



AgEcon SEARCH
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search

<http://ageconsearch.umn.edu>

aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

No endorsement of AgEcon Search or its fundraising activities by the author(s) of the following work or their employer(s) is intended or implied.

DETERMINANTS OF CATTLE FEEDING PROFIT AND COST OF GAIN VARIABILITY

Ted C. Schroeder

Martin L. Albright

Michael R. Langemeier

**DETERMINANTS OF CATTLE FEEDING PROFIT AND
COST OF GAIN VARIABILITY**

**TED C. SCHROEDER, MARTIN L. ALBRIGHT,
MICHAEL R. LANGEMEIER, AND JAMES MINTERT**

JULY 1993

No. 94-2

**Contribution No. 94-12-D from the Kansas Agricultural Experiment Station, Kansas State
University, Manhattan, KS 66506-4011.**

DETERMINANTS OF CATTLE FEEDING PROFIT AND COST OF GAIN VARIABILITY

By

Ted C. Schroeder,

Martin L. Albright,

Michael R. Langemeier,

and

James Mintert*

Selected Paper Presented at 1993 American Agricultural Economics Association Meetings,

Orlando, FL, August 1993

July 7, 1993

*The authors are associate professor, research assistant, assistant professor, and associate professor, Department of Agricultural Economics, Kansas State University. We acknowledge the generosity of two feedyard managers for providing data and Brenda Moore and Stacy Strnad for their considerable work entering and managing the sizeable data set for this study. Helpful comments of Kevin Dhuyvetter and several anonymous reviewers are appreciated.

DETERMINANTS OF CATTLE FEEDING PROFIT AND COST OF GAIN VARIABILITY

Cattle feeders face risks from fluctuating fed cattle, feeder cattle, and feed prices and cattle performance. Closeout data on 7292 pens of steers are studied to determine the relative impacts of prices and animal performance on cattle feeding profits and cost of gain. Results indicate the importance of managing price risk.

DETERMINANTS OF CATTLE FEEDING PROFIT AND COST OF GAIN VARIABILITY

Abstract

Cattle feeders face risks from fluctuating fed cattle, feeder cattle, and feed prices and cattle performance. Closeout data on 7292 pens of steers are studied to determine the relative impacts of prices and animal performance on cattle feeding profits and cost of gain. Results indicate the importance of managing price risk.

Previous Studies

A few studies have attempted to estimate the relative importance of different risk factors on profitability. Swanson and Wang (1990) estimated a linear panel data model using 1980-1985 data and found that fluctuations in feed prices were the most important risk factor. They estimated a gain function of $Y = a + b_1P + b_2F + b_3C + b_4G + b_5M + b_6S + b_7D + b_8H + b_9W + b_{10}B + b_{11}I + b_{12}O + b_{13}U + b_{14}R + b_{15}T + b_{16}L + b_{17}K + b_{18}J + b_{19}V + b_{20}N + b_{21}G + b_{22}C + b_{23}M + b_{24}S + b_{25}D + b_{26}H + b_{27}W + b_{28}B + b_{29}I + b_{30}O + b_{31}U + b_{32}R + b_{33}T + b_{34}L + b_{35}K + b_{36}J + b_{37}V + b_{38}N + b_{39}G + b_{40}C + b_{41}M + b_{42}S + b_{43}D + b_{44}H + b_{45}W + b_{46}B + b_{47}I + b_{48}O + b_{49}U + b_{50}R + b_{51}T + b_{52}L + b_{53}K + b_{54}J + b_{55}V + b_{56}N + b_{57}G + b_{58}C + b_{59}M + b_{60}S + b_{61}D + b_{62}H + b_{63}W + b_{64}B + b_{65}I + b_{66}O + b_{67}U + b_{68}R + b_{69}T + b_{70}L + b_{71}K + b_{72}J + b_{73}V + b_{74}N + b_{75}G + b_{76}C + b_{77}M + b_{78}S + b_{79}D + b_{80}H + b_{81}W + b_{82}B + b_{83}I + b_{84}O + b_{85}U + b_{86}R + b_{87}T + b_{88}L + b_{89}K + b_{90}J + b_{91}V + b_{92}N + b_{93}G + b_{94}C + b_{95}M + b_{96}S + b_{97}D + b_{98}H + b_{99}W + b_{100}B + b_{101}I + b_{102}O + b_{103}U + b_{104}R + b_{105}T + b_{106}L + b_{107}K + b_{108}J + b_{109}V + b_{110}N + b_{111}G + b_{112}C + b_{113}M + b_{114}S + b_{115}D + b_{116}H + b_{117}W + b_{118}B + b_{119}I + b_{120}O + b_{121}U + b_{122}R + b_{123}T + b_{124}L + b_{125}K + b_{126}J + b_{127}V + b_{128}N + b_{129}G + b_{130}C + b_{131}M + b_{132}S + b_{133}D + b_{134}H + b_{135}W + b_{136}B + b_{137}I + b_{138}O + b_{139}U + b_{140}R + b_{141}T + b_{142}L + b_{143}K + b_{144}J + b_{145}V + b_{146}N + b_{147}G + b_{148}C + b_{149}M + b_{150}S + b_{151}D + b_{152}H + b_{153}W + b_{154}B + b_{155}I + b_{156}O + b_{157}U + b_{158}R + b_{159}T + b_{160}L + b_{161}K + b_{162}J + b_{163}V + b_{164}N + b_{165}G + b_{166}C + b_{167}M + b_{168}S + b_{169}D + b_{170}H + b_{171}W + b_{172}B + b_{173}I + b_{174}O + b_{175}U + b_{176}R + b_{177}T + b_{178}L + b_{179}K + b_{180}J + b_{181}V + b_{182}N + b_{183}G + b_{184}C + b_{185}M + b_{186}S + b_{187}D + b_{188}H + b_{189}W + b_{190}B + b_{191}I + b_{192}O + b_{193}U + b_{194}R + b_{195}T + b_{196}L + b_{197}K + b_{198}J + b_{199}V + b_{200}N + b_{201}G + b_{202}C + b_{203}M + b_{204}S + b_{205}D + b_{206}H + b_{207}W + b_{208}B + b_{209}I + b_{210}O + b_{211}U + b_{212}R + b_{213}T + b_{214}L + b_{215}K + b_{216}J + b_{217}V + b_{218}N + b_{219}G + b_{220}C + b_{221}M + b_{222}S + b_{223}D + b_{224}H + b_{225}W + b_{226}B + b_{227}I + b_{228}O + b_{229}U + b_{230}R + b_{231}T + b_{232}L + b_{233}K + b_{234}J + b_{235}V + b_{236}N + b_{237}G + b_{238}C + b_{239}M + b_{240}S + b_{241}D + b_{242}H + b_{243}W + b_{244}B + b_{245}I + b_{246}O + b_{247}U + b_{248}R + b_{249}T + b_{250}L + b_{251}K + b_{252}J + b_{253}V + b_{254}N + b_{255}G + b_{256}C + b_{257}M + b_{258}S + b_{259}D + b_{260}H + b_{261}W + b_{262}B + b_{263}I + b_{264}O + b_{265}U + b_{266}R + b_{267}T + b_{268}L + b_{269}K + b_{270}J + b_{271}V + b_{272}N + b_{273}G + b_{274}C + b_{275}M + b_{276}S + b_{277}D + b_{278}H + b_{279}W + b_{280}B + b_{281}I + b_{282}O + b_{283}U + b_{284}R + b_{285}T + b_{286}L + b_{287}K + b_{288}J + b_{289}V + b_{290}N + b_{291}G + b_{292}C + b_{293}M + b_{294}S + b_{295}D + b_{296}H + b_{297}W + b_{298}B + b_{299}I + b_{300}O + b_{301}U + b_{302}R + b_{303}T + b_{304}L + b_{305}K + b_{306}J + b_{307}V + b_{308}N + b_{309}G + b_{310}C + b_{311}M + b_{312}S + b_{313}D + b_{314}H + b_{315}W + b_{316}B + b_{317}I + b_{318}O + b_{319}U + b_{320}R + b_{321}T + b_{322}L + b_{323}K + b_{324}J + b_{325}V + b_{326}N + b_{327}G + b_{328}C + b_{329}M + b_{330}S + b_{331}D + b_{332}H + b_{333}W + b_{334}B + b_{335}I + b_{336}O + b_{337}U + b_{338}R + b_{339}T + b_{340}L + b_{341}K + b_{342}J + b_{343}V + b_{344}N + b_{345}G + b_{346}C + b_{347}M + b_{348}S + b_{349}D + b_{350}H + b_{351}W + b_{352}B + b_{353}I + b_{354}O + b_{355}U + b_{356}R + b_{357}T + b_{358}L + b_{359}K + b_{360}J + b_{361}V + b_{362}N + b_{363}G + b_{364}C + b_{365}M + b_{366}S + b_{367}D + b_{368}H + b_{369}W + b_{370}B + b_{371}I + b_{372}O + b_{373}U + b_{374}R + b_{375}T + b_{376}L + b_{377}K + b_{378}J + b_{379}V + b_{380}N + b_{381}G + b_{382}C + b_{383}M + b_{384}S + b_{385}D + b_{386}H + b_{387}W + b_{388}B + b_{389}I + b_{390}O + b_{391}U + b_{392}R + b_{393}T + b_{394}L + b_{395}K + b_{396}J + b_{397}V + b_{398}N + b_{399}G + b_{400}C + b_{401}M + b_{402}S + b_{403}D + b_{404}H + b_{405}W + b_{406}B + b_{407}I + b_{408}O + b_{409}U + b_{410}R + b_{411}T + b_{412}L + b_{413}K + b_{414}J + b_{415}V + b_{416}N + b_{417}G + b_{418}C + b_{419}M + b_{420}S + b_{421}D + b_{422}H + b_{423}W + b_{424}B + b_{425}I + b_{426}O + b_{427}U + b_{428}R + b_{429}T + b_{430}L + b_{431}K + b_{432}J + b_{433}V + b_{434}N + b_{435}G + b_{436}C + b_{437}M + b_{438}S + b_{439}D + b_{440}H + b_{441}W + b_{442}B + b_{443}I + b_{444}O + b_{445}U + b_{446}R + b_{447}T + b_{448}L + b_{449}K + b_{450}J + b_{451}V + b_{452}N + b_{453}G + b_{454}C + b_{455}M + b_{456}S + b_{457}D + b_{458}H + b_{459}W + b_{460}B + b_{461}I + b_{462}O + b_{463}U + b_{464}R + b_{465}T + b_{466}L + b_{467}K + b_{468}J + b_{469}V + b_{470}N + b_{471}G + b_{472}C + b_{473}M + b_{474}S + b_{475}D + b_{476}H + b_{477}W + b_{478}B + b_{479}I + b_{480}O + b_{481}U + b_{482}R + b_{483}T + b_{484}L + b_{485}K + b_{486}J + b_{487}V + b_{488}N + b_{489}G + b_{490}C + b_{491}M + b_{492}S + b_{493}D + b_{494}H + b_{495}W + b_{496}B + b_{497}I + b_{498}O + b_{499}U + b_{500}R + b_{501}T + b_{502}L + b_{503}K + b_{504}J + b_{505}V + b_{506}N + b_{507}G + b_{508}C + b_{509}M + b_{510}S + b_{511}D + b_{512}H + b_{513}W + b_{514}B + b_{515}I + b_{516}O + b_{517}U + b_{518}R + b_{519}T + b_{520}L + b_{521}K + b_{522}J + b_{523}V + b_{524}N + b_{525}G + b_{526}C + b_{527}M + b_{528}S + b_{529}D + b_{530}H + b_{531}W + b_{532}B + b_{533}I + b_{534}O + b_{535}U + b_{536}R + b_{537}T + b_{538}L + b_{539}K + b_{540}J + b_{541}V + b_{542}N + b_{543}G + b_{544}C + b_{545}M + b_{546}S + b_{547}D + b_{548}H + b_{549}W + b_{550}B + b_{551}I + b_{552}O + b_{553}U + b_{554}R + b_{555}T + b_{556}L + b_{557}K + b_{558}J + b_{559}V + b_{560}N + b_{561}G + b_{562}C + b_{563}M + b_{564}S + b_{565}D + b_{566}H + b_{567}W + b_{568}B + b_{569}I + b_{570}O + b_{571}U + b_{572}R + b_{573}T + b_{574}L + b_{575}K + b_{576}J + b_{577}V + b_{578}N + b_{579}G + b_{580}C + b_{581}M + b_{582}S + b_{583}D + b_{584}H + b_{585}W + b_{586}B + b_{587}I + b_{588}O + b_{589}U + b_{590}R + b_{591}T + b_{592}L + b_{593}K + b_{594}J + b_{595}V + b_{596}N + b_{597}G + b_{598}C + b_{599}M + b_{600}S + b_{601}D + b_{602}H + b_{603}W + b_{604}B + b_{605}I + b_{606}O + b_{607}U + b_{608}R + b_{609}T + b_{610}L + b_{611}K + b_{612}J + b_{613}V + b_{614}N + b_{615}G + b_{616}C + b_{617}M + b_{618}S + b_{619}D + b_{620}H + b_{621}W + b_{622}B + b_{623}I + b_{624}O + b_{625}U + b_{626}R + b_{627}T + b_{628}L + b_{629}K + b_{630}J + b_{631}V + b_{632}N + b_{633}G + b_{634}C + b_{635}M + b_{636}S + b_{637}D + b_{638}H + b_{639}W + b_{640}B + b_{641}I + b_{642}O + b_{643}U + b_{644}R + b_{645}T + b_{646}L + b_{647}K + b_{648}J + b_{649}V + b_{650}N + b_{651}G + b_{652}C + b_{653}M + b_{654}S + b_{655}D + b_{656}H + b_{657}W + b_{658}B + b_{659}I + b_{660}O + b_{661}U + b_{662}R + b_{663}T + b_{664}L + b_{665}K + b_{666}J + b_{667}V + b_{668}N + b_{669}G + b_{670}C + b_{671}M + b_{672}S + b_{673}D + b_{674}H + b_{675}W + b_{676}B + b_{677}I + b_{678}O + b_{679}U + b_{680}R + b_{681}T + b_{682}L + b_{683}K + b_{684}J + b_{685}V + b_{686}N + b_{687}G + b_{688}C + b_{689}M + b_{690}S + b_{691}D + b_{692}H + b_{693}W + b_{694}B + b_{695}I + b_{696}O + b_{697}U + b_{698}R + b_{699}T + b_{700}L + b_{701}K + b_{702}J + b_{703}V + b_{704}N + b_{705}G + b_{706}C + b_{707}M + b_{708}S + b_{709}D + b_{710}H + b_{711}W + b_{712}B + b_{713}I + b_{714}O + b_{715}U + b_{716}R + b_{717}T + b_{718}L + b_{719}K + b_{720}J + b_{721}V + b_{722}N + b_{723}G + b_{724}C + b_{725}M + b_{726}S + b_{727}D + b_{728}H + b_{729}W + b_{730}B + b_{731}I + b_{732}O + b_{733}U + b_{734}R + b_{735}T + b_{736}L + b_{737}K + b_{738}J + b_{739}V + b_{740}N + b_{741}G + b_{742}C + b_{743}M + b_{744}S + b_{745}D + b_{746}H + b_{747}W + b_{748}B + b_{749}I + b_{750}O + b_{751}U + b_{752}R + b_{753}T + b_{754}L + b_{755}K + b_{756}J + b_{757}V + b_{758}N + b_{759}G + b_{760}C + b_{761}M + b_{762}S + b_{763}D + b_{764}H + b_{765}W + b_{766}B + b_{767}I + b_{768}O + b_{769}U + b_{770}R + b_{771}T + b_{772}L + b_{773}K + b_{774}J + b_{775}V + b_{776}N + b_{777}G + b_{778}C + b_{779}M + b_{780}S + b_{781}D + b_{782}H + b_{783}W + b_{784}B + b_{785}I + b_{786}O + b_{787}U + b_{788}R + b_{789}T + b_{790}L + b_{791}K + b_{792}J + b_{793}V + b_{794}N + b_{795}G + b_{796}C + b_{797}M + b_{798}S + b_{799}D + b_{800}H + b_{801}W + b_{802}B + b_{803}I + b_{804}O + b_{805}U + b_{806}R + b_{807}T + b_{808}L + b_{809}K + b_{810}J + b_{811}V + b_{812}N + b_{813}G + b_{814}C + b_{815}M + b_{816}S + b_{817}D + b_{818}H + b_{819}W + b_{820}B + b_{821}I + b_{822}O + b_{823}U + b_{824}R + b_{825}T + b_{826}L + b_{827}K + b_{828}J + b_{829}V + b_{830}N + b_{831}G + b_{832}C + b_{833}M + b_{834}S + b_{835}D + b_{836}H + b_{837}W + b_{838}B + b_{839}I + b_{840}O + b_{841}U + b_{842}R + b_{843}T + b_{844}L + b_{845}K + b_{846}J + b_{847}V + b_{848}N + b_{849}G + b_{850}C + b_{851}M + b_{852}S + b_{853}D + b_{854}H + b_{855}W + b_{856}B + b_{857}I + b_{858}O + b_{859}U + b_{860}R + b_{861}T + b_{862}L + b_{863}K + b_{864}J + b_{865}V + b_{866}N + b_{867}G + b_{868}C + b_{869}M + b_{870}S + b_{871}D + b_{872}H + b_{873}W + b_{874}B + b_{875}I + b_{876}O + b_{877}U + b_{878}R + b_{879}T + b_{880}L + b_{881}K + b_{882}J + b_{883}V + b_{884}N + b_{885}G + b_{886}C + b_{887}M + b_{888}S + b_{889}D + b_{890}H + b_{891}W + b_{892}B + b_{893}I + b_{894}O + b_{895}U + b_{896}R + b_{897}T + b_{898}L + b_{899}K + b_{900}J + b_{901}V + b_{902}N + b_{903}G + b_{904}C + b_{905}M + b_{906}S + b_{907}D + b_{908}H + b_{909}W + b_{910}B + b_{911}I + b_{912}O + b_{913}U + b_{914}R + b_{915}T + b_{916}L + b_{917}K + b_{918}J + b_{919}V + b_{920}N + b_{921}G + b_{922}C + b_{923}M + b_{924}S + b_{925}D + b_{926}H + b_{927}W + b_{928}B + b_{929}I + b_{930}O + b_{931}U + b_{932}R + b_{933}T + b_{934}L + b_{935}K + b_{936}J + b_{937}V + b_{938}N + b_{939}G + b_{940}C + b_{941}M + b_{942}S + b_{943}D + b_{944}H + b_{945}W + b_{946}B + b_{947}I + b_{948}O + b_{949}U + b_{950}R + b_{951}T + b_{952}L + b_{953}K + b_{954}J + b_{955}V + b_{956}N + b_{957}G + b_{958}C + b_{959}M + b_{960}S + b_{961}D + b_{962}H + b_{963}W + b_{964}B + b_{965}I + b_{966}O + b_{967}U + b_{968}R + b_{969}T + b_{970}L + b_{971}K + b_{972}J + b_{973}V + b_{974}N + b_{975}G + b_{976}C + b_{977}M + b_{978}S + b_{979}D + b_{980}H + b_{981}W + b_{982}B + b_{983}I + b_{984}O + b_{985}U + b_{986}R + b_{987}T + b_{988}L + b_{989}K + b_{990}J + b_{991}V + b_{992}N + b_{993}G + b_{994}C + b_{995}M + b_{996}S + b_{997}D + b_{998}H + b_{999}W + b_{1000}B + b_{1001}I + b_{1002}O + b_{1003}U + b_{1004}R + b_{1005}T + b_{1006}L + b_{1007}K + b_{1008}J + b_{1009}V + b_{1010}N + b_{1011}G + b_{1012}C + b_{1013}M + b_{1014}S + b_{1015}D + b_{1016}H + b_{1017}W + b_{1018}B + b_{1019}I + b_{1020}O + b_{1021}U + b_{1022}R + b_{1023}T + b_{1024}L + b_{1025}K + b_{1026}J + b_{1027}V + b_{1028}N + b_{1029}G + b_{1030}C + b_{1031}M + b_{1032}S + b_{1033}D + b_{1034}H + b_{1035}W + b_{1036}B + b_{1037}I + b_{1038}O + b_{1039}U + b_{1040}R + b_{1041}T + b_{1042}L + b_{1043}K + b_{1044}J + b_{1045}V + b_{1046}N + b_{1047}G + b_{1048}C + b_{1049}M + b_{1050}S + b_{1051}D + b_{1052}H + b_{1053}W + b_{1054}B + b_{1055}I + b_{1056}O + b_{1057}U + b_{1058}R + b_{1059}T + b_{1060}L + b_{1061}K + b_{1062}J + b_{1063}V + b_{1064}N + b_{1065}G + b_{1066}C + b_{1067}M + b_{1068}S + b_{1069}D + b_{1070}H + b_{1071}W + b_{1072}B + b_{1073}I + b_{1074}O + b_{1075}U + b_{1076}R + b_{1077}T + b_{1078}L + b_{1079}K + b_{1080}J + b_{1081}V + b_{1082}N + b_{1083}G + b_{1084}C + b_{1085}M + b_{1086}S + b_{1087}D + b_{1088}H + b_{1089}W + b_{1090}B + b_{1091}I + b_{1092}O + b_{1093}U + b_{1094}R + b_{1095}T + b_{1096}L + b_{1097}K + b_{1098}J + b_{1099}V + b_{1100}N + b_{1101}G + b_{1102}C + b_{1103}M + b_{1104}S + b_{1105}D + b_{1106}H + b_{1107}W + b_{1108}B + b_{1109}I + b_{1110}O + b_{1111}U + b_{1112}R + b_{1113}T + b_{1114}L + b_{1115}K + b_{1116}J + b_{1117}V + b_{1118}N + b_{1119}G + b_{1120}C + b_{1121}M + b_{1122}S + b_{1123}D + b_{1124}H + b_{1125}W + b_{1126}B + b_{1127}I + b_{1128}O + b_{1129}U + b_{1130}R + b_{1131}T + b_{1132}L + b_{1133}K + b_{1134}J + b_{1135}V + b_{1136}N + b_{1137}G + b_{1138}C + b_{1139}M + b_{1140}S + b_{1141}D + b_{1142}H + b_{1143}W + b_{1144}B + b_{1145}I + b_{1146}O + b_{1147}U + b_{1148}R + b_{1149}T + b_{1150}L + b_{1151}K + b_{1152}J + b_{1153}V + b_{1154}N + b_{1155}G + b_{1156}C + b_{1157}M + b_{1158}S + b_{1159}D + b_{1160}H + b_{1161}W + b_{1162}B + b_{1163}I + b_{1164}O + b_{1165}U + b_{1166}R + b_{1167}T + b_{1168}L + b_{1169}K + b_{1170}J + b_{1171}V + b_{1172}N + b_{1173}G + b_{1174}C + b_{1175}M + b_{1176}S + b_{1177}D + b_{1178}H + b_{1179}W + b_{1180}B + b_{1181}I + b_{1182}O + b_{1183}U + b_{1184}R + b_{1185}T + b_{1186}L + b_{1187}K + b_{1188}J + b_{1189}V + b_{1190}N + b_{1191}G + b_{1192}C + b_{1193}M + b_{1194}S + b_{1195}D + b_{1196}H + b_{1197}W + b_{1198}B + b_{1199}I + b_{1200}O + b_{1201}U + b_{1202}R + b_{1203}T + b_{1204}L + b_{1205}K + b_{1206}J + b_{1207}V + b_{1208}N + b_{1209}G + b_{1210}C + b_{1211}M + b_{1212}S + b_{1213}D + b_{1214}H + b_{1215}W + b_{1216}B + b_{1217}I + b_{1218}O + b_{1219}U + b_{1220}R + b_{1221}T + b_{1222}L + b_{1223}K + b_{1224}J + b_{1225}V + b_{1226}N + b_{1227}G + b_{1228}C + b_{1229}M + b_{1230}S + b_{1231}D + b_{1232}H + b_{1233}W + b_{1234}B + b_{1235}I + b_{1236}O + b_{1237}U + b_{1238}R + b_{1239}T + b_{1240}L + b_{1241}K + b_{1242}J + b_{1243}V + b_{1244}N + b_{1245}G + b_{1246}C + b_{1247}M + b_{1248}S + b_{1249}D + b_{1250}H + b_{1251}W + b_{1252}B + b_{1253}I + b_{1254}O + b_{1255}U + b_{1256}R + b_{1257}T + b_{1258}L + b_{1259}K + b_{1260}J + b_{1261}V + b_{1262}N + b_{1263}G + b_{1264}C + b_{1265}M + b_{1266}S + b_{1267}D + b_{1268}H + b_{1269}W + b_{1270}B + b_{1271}I + b_{1272}O + b_{1273}U + b_{1274}R + b_{1275}T + b_{1276}L + b_{1277}K + b_{1278}J + b_{1279}V + b_{1280}N + b_{1281}G + b_{1282}C + b_{1283}M + b_{1284}S + b_{1285}D + b_{1286}H + b_{1287}W + b_{1288}B + b_{1289}I + b_{1290}O + b_{1291}U + b_{1292}R + b_{1293}T + b_{1294}L + b_{1295}K + b_{1296}J + b_{1297}V + b_{1298}N + b_{1299}G + b_{1300}C + b_{1301}M + b_{1302}S + b_{1303}D + b_{1304}H + b_{1305}W + b_{1306}B + b_{1307}I + b_{1308}O + b_{1309}U + b_{1310}R + b_{1311}T + b_{1312}L + b_{1313}K + b_{1314}J + b_{1315}V + b_{1316}N + b_{1317}G + b_{1318}C + b_{1319}M + b_{1320}S + b_{1321}D + b_{1322}H + b_{1323}W + b_{1324}B + b_{1325}I + b_{1326}O + b_{1327}U + b_{1328}R + b_{1329}T + b_{1330}L + b_{1331}K + b_{1332}J + b_{1333}V + b_{1334}N + b_{1335}G + b_{1336}C + b_{1337}M + b_{1338}S + b_{1339}D + b_{1340}H + b_{1341}W + b_{1342}B + b_{1343}I + b_{1344}O + b_{1345}U + b_{1346}R + b_{1347}T + b_{1348}L + b_{1349}K + b_{1350}J + b_{1351}V + b_{1352}N + b_{1353}G + b_{1354}C + b_{1355}M + b_{1356}S + b_{1357}D + b_{1358}H + b_{1359}W + b_{1360}B + b_{1361}I + b_{1362}O + b_{1363}U + b_{1364}R + b_{1365}T + b_{1366}L + b_{1367}K + b_{1368}J + b_{1369}V + b_{1370}N + b_{1371}G + b_{1372}C + b_{1373}M + b_{1374}S + b_{1375}D + b_{1376}H + b_{1377}W + b_{1378}B + b_{1379}I + b_{1380}O + b_{1381}U + b_{1382}R + b_{1383}T + b_{1384}L + b_{1385}K + b_{1386}J + b_{1387}V + b_{1388}N + b_{1389}G + b_{1390}C + b_{1391}M + b_{1392}S + b_{1393}D + b_{1394}H + b_{1395}W + b_{1396}B + b_{1397}I + b_{1398}O + b_{1399}U + b_{1400}R + b_{1401}T + b_{1402}L + b_{1403}K + b_{1404}J + b_{1405}V + b_{1406}N + b_{1407}G + b_{1408}C + b_{1409}M + b_{1410}S + b_{1411}D + b_{1412}H + b_{1413}W + b_{1414}B + b_{1415}I + b_{1416}O + b_{1417}U + b_{1418}R + b_{1419}T + b_{1420}L + b_{1421}K + b_{1422}J + b_{1423}V + b_{1424}N + b_{1425}G + b_{1426}C + b_{1427}M + b_{1428}S + b_{1429}D + b_{1430}H + b_{1431}W + b_{1432}B + b_{1433}I + b_{1434}O + b_{1435}U + b_{1436}R + b_{1437}T + b_{1438}L + b_{1439}K + b_{1440}J + b_{1441}V + b_{1442}N + b_{1443}G + b_{1444}C + b_{1445}M + b_{1446}S + b_{1447$

DETERMINANTS OF CATTLE FEEDING PROFIT AND COST OF GAIN VARIABILITY

Cattle feeding involves considerable financial risk from fluctuating feeder and fed cattle prices, interest rates, and feeding cost of gain. Feeding cost of gain is susceptible to volatile feed grain prices and animal health and production performance. These risks should all be considered as cattle producers develop budget projections and contemplate placing cattle on feed. Understanding the relative risks each of these factors contributes to cattle feeding profitability is important to cattle producers in making profitable decisions regarding timing of feeder cattle placement, weight of feeder cattle to place, feeder cattle and feed procurement, and fed cattle marketing.

The objectives of this study are first to investigate factors that affect cattle feeding profitability and, second, to determine how feed grain prices, feed conversion, and average daily gain affect feeding cost of gain. Closeout data on 7292 pens of steers placed on feed between January 1980 and May 1991 in two western Kansas custom feedlots are used to estimate the relative contributions of price and performance factors to profit variability and feeding cost of gain. Results provide important evidence regarding the relative significance of market and cattle performance measures on long-term cattle feeding profit risk.

Previous Studies

A few studies have examined contributions of individual components affecting cattle feeding profitability. Swanson and West in 1963 examined Illinois Farm Bureau Farm Management Service records and found that feeder to fed cattle price margins explained 38% and feed cost per pound of gain explained 44% of profit variability over time. Trapp and Cleveland used closeout data from May 1986 through April 1987 on 480 pens of cattle to develop a cattle feeding return simulation model. Market risk explained 66% of profit volatility compared to 22% attributable to production risk. Langemeier et al. used monthly average data from 2600 pens of steers placed from 1980

through 1989 to estimate feeding profitability determinants. They concluded that fed cattle sale price, feeder cattle purchase price, and corn price were the most important factors affecting profit variance.

Little economic research has examined cattle feeding cost of gain determinants. Nelson and Purcell examined cost and revenue relationships of two groups of steers. They concluded that marginal cost per pound of muscle declined when cattle were slaughtered at lighter weights. Melton et al. examined tradeoffs among alternative cattle finishing objectives of maximizing rate of carcass weight gain, minimizing ration cost, minimizing total feeding cost, maximizing per day profit, and minimizing per day cost. They concluded that profit per head was maximized by minimizing total feeding costs.

This study examines the relative contributions of input and output prices, cattle performance, and interest rates to cattle feeding profit variability and the contributions of corn prices and cattle performance to feeding cost of gain. Improvements provided by this analysis relative to previous research include the use of pen level data instead of averages or aggregates. Aggregate cattle feeding cost and revenue data mask price variability and cattle performance across pens. This study also uses a larger and more recent data set than previous studies. The large data set ensures that results are representative and currentness makes results relevant to recent production and management advances. The large data set also allowed us to conduct analysis separately for different placement weights of cattle. Placement weights should be accounted for in such analysis because cattle placed on feed at different weights can have profit determinants with divergent relative importance.

Modeling Net Return and Cost of Gain Risk Determinants

Determining the relative contribution of factors affecting cattle feeding profitability and cost of gain requires identification of the relevant price and/or production components affecting revenues and costs. Consider a cattle feeder (or investor) finishing purchased cattle in a custom feedyard. Net

return from feeding a pen of cattle for this producer is:

$$(1) \text{ NET RETURN} = (\text{FEDP} \times \text{FEDWT}) - (\text{FDRP} \times \text{FDRWT}) - \text{FEEDCOST} - \text{INTEREST}$$

where:

NET RETURN is the net return to the cattle owner from feeding cattle (\$/head),

FEDP is the fed steer sale price f.o.b. the feedyard (\$/cwt),

FEDWT is the average shrink-adjusted fed cattle sale weight per head (cwt),

FDRP is the feeder cattle purchase price (\$/cwt),

FDRWT is the average per head pay weight of the feeder cattle (cwt),

FEEDCOST is the cost of feeding cattle (processing, feed, medication, veterinarian, and custom yardage charges) (\$/head),

INTEREST is interest cost on feeder cattle and feeding costs (\$/head).

Examination of (1) provides an understanding of the factors that impact cattle feeding return variability. The approximate sale weight of fed cattle (FEDWT) is at the discretion of the cattle feeder. Therefore, risks associated with gross revenue variability ($\text{FEDP} \times \text{FEDWT}$) are primarily attributable to fed cattle sale price. Similarly, because the cattle feeder has discretion over the weight of feeder cattle to purchase, the primary uncertainty in feeder cattle cost is feeder cattle price.

Feeding costs have several components that contribute to their variability. Changes in feed grain prices directly affect feeding costs. The most important of these costs is the price of high energy grains, such as corn. Animal performance and death loss also have considerable influence on cost of gain. Two measures of animal performance are average daily gain (total gain of the pen divided by total head-weighted days on feed) and feed conversion (total lbs. of feed consumed by the pen divided by total gain). An increase in feed conversion increases feeding costs, and an increase in average daily gain decreases feeding costs. Yardage charges also influence cost of gain. However, since daily yardage charges do not change often, variability in total yardage cost results from factors that

require cattle to remain on feed longer such as poor feed conversion and/or low average daily gain. Interest costs also contribute to return variability. Depending upon how cattle and feeding costs are financed, changes in interest rates can have significant cost impacts.

Equation (1) provides a foundation for developing an empirical model to estimate the relative impacts of prices and animal performance measures on profit variability. The following regression equation is estimated to determine the impact of these factors on cattle feeding net returns:

$$(2) \text{ NET RETURN}_i = \beta_0 + \beta_1 \text{FEDP}_i + \beta_2 \text{FDRP}_i + \beta_3 \text{CORNP}_i + \beta_4 \text{CONV}_i + \beta_5 \text{ADG}_i + \beta_6 \text{INT}_i + e_i$$

where i refers to the pen of cattle, NET RETURN, FEDP, and FDRP are as defined previously. CORNP is the average corn price during the placement month (\$/bu), CONV is the as-fed feed conversion of the cattle in the pen (lbs. feed/lb. gain), and ADG is the average daily gain of the cattle (lbs. gain/head/day). INT is the Kansas City Federal Reserve Bank interest rate for cattle feeding loans during the placement month (%), β_0 through β_6 are parameters to be estimated, and e is a random error term. Comparing (1) and (2), we can roughly interpret the coefficients of (3) as follows. First, β_1 and β_2 will approximately equal the absolute value of the average finish and placement weights per cwt of the cattle in the sample, respectively. β_1 is expected to be greater than zero because an increase in fed price increases return. β_2 is expected to be negative, an increase in feeder price reduces net return. β_3 is expected to be negative (increasing corn prices reduce profits), β_4 is expected to be negative (as more feed is consumed per pound of gain profits decline), β_5 is expected to be positive (higher ADG reduces feeding costs), and β_6 measures the impact of interest rate changes on returns and is expected to be negative.

Also of interest is determining the impacts of grain prices and animal performance on feeding cost of gain. Feeding cost of gain can be modeled as:

$$(3) \text{ COST OF GAIN} = f(\text{CORNP}, \text{CONV}, \text{ADG})$$

where COST OF GAIN is the cost per cwt of gain including interest (\$/cwt), and CORNP, CONV, and ADG are as defined previously.

The impacts of corn prices and animal performance on cost of gain as formulated in (3) are estimated with the following:

$$(4) \text{ COST OF GAIN}_i = \alpha_0 + \alpha_1 \text{CORNP} + \alpha_2 \text{CONV}_i + \alpha_3 \text{ADG}_i + u_i$$

where α 's are parameters to be estimated and u is a random error, and other variables are as defined previously. α_1 is expected to be positive, higher corn price increases cost, α_2 is expected to be positive, more pounds of feed per pound of gain increases cost, and α_3 is expected to be negative, higher daily gain reduces cost of gain.

Equations (2) and (4) are estimated separately for three different placement weight categories of steers to allow for differences in the impacts of these factors across weight. For example, we expect feeder cattle price to be more important for cattle placed on feed at heavier weights and feed price to be more important for lighter weight placements. These equations are also estimated separately for each of the two feedyards in the sample to determine how similar the results are across the two firms.

Coefficients of separate determination (Burt and Finley) are calculated for (2) and (4) to allocate variation in the dependent variable explained by the regression model to the individual independent variables. Coefficients of separate determination for each explanatory variable (C_j) are defined as:

$$\begin{aligned}
 C_1 &= \sum_{i=1}^n B_1 B_i r_{1i} \\
 C_2 &= \sum_{j=1}^n B_2 B_j r_{2j} \\
 &\vdots \\
 C_n &= \sum_{k=1}^n B_n B_k r_{nk}
 \end{aligned}
 \tag{5}$$

where B is the β regression coefficient times the ratio of its standard deviation to the standard deviation of the dependent variable and r is the simple correlation coefficient. The sum of the coefficients of determination equal the regression R-squared.

Data

Closeout data on 7292 pens of steers placed on feed during January 1980 through May 1991 were collected from two custom feedyards located in western Kansas. Information collected from the closeouts included placement date, feeder cattle purchase price, placement weight, days on feed, total gain, average daily gain, sale weight, feed conversion (as fed), yardage charges, feed cost, feed consumption (as fed), feeding cost per pound of gain, fed cattle sale price, and slaughter date. Only pens placed on feed weighing between 600 lbs. and 899 lbs. were used in this analysis. Numerous pens did not have feeder cattle prices reported in the closeouts. Dodge City, Kansas feeder cattle auction prices during the placement week for the appropriate cattle weight were substituted for missing feeder cattle prices. A few pens had missing fed cattle prices for which the western Kansas direct price on the sale date was used. All other data were complete.

The corn price was the average Kansas price during the feeding period (Kansas Agricultural Statistics). Interest costs were calculated on the entire feeder cost and one-half of the feeding costs for the period on feed. This assumes that the cattle producer finances all of the feed as consumed and

pays the entire feed bill when cattle are sold. Inflation was adjusted for by converting all price and cost data to January 1991 constant dollars using the monthly personal consumption expenditures implicit price deflator (U.S. Department of Commerce).

Table 1 contains summary statistics of the data. Real profits averaged from \$42/head for the two heavyweight placement groups of cattle to \$48/head for the lightest weight placements. Real profits vary considerably with coefficients of variation exceeding 100%. Figure 1 illustrates monthly average real net returns to finishing 700 to 799 lb. feeder steers over the 1980 through May 1991 placement period. As can be observed, wide swings in profitability occur regularly.

Real cost of gain averaged approximately \$62/cwt to \$65/cwt (table 1) with coefficients of variation of 23% to 24%. Monthly average cost of gain of feeding 700 to 799 lb. steers is presented in figure 2. Real cost of gain was volatile ranging from over \$90/cwt in late 1980 to \$45/cwt during the mid and late 1980s. Real costs trended downward through 1987 and ranged from the high \$40's/cwt to the low \$60's/cwt from late 1987 through May 1991. The downward shift in real costs demonstrates that relative to implicit prices of general consumer items included in the personal consumption expenditures deflator, costs of feeding cattle declined in the late 1980s. In practical terms this indicates that improvements in cattle feeding efficiency, together with declining real prices of feed grains, resulted in reduced real costs of gain.

Seasonal indexes of the real cost per cwt. of gain for the three placement weight categories over January 1980 to May 1991 placements are in figure 3. The three weight categories had similar seasonal cost of gain patterns. Steers placed on feed from February through August had below average cost of gain. Weather impacted cattle placed on feed during the fall. Steers placed in September, October, and November had above average real costs of gain for all placement weights. Cattle placed in the fall are on feed during cold, often wet, and muddy conditions which can induce health problems, poor feed conversion, and low rates of gain.

Cost of gain had seasonal components which contributed to its variability. Figure 4 depicts the seasonal index of real corn price, by placement month for steers placed between 700 and 799 lbs. Corn price trended upward to a peak in June and fell to seasonal lows during the last four months of the year.

Figure 5 illustrates the seasonal index of feed conversion by placement weight over the feeding period. Feed conversion followed the same pattern as cost of gain. Lower feed conversion results in lower cost of gain as less feed is needed for a pound of gain. Feed conversion was lowest for steers placed from February through August. Thus, poor feed conversion for cattle placed in October-November tended to more than offset seasonal feed grain price declines. Figure 6 depicts the seasonal pattern of average daily gain for each placement category over the feeding period. Average daily gain (ADG) and cost of gain, as expected, were inversely related. ADG was the highest for steers placed on feed from February through August and lowest for cattle placed September through December.

Results

Net Returns

Empirical results from estimating equation (2) for three steer placement weight categories are presented in table 2. The equations explain 93% to 94% of profit variability. The parameter estimates are all significantly different from zero at the 0.05 level and have the expected signs indicating that each factor (fed cattle price, feeder cattle price, corn price, interest rate, feed conversion, and average daily gain) is an important profit determinant.

The coefficients on fed price increase with placement weight, indicating that cattle placed on feed at heavier weights were generally fed to heavier weights. The corn price impact declines as placement weight increases because cattle placed on feed at heavier weights consume less total grain

than lightweight placements. Profitability of cattle placed at heavy weights is more dependent on feeder cattle price than grain price compared to cattle placed on feed at lighter weights.

The impact of feed conversion declines with increased placement weight reflecting the relative importance of feed efficiency for cattle placed at lighter weights. The influence of average daily gain on profitability increases with placement weight indicating the importance of rate of gain on heavier placed cattle that are on high energy finishing rations.

The coefficients of separate determination reported in table 3 provide estimates of the relative contribution of each explanatory factor on profit variability across pens and over time. Fed cattle price is the most important explanatory factor for the two lighter weight groups of steers explaining more than 40% of profit variance. Fed cattle price is the second most important factor for the 800 to 899 lb. placement category, explaining 35% of profit variance. Feeder cattle purchase price is the most important variable for heavy weight placements, explaining 44% of the total profit variability. Feeder cattle price represents the second most important variable for the two lighter weight categories. Together fed and feeder cattle prices explain from roughly 65% to 80% of the total profit variance. This emphasizes the importance cattle feeders need to place on cattle prices in developing procurement and marketing strategies and in developing budgets. In addition, cattle feeders need to manage purchase prices for heavyweight feeders more closely than for lightweight placements because the impact of purchase price on profitability increases as placement weight increases. In contrast, the impact of fed cattle price is of greater concern for producers placing lighter weight cattle because they are on feed more days allowing time for considerable fed cattle price movement.

Corn price is the third most important contributor to profit variance across all weights. The impact of corn price is considerably greater for 600 to 699 lb. placements, explaining 18% of profit variance compared to 8% for 800 to 899 lb. placements. Lighter weight placements consume considerably more total feed over the finishing period relative to heavier cattle and, as a result, their

profit is more dependent upon fluctuating corn prices. Feed conversion explains 4% to 6% of profit variance. Finally, interest rates and average daily gain combined explain roughly 2% to 4% of profit variance.

Also reported in table 3 are the coefficients of separate determination for each of the two feedyards independently. Noticeable differences in the magnitudes of coefficients of separate determination are evident across the two feedyards. For example, fed cattle price is considerably more important in explaining profit variability in yard two with as much as 73% of profit variability explained by this price. Conversely, in yard one feeder cattle price variability tends to be more important in explaining profit variance. Exactly why the differences in explanatory power for each factor is present is not apparent. Both yards had similar seasonal cattle placement patterns. Yard one had about a \$3/head higher average profit than yard two. Yard one also received approximately \$2/cwt less on average for fed cattle than yard two. This may suggest different types of cattle being placed by the two yards. Relative variabilities in prices, animal performances, and profits were similar across the two yards. These results suggest that coefficients of separate determination for profit determinants may be sensitive to the feedyard.

Feeding Cost of Gain

Estimates of the parameters of equation (4) explaining feeding cost of gain for the three placement weight categories are presented in table 4. The regression equations explain 92% to 94% of cost of gain variance. Parameter estimates are all statistically different from zero at the 0.05 level and have the expected signs.

The corn price coefficients increase as placement weight increases indicating that an increase in the price of corn increases cost of gain the most for heavier placed steers. The impact of feed conversion increases as placement weight increases illustrating the relative importance of feed efficiency on cost of gain for heavier placed steers. Conversely, the influence of average daily gain

on cost of gain decreases with placement weight indicating that the importance of rate of gain with respect to cost of may be greater for cattle placed on feed at lighter weights.

Coefficients of separate determination for cost of gain are reported in table 5. Corn price explains the greatest amount of cost of gain variance for all three placement categories. Corn price explained 63% of the variability in cost of gain for heavyweight steers and 63% of the variance in cost of gain for lightweight steers. This emphasizes the importance of corn procurement in controlling cost of gain. Feed conversion is the next most important contributor to cost of gain variance across all weight categories. The impact of conversion was the greatest for heavy placed steers indicating that they need to convert their high-cost ration as efficiently as possible. Average daily gain explained roughly 2% of cost of gain variance.

Coefficients of separate determination for cost of gain were also estimated separately for each feedyard (table 5). Consistent with combined results, corn price was overwhelmingly the most important explanatory factor for each yard explaining from 60% to 72% of total variability in cost of gain. Feed conversion was second in importance for each yard explaining 18% to 36% of total cost of gain variability. Interestingly feedyard one tended to have more variability explained by feed conversion relative to feedyard two. Conversely, feedyard two had more variability explained by corn price relative to feedyard one. Exactly why this was the case is not clear. Yard one tended to have a lower feed conversion and higher daily gain than yard two. This may be partially attributable to several factors including location (the yards are approximately 50 miles apart), types of cattle fed (we have little information on this aside from discussions with yard managers which revealed little discernable differences), and management differences. Yard differences do not appear to be related to seasonal dissimilarities in placements (both yards had similar seasonal placement patterns) or to *marked* differences in feed rations (both yards fed primarily corn-based rations).

Short Run Net Return Determinants

Results reported above are estimates of net return and cost of gain determinants across pens and over time. Parameter estimates and coefficients of separate determination indicate the impacts of these determinants over nearly a 12 year period. Over this long period, considerable price variability occurred which likely made prices more important net return determinants than they would be in the short run across a set of pens.

To determine the impact of prices and animal performance in the short run, coefficients of separate determination were calculated for each month cattle were placed on feed from January 1980 through May 1991. Only months that had at least ten pens placed across the two feedyards were included in this analysis. Because corn price was the average over the feeding period it had little or no variability across pens of similar weight placed in a month thus, it was dropped from the regressions. Similarly, the interest rate was the rate during the month cattle were placed, so it did not vary at all across cattle placed in a given month. Thus, the interest rate was also dropped from the regression. This resulted in net return being regressed against fed cattle price, feeder cattle price, feed conversion, and average daily gain.

Average coefficients of separate determination over all months for each placement weight category are reported in table 6. Fed and feeder cattle price differences were the most important net return determinants (feed conversion was slightly more important than feeder cattle for lightweight placements). Magnitudes of the coefficients of variation on fed and feeder cattle generally declined relative to those estimated over the long run and presented in table 3. As expected, feed conversion and average daily gain became much more important net return determinants in the short run explaining 11% to 21% of return variability across pens. This compares to the 1% to 6% explained in the long run analysis. Thus, in the short run, animal performance is a relatively more important net return determinant. However, cattle price variability still explains over 65% of return variability.

Conclusions

Factors contributing to cattle feeding profit and cost of gain variability were studied using closeout data from 7292 pens of steers placed on feed January 1980 to May 1991 in two western Kansas feedyards. Cattle prices explained approximately 65% to 80% of profit variability. Feeder cattle price tended to be a more important profit determinant for heavyweight cattle and fed cattle and corn prices were relatively more important for lighter weight cattle profit variability. Feed conversion and corn price explained roughly 90% of the variability in feeding cost of gain. Corn price dominated cost of gain variability for lightweight placements and feed conversion increased in relative importance with placement weight. Differences in explanatory power of profit determinants across feedyards suggests that specific results may be sensitive to the feedyard. However, general conclusions were consistent across the two yards.

As cattle feeders develop budgets they need to consider the impact of fluctuating cattle prices on profitability. Producers placing light weight cattle need to be more concerned with fed cattle sale prices than those placing heavier cattle because lighter cattle are on feed longer allowing more time for significant fed cattle price changes. Because light weight cattle consume more total grain than heavier cattle, producers placing light weight cattle should be more concerned with feed grain prices.

Producers placing cattle on feed weighing 800 lbs. or more purchase a larger percentage of the finished product relative to lighter weight placements. A larger percentage of total input costs for producers of heavy weight cattle is feeder costs (76% for 800 to 899 lb. category) relative to lighter cattle (69% for 600 to 699 lb. placements). As such, the purchase price of heavy cattle is the most important variable affecting heavy-weight cattle feeding profit. Overall, price risks represented at least 85% of cattle feeding profit variability and animal performance explained 5% to 10% of profit risk.

References

- Burt, O.R. and R.M. Finley. "Statistical Analysis of Identities in Random Variables." *American Journal of Agricultural Economics* 50(1968):733-44.
- Kansas Agricultural Statistics. *Agricultural Prices*, various issues.
- Langemeier, M., T. Schroeder, and J. Mintert. "Determinants of Cattle Finishing Profitability." *Southern Journal of Agricultural Economics* 24(1992):41-47.
- Melton, B., E. Heady, R. Willham, M. Hoffman. "The Impact of Alternative Objectives on Feedlot Rations for Beef Steers." *American Journal of Agricultural Economics*. 60(1978): 683-688.
- Nelson K., and W. Purcell. "A Comparison of Liveweight, Carcass and Lean Meat Criteria for the Feedlot Replacement Decision." *Southern Journal of Agricultural Economics*. 5(1973): 99-107.
- Swanson, E.R. and V.I. West. "Statistical Analysis of Feeder Cattle Returns." *Journal of Farm Economics* 45(1963):146-50.
- Trapp, J.N. and S.D. Cleveland. "An Analysis of the Sources of Profit Volatility in Cattle Feeding." In Proceedings of the NCR-134 Conference on Applied Commodity Price Analysis, Forecasting, and Market Risk Management, Ames, Iowa, 1989, pp. 161-176.
- U.S. Department of Agriculture. Agricultural Marketing Service, LS-214, various issues.
- U.S. Department of Commerce. *Survey of Current Business*, various issues.

Table 1. Means and Standard Deviations of Selected Steer Profits, Prices, Feeding Costs, and Performance Factors, by Placement Weight, January 1980 - May 1991.

Variable	Placement Weight					
	600/699 lbs. ^a		700/799 lbs.		800/899 lbs.	
	Mean	Coefficient of Variation %	Mean	Coefficient of Variation %	Mean	Coefficient of Variation %
Placement Weight (lbs.)	662	4	749	4	837	3
Days on Feed	146	12	127	12	116	13
Sale Weight (lbs.)	1112	5	1156	5	1215	5
Real Fed Price (\$/cwt.) ^b	86.20	12	83.01	11	82.31	10
Real Feeder Price (\$/cwt.) ^b	91.48	13	86.77	11	84.21	11
Real Corn Price (\$/bu.) ^{b,c}	3.40	29	3.19	28	3.11	28
Feed Conversion (as Fed)	8.25	11	8.29	11	8.59	12
Avg. Daily Gain (lbs.)	3.06	11	3.19	11	3.24	12
Real Cost per Cwt. Gain (\$/cwt.) ^{b,d}	65.16	24	62.39	23	63.57	23
Real Profit (\$/head) ^b	48.09	115	42.57	173	42.54	173
Observations (Pens)	1739		3815		1738	

^a Does not include cattle placed in May 1991 because of insufficient data.

^b January 1991 Dollars.

^c Average corn price over the feeding period.

^d Includes interest.

Table 2. Estimated Regression Equations of Factors Explaining Steer Feeding Profitability, by Placement Weight, January 1980 - May 1991^a.

Variable	Placement Weight		
	600/699 lbs.	700/799 lbs.	800/899 lbs.
Intercept	79.66*	62.57*	13.40
	(5.13)	(6.34)	(1.07)
Fed Price	10.10*	10.78*	11.55*
	(134.71)	(219.40)	(149.37)
Feeder Price	-6.18*	-7.37*	-8.46*
	(-89.80)	(-164.06)	(-132.98)
Corn Price	-48.63*	-43.66*	-42.85*
	(-7.26)	(-91.39)	(-61.57)
Interest Rate	-4.35*	-3.27*	-4.05*
	(-15.35)	(-17.79)	(-15.17)
Feed Conversion	-24.80*	-22.57*	-17.13*
	(-24.96)	(-35.92)	(-23.08)
Avg. Daily Gain	22.79*	24.66*	32.65*
	(9.28)	(15.86)	(16.99)
R-Squared	0.93	0.94	0.94
RMSE	20.48	18.57	17.71
Observations (Pens)	1739	3814	1738

^a t-statistics are in parentheses. * indicates significantly different from zero (one-tailed test) with 95% confidence.

Table 3. Percentage of Total Explained Steer Feeding Net Return Variability over Time Attributable to Selected Factors, by Placement Weight, January 1980 - May 1991.

Explanatory Variable	Placement Weight		
	600/699 lbs.	700/799 lbs.	800/899 lbs.
	----- % -----		
<u>Yards Combined</u>			
Fed Price	43.5	48.5	34.7
Feeder Price	22.9	28.2	43.8
Corn Price	17.8	10.2	7.6
Interest Rate	1.3	0.1	-0.0
Feed Conversion	5.6	4.3	4.8
Avg. Daily Gain	1.4	1.7	3.7
Total Explained ^a	92.5	93.7	94.2
Unexplained Variability ^b	7.5	6.3	5.8
<u>Yard One</u>			
Fed Price	25.0	36.4	30.3
Feeder Price	36.4	37.0	47.1
Corn Price	21.8	12.7	9.1
Interest Rate	1.1	0.1	-0.0
Feed Conversion	8.3	6.6	5.3
Avg. Daily Gain	1.4	1.2	2.6
Total Explained ^a	94.1	94.5	94.4
Unexplained Variability ^b	5.9	5.5	5.6
<u>Yard Two</u>			
Fed price	72.6	67.3	43.2
Feeder Price	5.0	17.0	38.1
Corn Price	11.5	6.7	5.0
Interest Rate	0.1	0.6	-0.5
Feed Conversion	3.7	2.8	5.8
Avg. Daily Gain	0.2	1.4	4.6
Total Explained ^a	94.1	95.8	96.0
Unexplained Variability ^a	5.9	4.2	4.0

^a Total percentage of variability in net return explained by variability in the explanatory variables.

^b Unexplained variability is 100 minus total explained.

Table 4. Estimated Regression Coefficients of Factors Explaining Steer Feeding Cost of Gain, January 1980 - May 1991.^a

Variable	Placement Weight		
	600/699 lbs.	700/799 lbs.	800/899 lbs.
Intercept	-30.33*	-26.19*	-26.39*
	(-9.81)	(-14.25)	(-11.11)
Corn Price	11.94*	12.03*	12.63*
	(106.61)	(181.29)	(125.89)
Feed Conversion	7.53*	6.73*	6.61*
	(35.81)	(56.31)	(45.40)
Avg. Daily Gain	-2.35*	-1.78*	-1.86*
	(-4.51)	(-5.90)	(-4.82)
R-Squared	0.92	0.94	0.94
RMSE	4.37	3.62	3.56
Observations (Pens)	1739	3815	1738

^a t-statistics are in parentheses. * indicates significantly different from zero (two-tailed test) with 99% confidence.

Table 5. Percentage of Total Explained Steer Feeding Cost of Gain Variability Over Time Attributable to Selected Factors, by Placement Weight, January 1980-May 1991.

Explanatory Variable	Placement Weight		
	600/699 lbs.	700/799 lbs.	800/899 lbs.
<u>Yards Combined</u>	----- % -----		
Corn Price	63.4	66.2	62.6
Feed Conversion	26.5	25.3	29.0
Avg. Daily Gain	2.2	1.9	2.5
Total Explained ^a	92.0	93.5	94.1
Unexplained Variability ^a	8.0	6.5	5.9
<u>Yard One</u>			
Corn Price	61.2	65.5	60.0
Feed Conversion	35.0	30.9	35.9
Avg. Daily Gain	-0.1	-0.0	0.6
Total Explained ^a	95.5	96.2	96.4
Unexplained Variability ^a	4.5	3.8	3.6
<u>Yard Two</u>			
Corn Price	72.2	69.7	68.7
Feed Conversion	17.9	22.3	23.0
Avg. Daily Gain	3.4	2.5	2.8
Total Explained ^a	93.6	94.4	94.5
Unexplained Variability ^a	6.4	5.6	5.5

^a Total explained variability is cost of gain variability explained by the explanatory variables.

^b Unexplained variability is 100 minus total explained.

Table 6. Monthly Average Percentage of Explained Steer Feeding Net Return Variability Attributable to Selected Factors, by Placement Weight, January 1980 - May 1991.

Explanatory Variable	Placement Weight		
	600/699 lbs.	700/799 lbs.	800/899 lbs.
	----- % -----		
Fed Price	35.6 (28.9)	43.7 (26.9)	41.5 (29.8)
Feeder Price	18.2 (24.3)	20.5 (23.4)	24.1 (25.5)
Feed Conversion	21.4 (21.3)	13.8 (16.1)	11.5 (14.5)
Avg. Daily Gain	13.5 (17.8)	11.2 (12.4)	16.3 (17.0)
Total Explained ^b	88.7 (10.4)	89.2 (8.9)	93.3 (6.3)
Unexplained Variability ^c	11.3	10.8	6.7

^a Standard errors are reported in parentheses.

^b Total percentage of variability in net return explained by variability in the explanatory variables.

^c Unexplained variability is 100 minus total explained.

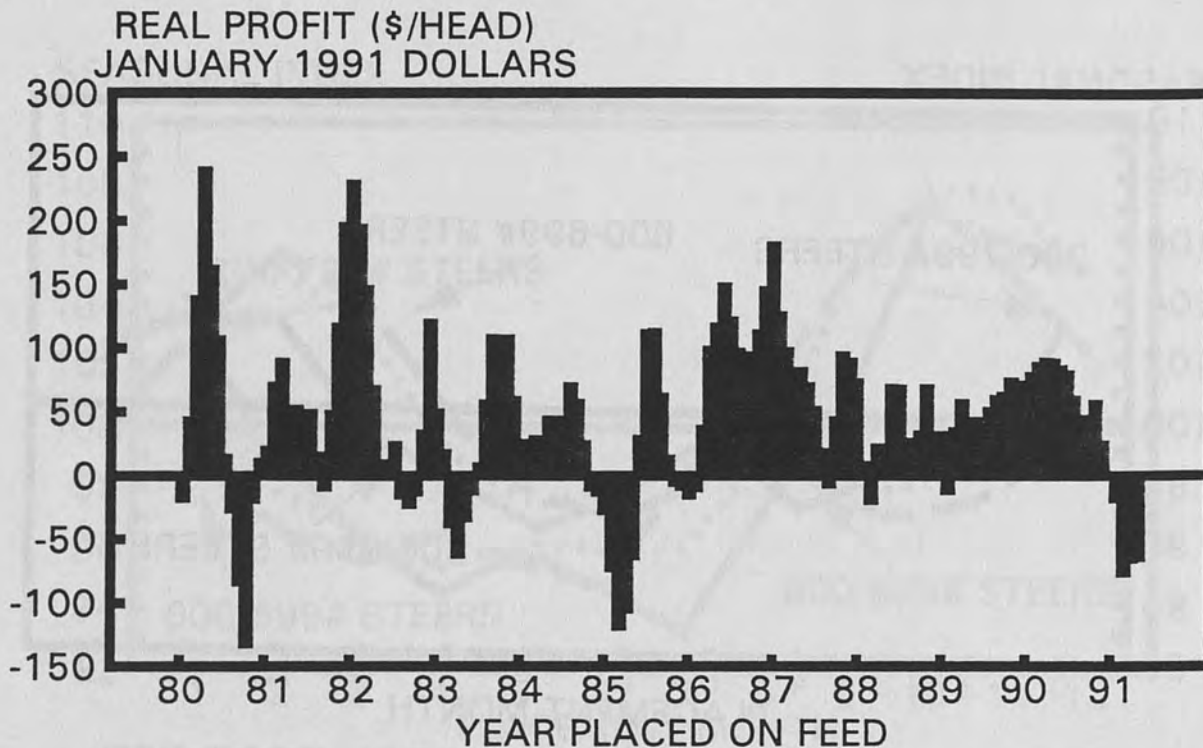


FIGURE 1. MONTHLY AVERAGE PROFIT PER HEAD FOR 700 TO 799 LB. STEERS, PLACED ON FEED JANUARY 1980 THROUGH MAY 1991.

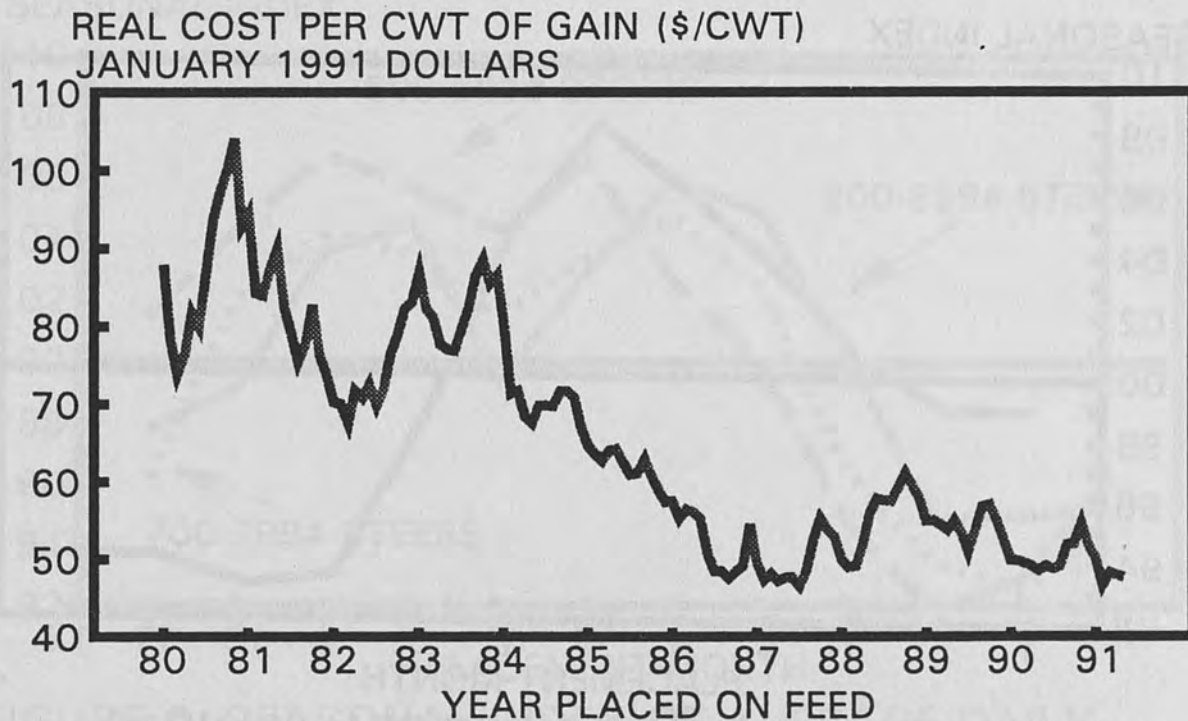


FIGURE 2. MONTHLY AVERAGE COST PER CWT. OF GAIN FOR 700 TO 799 LB. STEERS, PLACED ON FEED JANUARY 1980 THROUGH MAY 1991.

SEASONAL INDEX

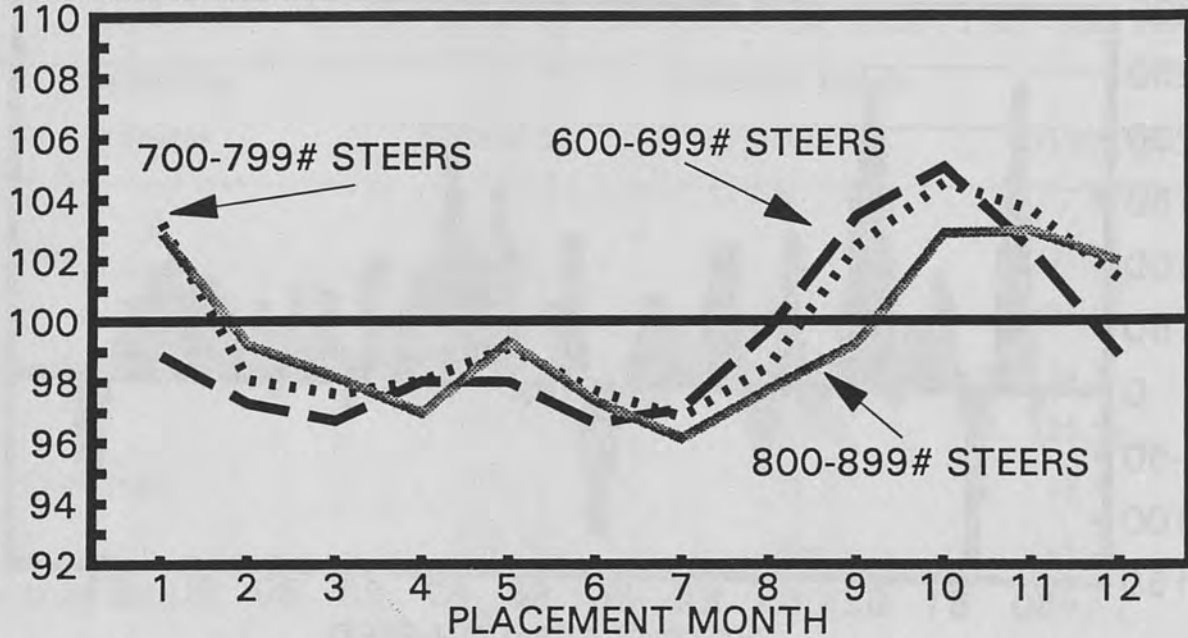


FIGURE 3. SEASONAL INDEX OF REAL COST PER CWT. OF GAIN, BY PLACEMENT WEIGHT, FOR STEERS PLACED ON FEED JANUARY 1980 THROUGH MAY 1991.

SEASONAL INDEX

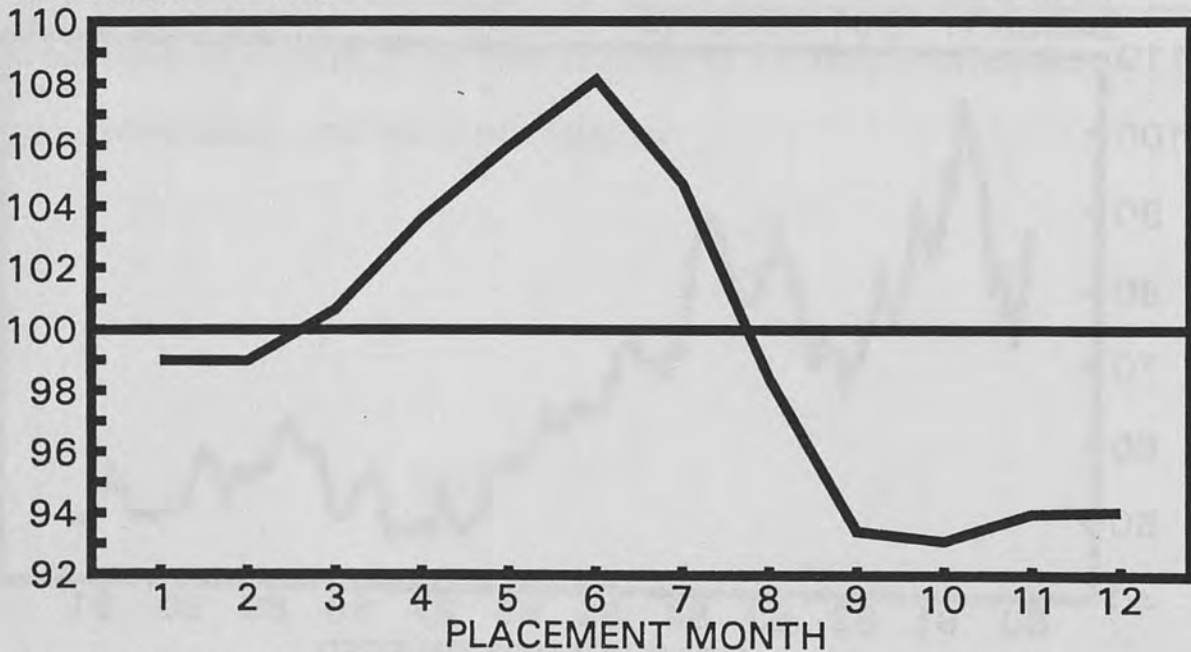


FIGURE 4. SEASONAL INDEX OF REAL KANSAS CORN PRICE, BY PLACEMENT MONTH FOR 700 TO 799 LB. STEERS FROM JANUARY 1980 THROUGH MAY 1991.

SEASONAL INDEX

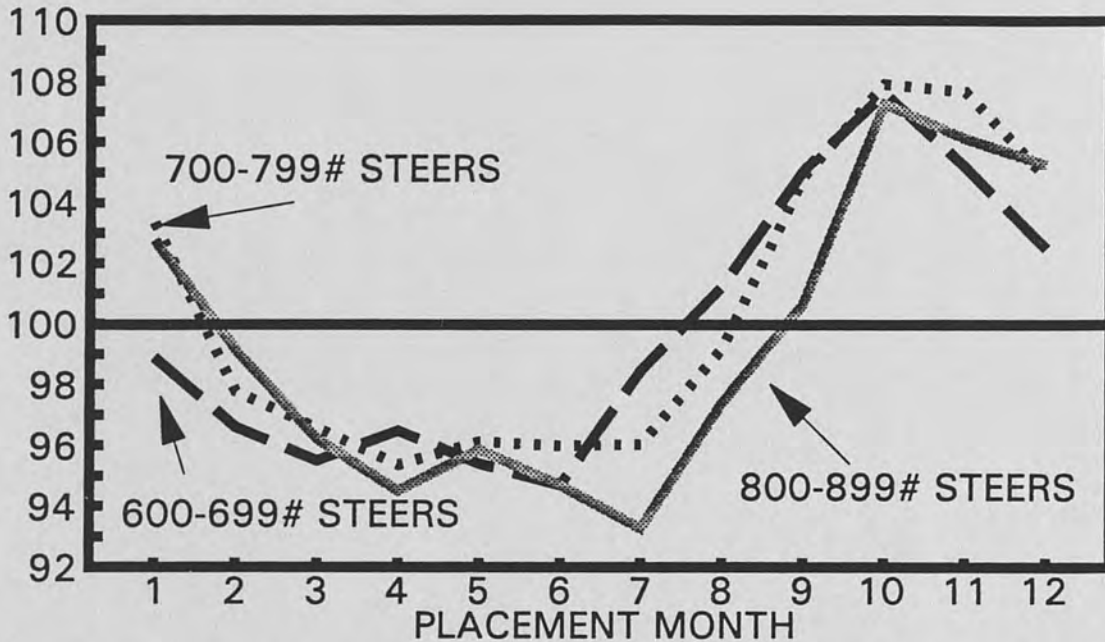


FIGURE 5. SEASONAL INDEX OF FEED CONVERSION, BY PLACEMENT WEIGHT, FOR STEERS PLACED ON FEED FROM JANUARY 1980 THROUGH MAY 1991.

SEASONAL INDEX

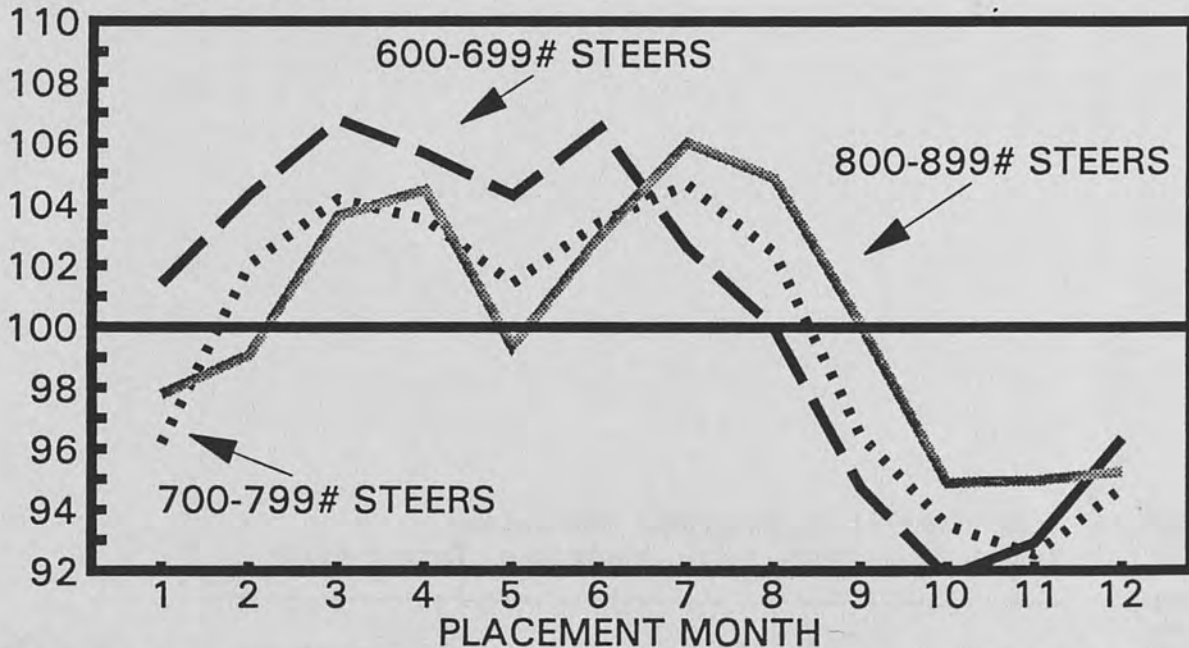


FIGURE 6. SEASONAL INDEX OF AVERAGE DAILY GAIN, BY PLACEMENT WEIGHT, FOR STEERS PLACED ON FEED FROM JANUARY 1980 THROUGH MAY 1991.

SEASONAL INDEX

SEASONAL INDEX

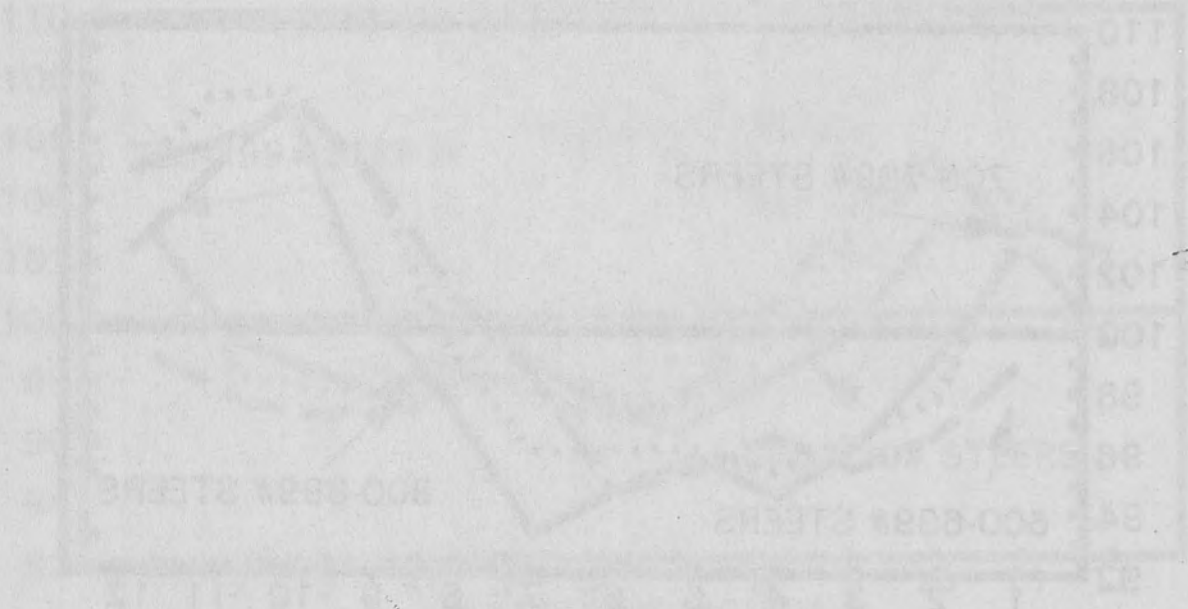
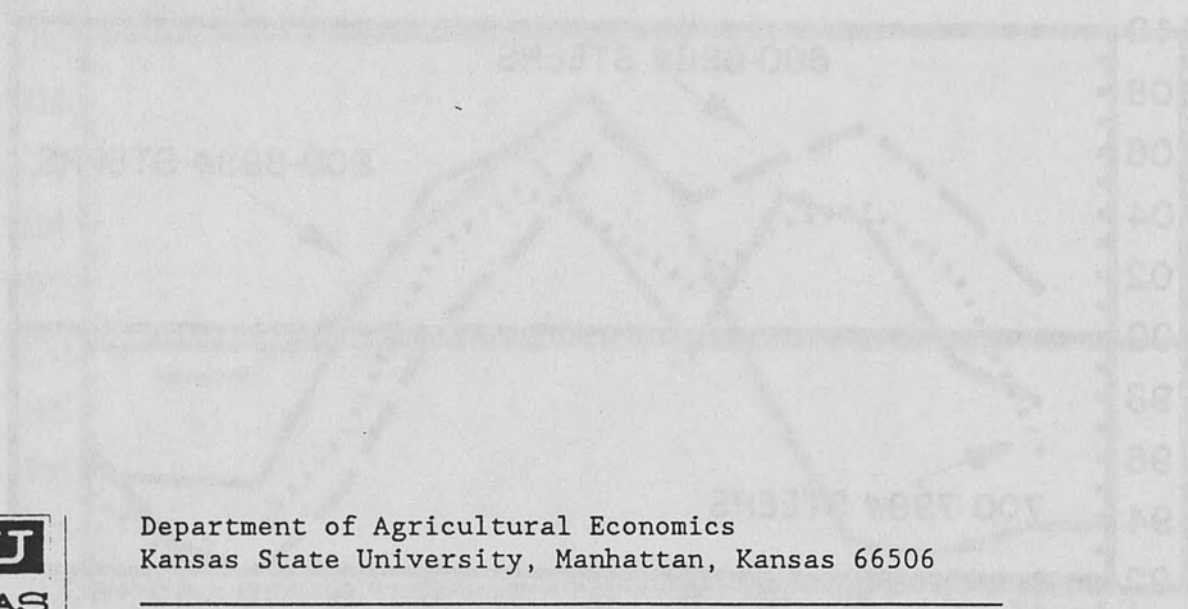


FIGURE 2. SEASONAL INDEX OF FEED PLACEMENT BY PLACEMENT WEIGHT, FOR STEERS PLACED ON FEED FROM JANUARY 1980 THROUGH MAY 1981.

SEASONAL INDEX



Department of Agricultural Economics
Kansas State University, Manhattan, Kansas 66506

Publications and public meetings by the Department of Agricultural Economics are available and open to the public regardless of race, sex, national origin, handicap, religion, age, sexual orientation, or other non-merit reasons.



