paid at that time to the $B$ share holders and if the price of the $A$ shares on the stock market on the day following the payment of this dividend is represented by "A ${ }_{M}$ then clearly the $B$ share holders could have bought with
 therefore it is logical to set rule that the stake of the A share holders after the payment of the nth dividend $X_{n}$ (after) be given by

$$
\begin{aligned}
& x_{p}\left(f f_{r}\right)=x_{n}\left(h_{n}\right) \\
& \text { and correspondingly the stake of the } B \text { share holders after payment of the nth }
\end{aligned}
$$ dividend be set at $Y_{n}(o f$ ter $)=V_{n}($ helore $)+\frac{X_{n}(\text { lin fie })}{[A n}$ If we take into account the fact that at the time of issue the relative status of the $A$ share holders were $50 \%$ and the relative stake of the $B$ share holders were also $50 \%$ and if we further take into account that up to one week of the first declaration one $A$ share was obtained by surrendering one $B$ share it is state clear that our rules defy precisely the relative status of the A share and

He $B$ shares for both/ before and after of each declaration of dividend and then define the conversion and also the conversion ratio of $A$ shares to $B$ shares for query interval between any two dividends.
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$\lim _{1} Y_{0} X_{n}$ (h) forty

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\begin{aligned}
& Y_{n+1}(\text { lubre })=I_{m} \text { (apter) }-Y_{m} \text { afler) } \frac{\left(B_{m}\right. \text { meneresian }}{\left(B_{m}\right)} \\
& \left(G_{n}\right)=\frac{E_{n}}{D_{n}}
\end{aligned}
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In the folloring is described a corporetion which has two kinds of shares issuod，A shares and 3 shares．The B shares are convorttrble to A shoses and the conversion ratio increeses fron yon to year according to a ilued rule onch time when dividend is paid．Another Pised zrule governs how much divideni may be paid on B showes depending on how mueh dividend is paid on A ghases．

These rules are so constructed that for those who are in lover Income breckets and wont a high dividend，it is of advantage to hold A shases and foce those who are in the higher ineone of⿰亻木 lurelats ane srent eapital gain，it is of advantage to hold $B$ shares．The rules ase such that those who hola A shares cam look somrarid to a cividend maintained at trice the level that a similos commany world pay on oxdinory cormon stock if it distributes one half of its net propits． They can also looik formaxd to the marinet price of their $\AA$ stock renvining at the some level（is there is no change in businoss conditions，and provided the company remains moderntely prosperrous）iut in the aboence of inflation and unchanged businoss conditions with the couphny doing averege businoss they camot look for－ waxd to eegital grin as lons as they do receive a high dividend．

Those holding B stock cannot lools forward to）bwa dividond but they can look sormax to realizing twice as much capital gain（vhonever aftor holaing the I stock long cnough they sell some of theiv B stocls on the stock mariset or convert some of their B stoek into A stock and sell this A stcek on the stock maricet）than they could reolize by holding ordinary comon stock in a similar carpeny that pours out in goncrel hois of ita net profits in the form of atividonds．

We have assumed heare for the salce of ergmont that both the $A$ stock and the B stock are traded on the stocls marisot．If that is the case it is alnost cortain that the hollor of B stocle wiln get a higher price fore his B stocik by
selving it on the marlegt than he could get by convorting his B stock into A stock and sel11ng the A stock on the remplat.

In adidtion to A and B stook there might be traded on the stook mamhet also a corpoaite stock consisting of one A shame and one B share. Those tho hola such coryosite stock as do those who hold an equal mubler of A and B shares are essentially in the some position as if they were holaing croitnamy common sheures of the eorporation. They are yracticalizy unaffected by the rules which define the privileges af the two kinds of shares. Obviously those who hold the composite shases lose mad beneflt equaliy ly any of the rules which Savor the A or $\mathbb{B}$ shases with respect to each other.

We shayl now assume 2 ors the salke of 171 nstration that we have to deal with a clogely held corporation that has one million shases issued. This corporation sha33. nor be recregentzed to have $10,500,000$ A sheses of whtel 500,000 shares will be tisued to the old stoctcholders and $500,000 \mathrm{~B}$ shares ail of which shan be issmed to the oid stockholders. $10,000,000 \mathrm{~A}$ shares are thins retained by the exrparation in its treasury.

B atook can be converted into A stock every yeer in the time interval. stretching trom the scventh day after dividend has been paid to one vaelk before thy nost decluration of dividend is due. It is assuaned foer the sole of discussion that dividond will be paid once a year. Fricx to the payment of the Pirst dividend the convergion ratio of B stock to A stock is one A stock for one B stock and thereafter it in increased accoratng to a predeterntrod formbe gtven belon each tine when a dividend is declared. This converstion ratio, i.e., the muber of the A stock that can be obtoined Ifon the ecrecretion by surrentering one 3 stock doos not chango in botwcem of doclarations of dividends. Motwithetanding the Sommia givon below, there is howerver an ugpers limit set for this convorstion ratio and in our exrmple it may not creced 20 A shares for one B share. Moreover, after 25 yoars all B shaxes are automaticaly cowvorted into A shares at the then prevailIng converstion ratto which may not axeced 20 A shases for one B shase.

Inreppective of the eristence of these two lefnals of shares, the carpany docides froely ecoh year how much of its net prosit it whishes to pay out in atvidonils. The B share holdors will howevor not receive any aividends on their B shoses until the A ohare holders have received on their A shares a dividend whith carresponds to thetr stake in the coupany. Prioce to the first dividend the stalse of the A share holders in the coupany is $50 \%$, and it will chance aftor ench dividend payment aceording to a prodetemined forming given below. Aceordingly the B share holders will receive no dividend unless the A share holders have recelved in dividend one hals of the first year's net profit. This preferenee of the A share holders in regard to dividends is cumulative in the sense that the $B$ shere holiers will receive no dividends until the A share holders have reseived. in the acgrogate for all the preceding years a dividend given by the formuia

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P_{1} X_{1}(\text { borbue })+P_{2} Z_{2} \text { (before) }+P_{3} Z_{3}(\text { berfare })+\cdots
$$

whore $P_{1}, P_{2}, P_{3}$, etc. represent the net profits of the Pirst, second, thifed years, etc., and $x_{1}$ (before), $X_{2}$ (before), $X_{3}$ (before) ete. represent the stalses of the A share holdors in the compeny during the veek pritor to the docloration of the dividend of the Psrst, second and therd years, otc.

To 131 ustreate the above rule, let's assume that no B shares are convorted into A shares so that the reletive stalke of the A share holders renain at 50 p. Furether asswne that the net proflts of the earporation in the Plrst yoer anounted to one million dollams.

If the coupany plows boek one half million dollose of the not prosit, the A ahore holders will receive in dividends $\$ 500,000$ and the B share holders will receive nothing. IP the company plans beek one cuarter of the net prosits, thon the A share holders Hill seceivg \$ $\$ 500,000$ and the $B$ share holdors will receive in aividends $\$ 250,000$.

Let us now assune that the corpeny plows back 75\% of the net propit of the Itrat year and peys the A shereholders in dividends $\$ 250,000$, the 3 shareholders recelving no dividend. If now in the next year the corpany makes again a net profit of one aillson dollars and if it aeciles to plow beck one quarter of this, it will have to pay the A share holders (because of curulative rule on dividends payable to A shareholders) $\$ 750,000$ and will not pay any dividends to the $B$ shareholders.

In order to make it easier to understand the rules which govern the conversion of B shares into A shares and the rules from which one may calculate at enytime the relative stelse of the A shareholaers and the B shareholaers; it is advisable to introduce a few concepts and designations.

We shall designate by $\left(A_{n}\right)$ the number of $A$ shares issued up to one week berore the nths dividend is declared and similariy by ( $3_{n}$ ) the number of $B$ shares issued up to one week before the nths dividend is declaced. If the relative stake os the A. shareholders imandately after the nths dividend has been declared is I ixed at $X_{n}$ (after) and ainilesily the relative stake of the $B$ shereholders inmediately after the dividend is declered is fixed et $\mathrm{y}_{\mathrm{n}}$ (after), then the relative stake of one $A$ shase is given by $X_{n}$ (oster) / ( $A_{n}$ ), and the relative steke of one $B$ share is eiven by $Y_{n}$ (after) / $\left(B_{n}\right)$.

The relative stakes of an $A$ ghare and an $B$ share does not change in the Interval between the decleration of the nth dividend and the declaration of the next dividend. We postulate that during this interval the number of A shaxes which may be obtained by surrendering one 3 share to the corpony shall be given by


This postulate is so designed that the A shares obtained in exchange for one $\bar{B}$ share represent the some stake in the congeny as represents the one $\mathbb{B}$ share which is surwendered.

During the time interval betreen the $n^{\text {th }}$ dividend and the next dividend the stake of one A share and one B share renains unchanged. The stake of the A shareholders and B shareholders however changes, because B shares are surrendered and A shares are issued in exchange. For this reeson the stake of the $B$ shareholders just prior to the declaration of the next dividend, which is designated by $Y_{n}$ (before), is given by

$$
Y_{n+1}(\text { before })=Y_{n} \text { (arter) }-Y_{n} \text { (after) } x \frac{(B \text { surrendered. in int.) }}{\left(B_{n}\right)}
$$

simflarly the stake of the A shareholders just before the declaration of the neat dividend, $X_{n}$ I (before), is given by

$$
X_{n+1} \text { (before) }=X_{n} \text { (after) }+X_{n} \text { (aiter) } \times \frac{(B \text { surrendered in interval) })}{\left(B_{n}\right)}
$$

Mis formula teaches how to corpute from the stake of the A shareholders and B shareholders after the declaration of a dividend the corresponing stalses before the declaration of the next dividend.
. How we must see how does the stake of the A shareholders and B shareholders change at the time thet the dividend is declared (at which time there is no change In the number of A showes and B shares issued, since no B shares will be converted from one weel before the declaration of dividend until one week after the payment of the dividend). The change in the stake of the $A$ shareholders and $B$ shoreholders at the time the dividend is declared should re?lect the fact that the A shareholders have received more than their fair share of the prosits in the form of dividends to the detriment of the B shareholders. Besed on this principle we are arriving at formulae which nay be used to compute from the stalse of the A shareholiers before payment of the nth dividend, $\mathrm{X}_{\mathrm{n}}$ (before)., and the stake of the $B$ shareholders before payment of the $n$th dividend, $Y_{n}$ (before), the tote1-nth itwithen patt-to A shareholieng which were desiguated by an ant the totel in the divitend poid to B shareholders the stake of the A shareholders after the $n^{t h}$ dividend, $X_{n}$ (arter) and the stalce of the $B$ shaweholders $Y_{n}$ (after),
by taking into account how maxh dividend an wos pald to the A shareholders in Toto In general the A shareholders get $/$ larger dividend relative to their stake than the 3 shareholders get relative to their stake. The excess dividend, $E_{n}$ which the A shareholders have received is given by

$$
E_{n}=\frac{a_{n} \times Y_{n} \text { (berore) }}{X_{n} \text { (berore) }}-b_{n}
$$

If a sum equal \%o the anount given by this formula vere paid to the A sharehollers in ToTR they could have bought on the stock mariset on the day following the payment of the $n^{\text {tih }}$ dividend a mumber of A shoxes $\left(G_{n}\right)$ which is given by

$$
\left(G_{n}\right)=\frac{E_{n}}{D_{2 \lambda}}
$$

whore $D_{n}$ represents the stock market price of the $A$ sheres one day after peyment of the $n^{\text {th }}$ dividend. Therefore it is logical to set the rule that the stake of the $A$ shareholders after the payment of the $n^{\text {th }}$ dividend, $X_{n}$ (aster), be given by
$z_{n}$ (after) $=X_{n}$ (before) $-X_{n}$ (berore) $\times \frac{\left(G_{n}\right)}{\left(A_{n}\right)}$
and accordingly the stake of the $B$ shareholders after payment of the $n^{\text {th }}$ dividend be set at
$X_{n}$ (arters) $=X_{n}$ (before) $+X_{n}$ (before) $\times \frac{\left(G_{n}\right)}{\left(A_{n}\right)}$
The formulae given in this memorrandu porrdt to calculate how the relative stake of the A stockholders and the B stocltholders changes whenever a dividend is paid and how it changes in the interval between two dividend payments. Therefore, if the initial stake of the A stockhoidors and B stcckholders is delined (in the exargle which we discussed the initiel stake wes $50 \%$ both for the A stockholders and the B stockholders) OUR FoR MurAE as to the relative stakes of the $A$ stockholders and $B$ stockholders at angtime.

Sinilarly the conversion ratio of $B$ shares to $A$ shares is defined by our formula for each intervel between two dividend payments.

If the A stock should not be traded on the stock naxket but if the composite stock which may consist of one $A$ share and one $B$ share is traded on the stock market the price of the compositestocis one day after dividend payment can be used in place of the price of the A stock. The formula given cannot, however, be applied directiy by substituting the price of the composite stock for the price of the A stock but rather a modified formila has to be used which has been derived and is available.

In case the composite stock is not TRADED on the stock market either, then/value $D$ may be set for the $A$ stocis at the tine when the $A$ and $B$ stocks are first issued and this more or less arbitrary set price D for the A stock may be used in the formula in place of the market price $\mathrm{D}_{\mathrm{n}}$ of the A stock.

In this memorandum we heve so for assuned that the initial relative stake of the A stockholders and the B stockholders is the same, 1.e., $50 \%$. However, our formulae hold equally well if the initial stake of the A stoclcholders is difforent from the inftial stake of the 3 stockholders except that the composite stock will in that case not consist of one $A$ share and one $B$ share but the ratio will be different.

In case of a corqaxy which has on opportunity to plow back say 75\% of the profit it would be reasonable initially to issue $A$ shares and $B$ shares in such a manner that the relative stake of the A shareholders is $25 \%$ and the relative stake of the $B$ shareholders is $75 \%$. As time goes on and $B$ shares MOY BE converted into A shomes the relative stake of the A shareholds MAY increase and that of the $B$ shareholders MAY aecrease. Such a change might be accompenied by a Gredual chenge of dividend policy and the compony might later on wish to plow bsck a snaller percent of the profits.

# SECOND ROUES SHIT DRAFT <br> IMEMRANDIM OH THO THUDS OF SHARES <br> Dy Leo SuL.3nad 

In the following is described a corporation which has two kinds of shares issued, A shares and B shores. The B shores are convertible to A shares and the conversion ratio increases frown yous to year according to a Taxed rule each tine When dividend is path. Another ilsod suite governs how much dividend may be paid on $B$ shares degenating on how mach dividend is paid on $A$ shaves.

Those rules are so constructed that for those who are in lower income brockets and want a high dividend, it is of advantage to hold A shares and fore those who ese In the highors income Wd brechocts and trent capital gain, it is of advantage to hold 3 shares. The rules are such that those who hold A shares can look Porromit to a dividend maintained at trice the level that a similes company would pay on ominnory conan stock is it distributes one hair of its net profits. They can also look forward to the maginot pride of their A stock remaining at the some level (is there is no change in business conditions, and provided the compony rorains moderately prosperous) but in the absence of inflation and unchanged Business conatetions with the company doing average business they cannot look forvase to capital gain as long as they do receive a high dividend.
much
 look formord to realising twice as much capital gain (whenever after holing the 3 stock long enough they sell some of their 3 stock on the stock market ore convert scone of thetis I stock into A stock and soil this A stock on the stocks marplot) than they could realize by holding ordinary common stock in a sining company that pours out in general hale of its net profits in the form of dividends.

We have assumed here for the salve of argument that both the A stock and the 3 stock ass traded on the stock market. If that is the case it is almost captain that the holder of 3 stock will get a higher price for his 13 stools by
selling it on the merlset then he could get by convorting his is stoels Into A atock and nelring the A stook on the menlent.

In adiation to A and B atoek thene night be trodoa on the stock nasplact also a corposite stock constotinc of one $A$ showe and one $B$ shase. Thwee who hold such corposita stock as do those who hold an equal maxber of $A$ and $B$ shares are essemtially in the suene pooition as if they wre holating ordinary comon sheres of the corporettom. They are practiceliy umaffected by the sules which define the privileges of the two kinals of shases. Obviously those who hola the couposite shaxes lose and benerit equaliy by ony of the mules thich Savor the A or 13 shasen with reapect to each other.

We shan now assurve for the salre of 211 wstrataion that we have to doal with a closely hola corporation that has one million shases issued. This corpocation shatl now be recrgantzed to have $10,500,000$ A sheses of which 500,000 shares wi:11 be Liscuol to the oll stoekholdoass and 500,000 3 ahares all of which shayl be issued to the old stocloholders. $10,000,000 \mathrm{~A}$ shares are thus retainod. by the corporation in Its treasury.

3 stock can be convorted into A stock every yoer in the time interval stretching from the seventh day aiter dividend hes been gaid to one woek before the nost decIaration of aivident is atuo. It is assumod for the solve of atseussion that aividend will be paid once a yeme. Prices to the payment of the itrot dividend the conversion ratio of B stock to A stock is one A stock for one $\mathbb{B}$ gtock and thareartes it is incroased accorling to a prodetorminod formula eiven belom ench thae whea a dividend is declawed. This couvergion ratio, i.e., the muibor of the A stoek that can bo obtoined Irom the corporation by surrendering one 3 stoek does not change in between of declarations of dividends. Wotwithstanding the formia fiven below, there is horrever an upper 14 mit set pors this conversion ratio and in our excample it may not exceod 20 A shares for one B share. Noreover, after 25 yours all B shares are eutonatically comverted into A shares at the then prevadlIng convergion retio vhich may not exreced 20 A shases for one B shore.

Ixreopective of the extistonce of these two kinds of shares, the ecumpny decilies frooly eoch year how mench of ites net proitt it whehos to poy out in dividonds. The 3 shase holders w131 howevers not reeeive any dividends on their IB shases until the A share holders have recelved on thetr A shares a divident which ecerropponils to their staine in the coumony. Irior to the firsat dividand the staino of the A share holdery in the coupeny is $50 \%$, and it wil1, change aftore each dividoni payment agecuding to a predaternined formala given below. Aceord-
 have received in aividiend one hals of the firgt yees's net grofit. This preference of the A shase holiters in rognet to dividenis is eumulative in the sense that the I shawe holless will receive no dividends watil the A ahore holders have recoivol. in the ascregato for $27 \%$ the procoding years a divident givan wy the formala

$$
P_{2} X_{1} \text { (berare) }+P_{2} X_{2} \text { (before) }+P_{3} \mathbb{R}_{3} \text { (berfore) }+\ldots
$$

where $P_{1}, P_{2}, P_{3}$, ete. represent the not propits of the first, second, thita yenrs, etc., and $X_{2}$ (bercore), $X_{2}$ (berore), $X_{3}$ (berone) etc. represent the stalsoss of the $A$ share hollers in the ecumeny during the wook price to the declaration of the dividend of the Plsrat, second and third years, ate.

To Illustrate the above ruie, $\operatorname{let}^{\prime} \mathrm{s}$ assuma that mo B shares are converted into A shares so that the relative stalee of the A share holders wemain at $50 \%$. Turthers essume thet the not yrostts of the ecrpcration in the itret year amountod to one million dollmas.

If the eorpony ploms back one hnle nillion dollews of the net proilt, the A shaxe holders will receive in dividends $\$ 500,000$ and the 3 share holdoss will recelve nothing. If the cormany plown veck one cumetor of the not prostts, thom the A shore holders will recelve $\$ 500,000$ and the B shase holders will recoive in atvidenas \$250,000.

Let us now assume that the company plows back 75p of the net profit of the Pirst year and pays the A shareholders in dividends $\$ 250,000$, the $\mathbb{B}$ shareholders receiving no dividend. Ir now in the neat year the company nakes again a net proist of one million dollars and if it decides to plow beck one guarter of this, it will have to pey the A share holders (because of curnlative rule on dividends payeble to A shareholders) $\$ 750,000$ and will not pay any dividends to the is shareholders.

In order to make it easier to understand the rules which govern the convorsion os $B$ shares into $A$ shares and the rules from which one may calculate at anytime the relative stake of the A shareholders and the B shareholders, it is advisable to introunce a few concepts and designations.

We shall designate by ( $A_{n}$ ) the number of A sheres issued up to one week beiore the nths dividend is declared and similerly by $\left(B_{n}\right)$ the number of $B$ shares issued up to one week before the nthe dividend is declared. If the reletive stake of the A shareholders irmediately after the nths dividend has been declared is fised at $X_{n}$ (after) and similarly the relative stake of the $B$ shareholders imediately after the dividend is declared is sixed at $\mathrm{X}_{\mathrm{n}}$ (after), then the relative stake of one $A$ share is given by $\chi_{n}$ (after) / $\left(A_{n}\right)$, and the relative stake of one $B$ share is given by $Y_{n}$ (aister) / $\left(B_{n}\right)$.

The relative stakes of an A share and an B shase does not change in the interval between the declaration of the nth dividend and the declaration of the nert dividend. We postulate that during this interval the number of A shares which may be obtained by surrendering one B shase to the company shall be given by


This postulate is so designed that the A shares obtained in exchange for one $B$ share represent the seme stake in the company as represents the one $B$ shase which is surrendered.

Duxing the time interval between the $n^{\text {th }}$ dividend and the next dividend the stake of one A share and one $B$ share remains unchanged. The stake of the A shareholders and B shareholders however changes, because B shares are surrendered and A shares are issued in exchange. For this reason the stake of the $B$ shareholders just prior to the declaration of the next dividend, which is designated by $Y_{n} 2$ (before), is given by

$$
Y_{n+1} \text { (before) }=Y_{n} \text { (after) }-Y_{n} \text { (after) } x \frac{(B \text { surrendered in int.) }}{\left(B_{n}\right)}
$$

similarly the stake of the A shareholders just before the declaration of the next dividend, $\mathrm{X}_{\mathrm{n}}$ I (before), is given by

$$
X_{n+1} \text { (before) }=X_{n} \text { (after) }+y_{n} \text { (after) } \times \frac{(B \text { surcendered in interval) })}{\left(B_{n}\right)}
$$

mis formula teaches how to compute from the stake of the A shareholders and B shareholders after the declaration of a dividend the corresponding stakes before the declaration of the next dividend.

How we must see how does the stake of the $A$ shareholders and $B$ shareholders change at the time that the dividend is declared (at which time there is no change In the number of $A$ shares and $B$ shares issued, since no $B$ shares will be converted Arom one week before the declaxation of dividend until one week after the payment of the dividend). The change in the stake of the $A$ shareholders and $B$ shareholders at the tire the dividend is declared should reflect the fect that the $A$ shareholders have received more than their fair share of the profits in the form of dividends to the detriment of the B shareholders. Besed on this principle we are arriving at formulae which may be used to compute from the stake of the A shareholders before payment of the nth dividend, $X_{n}$ (before), and the stake of the B shareholders before payment of the $n$th dividend, $Y_{n}$ (before), the totel $n^{\text {th }}$ dividond paid to A ghmeholders which were designated by an and
 holders after the $n^{\text {th }}$ dividend, $X_{n}$ (after) and the stake of the $B$ shoreholders $Y_{n}$ (after),
by taking into account how much dividend $a_{n}$, was paid to the A shareholders in Toto and how much dividend $b_{n}$ was paid to the $B$ shareholders in toro In general the A shareholders get/larger dividend relative to their stake than the $B$ shareholders get relative to their stake. The excess dividend, $\mathbb{F}_{\mathrm{n}}$ which the A shareholders have received is given by

$$
E_{n}=\frac{a_{n} \times Y_{n} \text { (before) }}{X_{n} \text { (berore) }}-b_{n}
$$

If a sum equal to the amount given by this formula were paid to the A shareholders in fore they could have bought on the stock market on the day following the payment of the $n^{\text {th }}$ dividend a number of $A$ shares $\left({ }_{\mathrm{n}}\right.$ ) which is given by

$$
\left(G_{n}\right)=\cdot \frac{E_{n}}{D_{n}}
$$

where $D_{n}$ represents the stock market price of the $A$ shares one day after payment of the $n^{\text {th }}$ dividend. Therefore it is logical to set the rule thet the stalke of the $A$ shareholders after the payment of the $n^{\text {th }}$ dividend, $X_{n}$ (after), be given by
$x_{n}$ (after) $=x_{n}$ (vefore) $-X_{n}$ (before) $\times \frac{\left(G_{n}\right)}{\left(A_{n}\right)}$
and accordingly the stake of the $B$ shareholders after payment of the $n^{\text {th }}$ dividend be set at
$\mathrm{X}_{\mathrm{n}}$ (after) $=\mathrm{I}_{\mathrm{n}}$ (before) $+\mathrm{X}_{\mathrm{n}}$ (before) $\times \frac{\left(\mathrm{G}_{\mathrm{n}}\right)}{\left(A_{n}\right)}$
The Pormulae given in this memorandum permit to calculate how the relative stake of the A stockholders and the B stocknolders changes whenever a dividend is paid and how it changes in the interval between two dividend payments. Therefore, if the initial stake of the A stockholders and B stockholders is defined (in the example which we discussed the initial stake was $50 \%$ both for the A stockholders and the B stockholders) ho uncertainty as to the relative stakes of the A stockholders and B stockholders at anytime.

Sinilarly the conversion ratio of $B$ shares to $A$ shares is defined by our formula for each interval between two dividend payments.

If the A stock should not be traded on the stock mariket but if the composite stock which may consist of one A share and one B share is traded on the stock market the price of the compositestock one day after dividend peyment can be used in place of the price of the A stock. The formula given cannot, however, be applied directly by substituting the price of the composite stock Por the price of the A stock but rather a modified formula has to be used which has been derived and is available.

In case the composite stock is not TRAPED on the stock market either, then/ value D may be set for the A stock at the tine when the A and B stocks are flrst issued and this nore or less arbitracy set price $D$ for the A stock may be used in the forruula in place of the mariset price $D_{n}$ of the $A$ stock.

In this memorandum we have so far assumed that the initial relative stake of the A stockholders and the B stockholders is the same, i.e., $50 \%$. However, our formulae hold equally well if the initial stake of the A stockholders is different from the initial stake of the $B$ stockholders except that the composite stock will in that case not consist of one A share and one B shaxe but the ratio will be different.

In case of a company which has on opportunity to plow back say $75 \%$ of the profit it would be reasonable initially to issue $A$ shares and $B$ shares in such a manner that the relative stake of the A shareholders is $25 \%$ and the relative

MAYBE stake of the $B$ shareholders is $75 \%$. As time goes on and $B$ shares converted into A shares the relative stake of the A shareholds MAY increase and that of the $B$ shareholders may decrease. Such a change might be accompanied by a gredual change of dividend policy and the compeny might later on wish to plow back a smaller percent of the profits.

Let us now assume that the company plows back $75 \%$ of the net profit of the first year and pays the A share holders in dividends $\$ 250,000$, the B share holders receiving no dividend. If now in the next year the company makes again a net profit of one million dollars and if it decides to plow back one quarter of this, it will have to pay the A share holders (because of cumulative rule on dividends payable to A share holders) $\$ 750,000$ and will not pay any dividends to the B share holders.

In order to make it easier to understand the rules which govern the conversion of $B$ shares into $A$ shares and the rules from which one may calculate at anytime the relative stake of the $A$ shareholders and the $B$ shareholders, it is advisable to introduce a few concepts and designations.

We shall designate by $\left(A_{n}\right)$ the number of $A$ shares issued up to one week before the $n$th s dividend is declared and similarly by $\left(B_{n}\right)$ the number of $B$ shares issued up to one week before the $n$th dividend is declared. If the relative stake of the A shareholders immediately after the nth dividend has been declared is fixed at $X_{n}$ (after) and similarly the relative stake of the $B$ shareholders immediately after the dividend is declared is fixed at $Y_{n}$ (after), then the relative stake of one $A$ share is given by $X_{n}(a f t e r) /\left(\&_{n}\right)$. and the relative ducoradoau dit the on Ane and B-shaxes does not change
dividend has been declared until the next dividend is deelared. We postulate that during this interval the number of A shares which may be obtained by surrendering one $B$ share to the company shall be given by
(A)

Fisonedinimboruell) $\mathrm{Y}_{\mathrm{n}}(\text { after })_{x}\left(\mathrm{~A}_{\mathrm{n}}\right)$
memendiard $=\frac{Y_{n}(\text { after })_{x}\left(B_{n}\right)}{X_{n}(\text { at }}$
This postulate is so designed that the A shares obtained in exchange for
one B sharefrepresent the same stake in the company as represents the one B share which is surrendered.
the
During the time interval between the nth dividend and the next dividend
在解
stake of the $A$ share holders and $B$ share holders changes, stake of one $A$ share and one $B$ share remains unchanged simply because $B$ shares are surrendered and A shares are issued in exchange. For this reason the stake of the B shareholders just prior to the declaration of the next dividend which is distinguished by $Y_{n+1}$ (before), is given by shareholders, $\mathrm{X}_{n+1}$ (before), is given by

$$
X_{n+1}^{\text {elite })}=X_{m} \text { (after) }
$$

$$
\frac{(A n)+(A \text { inced in yer })}{(A n)}
$$

for which we can also write
$\qquad$
$\left(\begin{array}{l}(A n) \\ \text { andre }) \\ \text { ( }\end{array}\right.$
This formula teaches how to compute from the stake of the $A$ shareholders and $B$ shareholders after the declaration of a dividend the corresponding stakes before the declaration of the next dividend.
and $B$ shareholders
Now we must see how does the stake of the A shareholders/changes at the time that the dividend is declared (awing which time there is no change in the number of $A$ shares and $B$ shares issued, since no $B$ shares will be converted from one week before the declaration of dividend until one week after the payment of the dividend. The change in the stake of the A shareholders and B shareholders at the time dividend is declared should reflect the fact that the A shareholders have received more than their fair share of the profits in the form of dividends to the detriment of the B shareholders. We rus arrive at a Formula is
$-X_{m \times 1}($ bernese $)=X_{m}$ after $+\frac{Y_{m} \text { after } B \text { sumemeine }}{\left(B_{m}\right)}$

If when the nth dividend is paid the total dividend paid to the $A$ shareholders is given by $a_{n}$ and the total dividend paid to the $B$ shareholders is fiver represented by $\mathrm{b}_{\mathrm{n}}$ then the expression

$$
\text { then the expression } \text { A }_{n} \text { (effie) (Xn (before) - } 6 x
$$

represents the amount which the $B$ shareholders received in excess of their due. If an equal amount were paid at that time to the $B$ shareholders and if the price of the $A$ shares on the stock market on the day following the payment of the nth dividend is represented by "A" $n$ then clearly the $B$ share holders could have bought with an amount
a/mimber

$$
\frac{a_{n} \times Y_{n}(b u b r)}{X_{n}(b x) x}-b_{n}
$$

a number of $\left(G_{n}\right)$ of $A$ shares of

$$
\left(g_{n}\right)=
$$

Therefore it is logical to set the rule that the stake of the A shareholders after the payment of the nth dividend, $X_{n}$ (after), be given by
and correspondingly the stake of the $B$ shareholders after payment of the nth dividend be set at

$$
Y_{m}(\text { apter })=Y_{n}(\text { colone })+
$$

Again we have

If we take into account the fact that at the time of issue the relative status was of the A shareholders were $50 \%$ and the relative stake of the B shareholders was Were also $50 \%$ and if we further take into account that up to one week of the first deeleation/one $A$ share was obtained by surrendering one $B$ share it is
clear that our rules define precisely the relative stake of the A shareholders and the $B$ shareholders both for before and after of each declaration of dividend. Our rules also define the conversion ratio of $B$ shares to $A$ shares for the time interval between any two dividends.

If the $A$ shares are not on the market their market price cannot be used to calculate from it the change in the relative stake of the $A$ shareholders and $B$ shareholders at the time when dividend is paid. If however the composite stock which consists of one $A$ share and one $B$ share is traded on the stock market then the market price "AB" of this composite stock, can be used for our purpose. We have then for the relative stake of the $A$ shareholders and $B$ shareholders after the nth dividend:

$$
\text { and } Y_{m}(\text { after })=
$$

$$
\text { where } H_{n}=
$$

$n$

$$
E_{\sim}
$$

Finally, if the composite stock " $A B$ " is not on the market either then instead of the market price "Aل" of the A shares there may be set fixed price in dollars for the A shares which will be used in our formula in place of a market price "An".

$$
\begin{aligned}
& X_{m}(\text { behove })+H_{n} \frac{X_{n}}{\left(A_{m}\right)}+H_{m} H_{m} \frac{1}{B_{n}} B_{n} \text { nets }
\end{aligned}
$$

The public discussion of the issue which faces the world today is so unsatisfactory, because in it we can discern only two kinds of voices. the voices or echo there rearekirsee of those who more or less represent government policy and one of three sections of state since the end of the last war failed to present anything that deserved the intel present name of policy, What they ascribed to us was not a policy at all, but a pattern
 of behavior to which they made, the United States Government/and for which they
sought public support. Their voices contributed nothing to the clarification
of the issues and only increased the existing confusion. Nothing they said made as pride often wonder any sense, and one often wondered how anybody conversant with history can say the things they said. On the other hand, one could discern, even though rather feebly the voices of those who erriea to give the public insight into the situation in which the United States finds itself. Such men, to name Lipman, Cannon, Moranamong them, knew history, and perhaps they mow the history too well. hirer apply I-ooula often agree with the sill to what thergevernment policies made no sense and alae agree with them on the next few steps that need to be taken, yet they and cue min wore af lea lias unit
there neh seems to miss the fact that something unprecented has taken place in the world and because this has happened, a good foreign policy for which they pleaded, while necessary will not be capable of solving our problem.

A good foreign policy can do no more then, reduce the possibility of war, whiten arenur iulus
under a bad foreign policy mid most certain to a few pere this is all we can do, and if we are are not aware of the need to use the len jo ms problem which a good foreign policy might provide to eliminate the possibility of war altogether, then nothing really was worthwhile. For at the rate at which the destruction of atomic bomb increases is such that if we know there will be another world war, we must pray for an early war rather than a late one. And if we cannot go beyond establishing a good foreign policy, then it is not only likely that there will be another world war, but in the long run, it is an absolute certainty.

## Page 2

It is necessary to emphasize this for what terms of a settlement that will end the cold war between Russia and the United States, it is necessary to keep in mind that we must have a settlement which on the one hand gives us a reasonable assurance that there will be no world war within the next 25 years, and on the other hand lays the groundwork for the unprecented steps for which we have to press during the next 25 years in order to reduce the danger-of-wax probability of war for a few percent per annum to zero in these next 25 years.

July 18, 1058

Te : Richard Feganan  Lee mallidge Eugene Rabinowitch H. C. Urey<br> Louts Ravenous<br>From: Leo Smilax d

Enclosed is a collection of documents which, I believes will interest you. I should appreciate getting much comments from you al you care to mate at this time.

This is an informal and thotiletal query that $I$ an maklag personally. Any more ofilalal approach to you would come to you through Col. Leghorn who functions as our bitidal ${ }^{3}$ line of communication with the Academy of Defences of the Soviet Union.
cape to: Cl.R.S.Leqhan

