0x Guard

Smart contracts security assessment

Final report

Champion Finance EVIC

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▢ Contents

🛡 Introduction

The report has been prepared for Champion Finance.

The Champion Finance Protocol allows users to farm EVICTokens. The EVICToken is a rebase tokens. The EVICToken owner (taxOffice) can set fee on token trading.

Contracts EvicTreasury and EvicBoardroom allow keeping a stable price of the EVICToken using rebase mechanism.

The code is available at the GitHub [repository](#) and was audited after the commit [9a66fa1228782f3453473e5fa26148722657a48e](#).

Report Update.

The contracts code was updated according to this report and rechecked after the commit [9c35b7ac0cf1848cdd1a45cc1efac16b84c7ce9a](#).

 Only 4 contracts with its dependencies were audited: EVICToken, EVICGenesis, EVICBoardroomV2, EVICTreasuryV2.sol.

Name	Champion Finance EVIC
Audit date	2022-08-24 - 2022-09-05
Language	Solidity
Platform	Avalanche Network

🛡 Contracts checked

Name	Address
EVICToken	
EVICGenesis	
EVICBoardroomV2	

EVICTreasuryV2

🛡 Procedure

We perform our audit according to the following procedure:

Automated analysis

- Scanning the project's smart contracts with several publicly available automated Solidity analysis tools
- Manual verification (reject or confirm) all the issues found by the tools

Manual audit

- Manually analyze smart contracts for security vulnerabilities
- Smart contracts' logic check

🛡 Known vulnerabilities checked

Title	Check result
Unencrypted Private Data On-Chain	passed
Code With No Effects	passed
Message call with hardcoded gas amount	passed
Typographical Error	passed
DoS With Block Gas Limit	passed
Presence of unused variables	passed
Incorrect Inheritance Order	passed
Requirement Violation	passed
Weak Sources of Randomness from Chain Attributes	passed

Shadowing State Variables	passed
Incorrect Constructor Name	passed
Block values as a proxy for time	passed
Authorization through tx.origin	passed
DoS with Failed Call	passed
Delegatecall to Untrusted Callee	passed
Use of Deprecated Solidity Functions	passed
Assert Violation	passed
State Variable Default Visibility	passed
Reentrancy	passed
Unprotected SELFDESTRUCT Instruction	passed
Unprotected Ether Withdrawal	passed
Unchecked Call Return Value	passed
Floating Pragma	passed
Outdated Compiler Version	passed
Integer Overflow and Underflow	passed
Function Default Visibility	passed

🛡 Classification of issue severity

High severity   High severity issues can cause a significant or full loss of funds, change of contract ownership, major interference with contract logic. Such issues require immediate attention.

Medium severity   Medium severity issues do not pose an immediate risk, but can be detrimental to the client's reputation if exploited. Medium severity issues may lead to a contract failure and can be fixed by modifying the contract state or redeployment. Such issues require attention.

Low severity   Low severity issues do not cause significant destruction to the contract's functionality. Such issues are recommended to be taken into consideration.

🛡 Issues

High severity issues

1. Blacklist (EVICToken)
Status: Fixed

The contract owner (`taxOffice`) has the ability to block any user by adding him to blacklist (`addToBlackList()`). This is not fair, since users who have invested in the project may be blocked simply at the request of the owner.

Also this functionality can be used for rugpull.

Recommendation: It is necessary to restrict the owner's rights to use the blacklist functionality.

2. Changing oracle (EVICToken)
Status: Fixed

The contract operator can change the implementation of the oracle using the `setTokenOracle()` function. This can lead to a completely different calculation of the weighted token price.

```
function setTokenOracle(address _oracle) external onlyOperator {
    oracle = _oracle;
}
```

Recommendation: Restrict the operator's (owner) ability to change the oracle contract address.

3. Unlimited tax parameters (EVICToken)
Status: Fixed

The contract admin (`taxOffice`) is able to set `taxRateAfterRebase` for 100% (or even more) and to set a huge value of `timeTaxAfterRebase`.

Recommendation: Add validation for parameters of the `setTaxRateAfterRebase()`, `setTimeTaxAfterRebase()` functions.

Medium severity issues

1. Fee checking (EVICToken)
Status: Fixed

The tax fee amount should be checked in the `setTaxTiersRate()` function instead of being checked during token transfers in the `calculateTaxRate()` function (L425). Because users will not be able to transfer tokens due to an admin mistake.

Recommendation: We recommend replacing `taxTiersRates` check into `setTaxTiersRate()` function.

Low severity issues

1. Redundant check of the uint variable (EVICToken)
Status: Fixed

There are checks for `uint` value in L435 and L450.

```
require(_index >= 0, "Index has to be higher than 0");
```

This check does nothing because `uint` value >= 0 by default.

Recommendation: Check the logic of the functions, and make sure these checks are necessary. Perhaps there was supposed to be a different functionality.

2. Gas optimization (EVICToken)
Status: Open

The vilibility of the `setMarketLpPairs()` function can be changed to external to save gas.

3. Non-validated values (EVICBoardroomV2)
Status: Fixed

The setWithdrawLockupEpoch() and setRewardLockupEpoch() functions have been added to the updated code.

Consider adding validation for the input parameters of these functions. Because some users may not have time to use the claim functions.

4. Payouts to funds over 100% (EVICTreasuryV2)
Status: Open

The contract operator can set 99% reward amount for each fund: daoFundSharedPercent and polFundSharedPercent.

Also, together their sum can exceed 100% (up to 198%). Thus, the function _sendToBoardroom() will always fail and block part of the project, because fund payments will exceed _amount (L337).

```
function _sendToBoardroom(uint256 _amount) internal {
    IEVICToken mainTokenErc20 = IEVICToken(mainToken);
    mainTokenErc20.mint(address(this), _amount);

    uint256 _daoFundSharedAmount = _amount.mul(daoFundSharedPercent).div(100);
    address daoFund = mainTokenErc20.getDaoFund();
    mainTokenErc20.transfer(daoFund, _daoFundSharedAmount);
    emit DaoFundFunded(block.timestamp, _daoFundSharedAmount);

    uint256 _polFundSharedAmount = _amount.mul(polFundSharedPercent).div(100);
    address polFund = mainTokenErc20.getPolWallet();
    mainTokenErc20.transfer(polFund, _polFundSharedAmount);
    emit PolFundFunded(block.timestamp, _polFundSharedAmount);

    _amount = _amount.sub(_daoFundSharedAmount).sub(_polFundSharedAmount);
    ...
}
```

Recommendation: It is necessary to decrease the validation threshold (current value is 100) of the setDaoFundSharedPercent(), setPolFundSharedPercent() functions.

```
require(_value < 100, 'Treasury: Max percent is 100%');
```

Update: In the updated code the contract operator can set 50% reward amount for each fund: daoFundSharedPercent and polFundSharedPercent (in total 100%). This means that all awards will go to these funds. And there will be nothing left for the all boardroom contracts.

Consider the possibility of lowering the total payment to the funds.

The severity of the issue has been lowered in the update.

⛊ Conclusion

Champion Finance EVIC EVICToken, EVICGenesis, EVICBoardroomV2, EVICTreasuryV2 contracts were audited. 3 high, 1 medium, 4 low severity issues were found.
3 high, 1 medium, 2 low severity issues have been fixed in the update.

According to this report 3 high, 1 medium and 2 low issues were fixed by the Champion Finance team.

We strongly recommend writing unit tests to have extensive coverage of the codebase minimize the possibility of bugs and ensure that everything works as expected.

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🛡 Slither's output

```
EVICTreasuryV2._sendToBoardroom(uint256) (contracts/EVICTreasuryV2.sol#323-361) ignores
return value by mainTokenErc20.transfer(daoFund,_daoFundSharedAmount) (contracts/
EVICTreasuryV2.sol#329)
EVICTreasuryV2._sendToBoardroom(uint256) (contracts/EVICTreasuryV2.sol#323-361) ignores
return value by mainTokenErc20.transfer(polFund,_polFundSharedAmount) (contracts/
EVICTreasuryV2.sol#334)
EVICTreasuryV2._sendToBoardroom(uint256) (contracts/EVICTreasuryV2.sol#323-361) ignores
return value by mainTokenErc20.transfer(daoFund,daoFundReward) (contracts/
EVICTreasuryV2.sol#355)
EmergencyWithdraw.emergencyWithdrawTokenBalance(address,address,uint256) (contracts/
utils/EmergencyWithdraw.sol#45-52) ignores return value by erc20.transfer(_to,_amount)
(contracts/utils/EmergencyWithdraw.sol#51)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#unchecked-
transfer


EVICTreasuryV2.getEstimatedReward(uint256) (contracts/EVICTreasuryV2.sol#299-321)
performs a multiplication on the result of a division:
        -estimatedReward = mainTokenTotalSupply.mul(percentage).div(10000) (contracts/
EVICTreasuryV2.sol#304)
        -estimatedReward = estimatedReward.mul(expansionRate).div(10000) (contracts/
EVICTreasuryV2.sol#308)
EVICTreasuryV2.getEstimatedReward(uint256) (contracts/EVICTreasuryV2.sol#299-321)
performs a multiplication on the result of a division:
        -estimatedReward = estimatedReward.mul(expansionRate).div(10000) (contracts/
EVICTreasuryV2.sol#308)
        -_daoFundSharedAmount = estimatedReward.mul(daoFundSharedPercent).div(100)
(contracts/EVICTreasuryV2.sol#314)
EVICTreasuryV2.getEstimatedReward(uint256) (contracts/EVICTreasuryV2.sol#299-321)
performs a multiplication on the result of a division:
        -estimatedReward = estimatedReward.mul(expansionRate).div(10000) (contracts/
EVICTreasuryV2.sol#308)
        -_polFundSharedAmount = estimatedReward.mul(polFundSharedPercent).div(100)
(contracts/EVICTreasuryV2.sol#315)
EVICTreasuryV2.getEstimatedReward(uint256) (contracts/EVICTreasuryV2.sol#299-321)
performs a multiplication on the result of a division:
        -estimatedReward = estimatedReward.mul(expansionRate).div(10000) (contracts/
EVICTreasuryV2.sol#308)
```

```
        -estimatedReward.mul(boardroomPool.allocPoint).div(totalAllocPoint) (contracts/
EVICTreasuryV2.sol#320)
EVICTreasuryV2.allocateSeigniorage() (contracts/EVICTreasuryV2.sol#398-449) performs a
multiplication on the result of a division:
        -_savedForBoardroom = mainTokenTotalSupply.mul(_percentage).div(10000)
(contracts/EVICTreasuryV2.sol#409)
        -_savedForBoardroom = _savedForBoardroom.mul(expansionRate).div(10000)
(contracts/EVICTreasuryV2.sol#414)
EVICTreasuryV2.computeSupplyDelta() (contracts/EVICTreasuryV2.sol#451-464) performs a
multiplication on the result of a division:
        -rebasePercentage = targetRate.sub(rate).mul(ONE).div(targetRate) (contracts/
EVICTreasuryV2.sol#458)
        -supplyDelta =
mathRound(getMainTokenCirculatingSupply().mul(rebasePercentage).div(ONE)) (contracts/
EVICTreasuryV2.sol#463)
EVICTreasuryV2.mathRound(uint256) (contracts/EVICTreasuryV2.sol#466-474) performs a
multiplication on the result of a division:
        -valueFloor = _value.div(midpointRounding).mul(midpointRounding) (contracts/
EVICTreasuryV2.sol#467)
EVICGenesis.pending(uint256,address) (contracts/distribution/EVICGenesis.sol#167-183)
performs a multiplication on the result of a division:
        -_evicTokenReward = _generatedReward.mul(pool.allocPoint).div(totalAllocPoint)
(contracts/distribution/EVICGenesis.sol#174)
        -accEVICTokenPerShare =
accEVICTokenPerShare.add(_evicTokenReward.mul(1e18).div(tokenSupply)) (contracts/
distribution/EVICGenesis.sol#175)
EVICGenesis.updatePool(uint256) (contracts/distribution/EVICGenesis.sol#228-248)
performs a multiplication on the result of a division:
        -_evicTokenReward = _generatedReward.mul(pool.allocPoint).div(totalAllocPoint)
(contracts/distribution/EVICGenesis.sol#244)
        -pool.accEVICTokenPerShare =
pool.accEVICTokenPerShare.add(_evicTokenReward.mul(1e18).div(tokenSupply)) (contracts/
distribution/EVICGenesis.sol#245)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#divide-before-
multiply


EVICGenesis.updatePool(uint256) (contracts/distribution/EVICGenesis.sol#228-248) uses a
dangerous strict equality:
        - tokenSupply == 0 (contracts/distribution/EVICGenesis.sol#234)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#dangerous-
strict-equalities
```

```
Reentrancy in EVICTreasuryV2._rebase(uint256) (contracts/EVICTreasuryV2.sol#476-495):
        External calls:
        - newTotalSupply = IEVICToken(mainToken).rebase(epoch,supplyDelta,negative)
(contracts/EVICTreasuryV2.sol#488)
        State variables written after the call(s):
        - previousEpoch = epoch (contracts/EVICTreasuryV2.sol#490)
Reentrancy in EVICTreasuryV2.initialize(address,address,uint256) (contracts/
EVICTreasuryV2.sol#193-219):
        External calls:
        - IEVICToken(mainToken).grantRebaseExclusion(address(this)) (contracts/
EVICTreasuryV2.sol#213)
        State variables written after the call(s):
        - initialized = true (contracts/EVICTreasuryV2.sol#215)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#reentrancy-
vulnerabilities-1


EVICToken.calculateTaxRate(uint256) (contracts/EVICToken.sol#440-454) contains a
tautology or contradiction:
        - tierId >= 0 (contracts/EVICToken.sol#446)
EVICTreasuryV2.calculateMaxSupplyExpansionPercent(uint256) (contracts/
EVICTreasuryV2.sol#363-380) contains a tautology or contradiction:
        - tierId >= 0 (contracts/EVICTreasuryV2.sol#372)
EVICTreasuryV2.calculateExpansionRate(uint256) (contracts/EVICTreasuryV2.sol#382-396)
contains a tautology or contradiction:
        - tierId >= 0 (contracts/EVICTreasuryV2.sol#388)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#tautology-or-
contradiction


EVICTreasuryV2.getTwapPrice().price (contracts/EVICTreasuryV2.sol#186) is a local
variable never initialized
EVICTreasuryV2.calculateExpansionRate(uint256).expansionRate (contracts/
EVICTreasuryV2.sol#383) is a local variable never initialized
EVICToken._getTokenPrice()._price (contracts/EVICToken.sol#413) is a local variable
never initialized
EVICTreasuryV2.calculateMaxSupplyExpansionPercent(uint256).maxSupplyExpansionPercent
(contracts/EVICTreasuryV2.sol#367) is a local variable never initialized
EVICTreasuryV2.getMainTokenPrice().price (contracts/EVICTreasuryV2.sol#178) is a local
variable never initialized
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#uninitialized-
local-variables
```

EVICToken._getTokenPrice() (contracts/EVICToken.sol#412-418) ignores return value by
IOracle(oracle).consult(address(this),1e18) (contracts/EVICToken.sol#413-417)
EVICTreasuryV2.getMainTokenPrice() (contracts/EVICTreasuryV2.sol#177-183) ignores
return value by IOracle(oracle).consult(mainToken,1e18) (contracts/
EVICTreasuryV2.sol#178-182)
EVICTreasuryV2.getTwapPrice() (contracts/EVICTreasuryV2.sol#185-191) ignores return
value by IOracle(oracle).twap(mainToken,1e18) (contracts/EVICTreasuryV2.sol#186-190)
EVICTreasuryV2._sendToBoardroom(uint256) (contracts/EVICTreasuryV2.sol#323-361) ignores
return value by mainTokenErc20.mint(address(this),_amount) (contracts/
EVICTreasuryV2.sol#325)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#unused-return

EVICGenesis.add(uint256,IERC20,uint256) (contracts/distribution/
EVICGenesis.sol#112-139) should emit an event for:
        - totalAllocPoint = totalAllocPoint.add(_allocPoint) (contracts/distribution/
EVICGenesis.sol#137)
EVICGenesis.set(uint256,uint256) (contracts/distribution/EVICGenesis.sol#142-150)
should emit an event for:
        - totalAllocPoint = totalAllocPoint.sub(pool.allocPoint).add(_allocPoint)
(contracts/distribution/EVICGenesis.sol#146)
EVICGenesis.setPoolStartTime(uint256) (contracts/distribution/EVICGenesis.sol#349-356)
should emit an event for:
        - poolStartTime = _poolStartTime (contracts/distribution/EVICGenesis.sol#353)
        - poolEndTime = poolStartTime + runningTime (contracts/distribution/
EVICGenesis.sol#354)
        - lastAirdropRewardTime = poolStartTime (contracts/distribution/
EVICGenesis.sol#355)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#missing-events-
arithmetic

EVICBoardroomV2.setOperator(address)._operator (contracts/EVICBoardroomV2.sol#155)
lacks a zero-check on :
                - operator = _operator (contracts/EVICBoardroomV2.sol#156)
EVICTreasuryV2.setOperator(address)._operator (contracts/EVICTreasuryV2.sol#221) lacks
a zero-check on :
                - operator = _operator (contracts/EVICTreasuryV2.sol#222)
EmergencyWithdraw.emergencyWithdrawEthBalance(address,uint256)._to (contracts/utils/
EmergencyWithdraw.sol#28) lacks a zero-check on :
                - address(_to).transfer(_amount) (contracts/utils/
EmergencyWithdraw.sol#29)

Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#missing-zero-address-validation

EVICTreasuryV2.setWithdrawLockupEpoch(uint256) (contracts/EVICTreasuryV2.sol#539-544) has external calls inside a loop:
IBoardroom(boardroomInfo[pid].boardroom).setWithdrawLockupEpoch(_value) (contracts/EVICTreasuryV2.sol#542)
EVICTreasuryV2.setRewardLockupEpoch(uint256) (contracts/EVICTreasuryV2.sol#546-551) has external calls inside a loop:
IBoardroom(boardroomInfo[pid].boardroom).setRewardLockupEpoch(_value) (contracts/EVICTreasuryV2.sol#549)
EVICGenesis.updatePool(uint256) (contracts/distribution/EVICGenesis.sol#228-248) has external calls inside a loop: tokenSupply = pool.token.balanceOf(address(this)) (contracts/distribution/EVICGenesis.sol#233)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation/#calls-inside-a-loop

Variable 'EVICToken._getTokenPrice()._price (contracts/EVICToken.sol#413)' in EVICToken._getTokenPrice() (contracts/EVICToken.sol#412-418) potentially used before declaration: uint256(_price) (contracts/EVICToken.sol#414)
Variable 'EVICTreasuryV2.getMainTokenPrice().price (contracts/EVICTreasuryV2.sol#178)' in EVICTreasuryV2.getMainTokenPrice() (contracts/EVICTreasuryV2.sol#177-183) potentially used before declaration: uint256(price) (contracts/EVICTreasuryV2.sol#179)
Variable 'EVICTreasuryV2.getTwapPrice().price (contracts/EVICTreasuryV2.sol#186)' in EVICTreasuryV2.getTwapPrice() (contracts/EVICTreasuryV2.sol#185-191) potentially used before declaration: uint256(price) (contracts/EVICTreasuryV2.sol#187)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#pre-declaration-usage-of-local-variables

Reentrancy in EVICTreasuryV2._rebase(uint256) (contracts/EVICTreasuryV2.sol#476-495):
        External calls:
        - newTotalSupply = IEVICToken(mainToken).rebase(epoch,supplyDelta,negative) (contracts/EVICTreasuryV2.sol#488)
        State variables written after the call(s):
        - epochRebases.push(epoch) (contracts/EVICTreasuryV2.sol#491)
Reentrancy in EVICToken._transfer(address,address,uint256) (contracts/EVICToken.sol#327-359):
        External calls:
        - _updatePrice() (contracts/EVICToken.sol#343)
                - IOracle(oracle).update() (contracts/EVICToken.sol#421-423)
        State variables written after the call(s):

```
              - _transferBase(from,polWallet,taxAmount) (contracts/EVICToken.sol#354)
                      - _balances[from] = _balances[from].sub(gonValue) (contracts/
EVICToken.sol#320)
                      - _balances[to] = _balances[to].add(gonValue) (contracts/
EVICToken.sol#321)
          - _transferBase(from,to,amount) (contracts/EVICToken.sol#358)
                      - _balances[from] = _balances[from].sub(gonValue) (contracts/
EVICToken.sol#320)
                      - _balances[to] = _balances[to].add(gonValue) (contracts/
EVICToken.sol#321)
Reentrancy in EVICTreasuryV2.allocateSeigniorage() (contracts/
EVICTreasuryV2.sol#398-449):
        External calls:
        - _updatePrice() (contracts/EVICTreasuryV2.sol#399)
                - IOracle(oracle).update() (contracts/EVICTreasuryV2.sol#290-292)
        State variables written after the call(s):
        - previousEpochMainPrice = getMainTokenPrice() (contracts/
EVICTreasuryV2.sol#401)
        - totalEpochAbovePeg = totalEpochAbovePeg.add(1) (contracts/
EVICTreasuryV2.sol#403)
Reentrancy in EVICTreasuryV2.initialize(address,address,uint256) (contracts/
EVICTreasuryV2.sol#193-219):
        External calls:
        - IEVICToken(mainToken).grantRebaseExclusion(address(this)) (contracts/
EVICTreasuryV2.sol#213)
        State variables written after the call(s):
        - operator = msg.sender (contracts/EVICTreasuryV2.sol#216)
Reentrancy in EVICToken.transferFrom(address,address,uint256) (contracts/
EVICToken.sol#379-387):
        External calls:
        - _transfer(sender,recipient,amount) (contracts/EVICToken.sol#384)
                - IOracle(oracle).update() (contracts/EVICToken.sol#421-423)
        State variables written after the call(s):
        - _approve(sender,_msgSender(),allowance(sender,_msgSender()).sub(amount,ERC20:
transfer amount exceeds allowance)) (contracts/EVICToken.sol#385)
                - _allowances[owner][spender] = amount (contracts/EVICToken.sol#303)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#reentrancy-
vulnerabilities-2


Reentrancy in EVICTreasuryV2._rebase(uint256) (contracts/EVICTreasuryV2.sol#476-495):
        External calls:
```

```
        - newTotalSupply = IEVICToken(mainToken).rebase(epoch,supplyDelta,negative)
(contracts/EVICTreasuryV2.sol#488)
        Event emitted after the call(s):
        - LogRebase(epoch,supplyDelta,targetRate,_oldPrice,newTotalSupply,oldTotalSupply
,block.timestamp) (contracts/EVICTreasuryV2.sol#494)
Reentrancy in EVICTreasuryV2._sendToBoardroom(uint256) (contracts/
EVICTreasuryV2.sol#323-361):
        External calls:
        - mainTokenErc20.mint(address(this),_amount) (contracts/EVICTreasuryV2.sol#325)
        - mainTokenErc20.transfer(daoFund,_daoFundSharedAmount) (contracts/
EVICTreasuryV2.sol#329)
        Event emitted after the call(s):
        - DaoFundFunded(block.timestamp,_daoFundSharedAmount) (contracts/
EVICTreasuryV2.sol#330)
Reentrancy in EVICTreasuryV2._sendToBoardroom(uint256) (contracts/
EVICTreasuryV2.sol#323-361):
        External calls:
        - mainTokenErc20.mint(address(this),_amount) (contracts/EVICTreasuryV2.sol#325)
        - mainTokenErc20.transfer(daoFund,_daoFundSharedAmount) (contracts/
EVICTreasuryV2.sol#329)
        - mainTokenErc20.transfer(polFund,_polFundSharedAmount) (contracts/
EVICTreasuryV2.sol#334)
        Event emitted after the call(s):
        - BoardroomFunded(block.timestamp,_amount) (contracts/EVICTreasuryV2.sol#360)
        - PolFundFunded(block.timestamp,_polFundSharedAmount) (contracts/
EVICTreasuryV2.sol#335)
Reentrancy in EVICToken._transfer(address,address,uint256) (contracts/
EVICToken.sol#327-359):
        External calls:
        - _updatePrice() (contracts/EVICToken.sol#343)
                - IOracle(oracle).update() (contracts/EVICToken.sol#421-423)
        Event emitted after the call(s):
        - Transfer(from,to,amount) (contracts/EVICToken.sol#322)
                - _transferBase(from,polWallet,taxAmount) (contracts/EVICToken.sol#354)
        - Transfer(from,to,amount) (contracts/EVICToken.sol#322)
                - _transferBase(from,to,amount) (contracts/EVICToken.sol#358)
Reentrancy in EVICTreasuryV2.addBoardroom(address,uint256) (contracts/
EVICTreasuryV2.sol#233-239):
        External calls:
        - IEVICToken(mainToken).grantRebaseExclusion(_boardroom) (contracts/
EVICTreasuryV2.sol#237)
```

```
        Event emitted after the call(s):
        - AddBoardroom(msg.sender,_boardroom,_allocPoint) (contracts/
EVICTreasuryV2.sol#238)
Reentrancy in EVICBoardroomV2.allocateSeigniorage(uint256) (contracts/
EVICBoardroomV2.sol#249-262):
        External calls:
        - rewardToken.safeTransferFrom(msg.sender,address(this),amount) (contracts/
EVICBoardroomV2.sol#260)
        Event emitted after the call(s):
        - RewardAdded(msg.sender,amount) (contracts/EVICBoardroomV2.sol#261)
Reentrancy in EVICBoardroomV2.claimReward() (contracts/EVICBoardroomV2.sol#238-247):
        External calls:
        - rewardToken.safeTransfer(msg.sender,reward) (contracts/
EVICBoardroomV2.sol#244)
        Event emitted after the call(s):
        - RewardPaid(msg.sender,reward) (contracts/EVICBoardroomV2.sol#245)
Reentrancy in EVICGenesis.emergencyWithdraw(uint256) (contracts/distribution/
EVICGenesis.sol#339-347):
        External calls:
        - pool.token.safeTransfer(msg.sender,_amount) (contracts/distribution/
EVICGenesis.sol#345)
        Event emitted after the call(s):
        - EmergencyWithdraw(msg.sender,_pid,_amount) (contracts/distribution/
EVICGenesis.sol#346)
Reentrancy in EVICTreasuryV2.initialize(address,address,uint256) (contracts/
EVICTreasuryV2.sol#193-219):
        External calls:
        - IEVICToken(mainToken).grantRebaseExclusion(address(this)) (contracts/
EVICTreasuryV2.sol#213)
        Event emitted after the call(s):
        - Initialized(msg.sender,block.number) (contracts/EVICTreasuryV2.sol#218)
Reentrancy in EVICToken.transferFrom(address,address,uint256) (contracts/
EVICToken.sol#379-387):
        External calls:
        - _transfer(sender,recipient,amount) (contracts/EVICToken.sol#384)
                - IOracle(oracle).update() (contracts/EVICToken.sol#421-423)
        Event emitted after the call(s):
        - Approval(owner,spender,amount) (contracts/EVICToken.sol#304)
                -
_approve(sender,_msgSender(),allowance(sender,_msgSender()).sub(amount,ERC20: transfer
amount exceeds allowance)) (contracts/EVICToken.sol#385)
```

Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#reentrancy-vulnerabilities-3

EVICToken.calculateTaxRate(uint256) (contracts/EVICToken.sol#440-454) uses timestamp for comparisons
        Dangerous comparisons:
        - block.timestamp >= lastTimeRebase && block.timestamp < lastTimeRebase.add(timeTaxAfterRebase) (contracts/EVICToken.sol#443)
EVICGenesis.constructor(address,address,uint256) (contracts/distribution/EVICGenesis.sol#76-97) uses timestamp for comparisons
        Dangerous comparisons:
        - require(bool,string)(block.timestamp < _poolStartTime,late) (contracts/distribution/EVICGenesis.sol#80)
EVICGenesis.checkPoolDuplicate(IERC20) (contracts/distribution/EVICGenesis.sol#104-109) uses timestamp for comparisons
        Dangerous comparisons:
        - pid < length (contracts/distribution/EVICGenesis.sol#106)
        - require(bool,string)(poolInfo[pid].token != _token,GenesisPool: existing pool?) (contracts/distribution/EVICGenesis.sol#107)
EVICGenesis.add(uint256,IERC20,uint256) (contracts/distribution/EVICGenesis.sol#112-139) uses timestamp for comparisons
        Dangerous comparisons:
        - block.timestamp < poolStartTime (contracts/distribution/EVICGenesis.sol#119)
        - _lastRewardTime == 0 (contracts/distribution/EVICGenesis.sol#121)
        - _lastRewardTime < poolStartTime (contracts/distribution/EVICGenesis.sol#124)
        - _lastRewardTime == 0 || _lastRewardTime < block.timestamp (contracts/distribution/EVICGenesis.sol#130)
        - _isStarted = (_lastRewardTime <= poolStartTime) || (_lastRewardTime <= block.timestamp) (contracts/distribution/EVICGenesis.sol#134)
EVICGenesis.getGeneratedReward(uint256,uint256) (contracts/distribution/EVICGenesis.sol#153-164) uses timestamp for comparisons
        Dangerous comparisons:
        - _fromTime >= _toTime (contracts/distribution/EVICGenesis.sol#154)
        - _toTime >= poolEndTime (contracts/distribution/EVICGenesis.sol#155)
        - _toTime <= poolStartTime (contracts/distribution/EVICGenesis.sol#160)
EVICGenesis.pending(uint256,address) (contracts/distribution/EVICGenesis.sol#167-183) uses timestamp for comparisons
        Dangerous comparisons:
        - block.timestamp > pool.lastRewardTime && tokenSupply != 0 (contracts/distribution/EVICGenesis.sol#172)
EVICGenesis.pendingAirdrop(uint256,uint256,address) (contracts/distribution/

EVICGenesis.sol#185-200) uses timestamp for comparisons
        Dangerous comparisons:
        - _fromTime >= _toTime (contracts/distribution/EVICGenesis.sol#187)
        - _toTime >= poolEndTime (contracts/distribution/EVICGenesis.sol#188)
        - _toTime <= poolStartTime (contracts/distribution/EVICGenesis.sol#193)
EVICGenesis.pendingDao(uint256,uint256,address) (contracts/distribution/
EVICGenesis.sol#202-217) uses timestamp for comparisons
        Dangerous comparisons:
        - _fromTime >= _toTime (contracts/distribution/EVICGenesis.sol#204)
        - _toTime >= poolEndTime (contracts/distribution/EVICGenesis.sol#205)
        - _toTime <= poolStartTime (contracts/distribution/EVICGenesis.sol#210)
EVICGenesis.updatePool(uint256) (contracts/distribution/EVICGenesis.sol#228-248) uses
timestamp for comparisons
        Dangerous comparisons:
        - block.timestamp <= pool.lastRewardTime (contracts/distribution/
EVICGenesis.sol#230)
EVICGenesis.withdraw(uint256,uint256) (contracts/distribution/EVICGenesis.sol#273-310)
uses timestamp for comparisons
        Dangerous comparisons:
        - _airdropReward > 0 (contracts/distribution/EVICGenesis.sol#284)
        - _daoReward > 0 (contracts/distribution/EVICGenesis.sol#289)
        - _reward > 0 (contracts/distribution/EVICGenesis.sol#298)
EVICGenesis.safeEVICTokenTransfer(address,uint256) (contracts/distribution/
EVICGenesis.sol#313-322) uses timestamp for comparisons
        Dangerous comparisons:
        - _amount > _evicTokenBalance (contracts/distribution/EVICGenesis.sol#316)
EVICGenesis.setPoolStartTime(uint256) (contracts/distribution/EVICGenesis.sol#349-356)
uses timestamp for comparisons
        Dangerous comparisons:
        - require(bool,string)(block.timestamp < _poolStartTime,late) (contracts/
distribution/EVICGenesis.sol#350)
        - require(bool,string)(block.timestamp < poolStartTime,Pool is started. Not
reset set time start) (contracts/distribution/EVICGenesis.sol#351)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#block-
timestamp

EVICToken.revokeRebaseExclusion(address) (contracts/EVICToken.sol#216-229) has costly
operations inside a loop:
        - excluded.pop() (contracts/EVICToken.sol#224)
EVICGenesis.updatePool(uint256) (contracts/distribution/EVICGenesis.sol#228-248) has
costly operations inside a loop:

```
        - totalAllocPoint = totalAllocPoint.add(pool.allocPoint) (contracts/
distribution/EVICGenesis.sol#240)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#costly-
operations-inside-a-loop


Pragma version0.8.13 (contracts/EVICBoardroomV2.sol#3) necessitates a version too
recent to be trusted. Consider deploying with 0.6.12/0.7.6/0.8.7
Pragma version0.8.13 (contracts/EVICToken.sol#3) necessitates a version too recent to
be trusted. Consider deploying with 0.6.12/0.7.6/0.8.7
Pragma version0.8.13 (contracts/EVICTreasuryV2.sol#3) necessitates a version too recent
to be trusted. Consider deploying with 0.6.12/0.7.6/0.8.7
Pragma version0.8.13 (contracts/distribution/EVICGenesis.sol#3) necessitates a version
too recent to be trusted. Consider deploying with 0.6.12/0.7.6/0.8.7
Pragma version0.8.13 (contracts/utils/ContractGuard.sol#3) necessitates a version too
recent to be trusted. Consider deploying with 0.6.12/0.7.6/0.8.7
Pragma version0.8.13 (contracts/utils/EmergencyWithdraw.sol#2) necessitates a version
too recent to be trusted. Consider deploying with 0.6.12/0.7.6/0.8.7
Pragma version0.8.13 (contracts/utils/Epoch.sol#3) necessitates a version too recent to
be trusted. Consider deploying with 0.6.12/0.7.6/0.8.7
solc-0.8.13 is not recommended for deployment
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#incorrect-
versions-of-solidity


Variable EVICTreasuryV2.maxPercentExpansionTier (contracts/EVICTreasuryV2.sol#85) is
too similar to EVICTreasuryV2.minPercentExpansionTier (contracts/EVICTreasuryV2.sol#84)
Variable EVICGenesis.TOTAL_REWARD_POOL_0_NEXT_PHASE (contracts/distribution/
EVICGenesis.sol#58) is too similar to EVICGenesis.TOTAL_REWARD_POOL_1_NEXT_PHASE
(contracts/distribution/EVICGenesis.sol#57)
Variable EVICGenesis.TOTAL_REWARD_POOL_0_NEXT_PHASE (contracts/distribution/
EVICGenesis.sol#58) is too similar to EVICGenesis.TOTAL_REWARD_POOL_2_NEXT_PHASE
(contracts/distribution/EVICGenesis.sol#56)
Variable EVICGenesis.TOTAL_REWARD_POOL_1_NEXT_PHASE (contracts/distribution/
EVICGenesis.sol#57) is too similar to EVICGenesis.TOTAL_REWARD_POOL_2_NEXT_PHASE
(contracts/distribution/EVICGenesis.sol#56)
Variable EVICGenesis.TOTAL_REWARD_POOL_0_NEXT_PHASE (contracts/distribution/
EVICGenesis.sol#58) is too similar to EVICGenesis.TOTAL_REWARD_POOL_3_NEXT_PHASE
(contracts/distribution/EVICGenesis.sol#55)
Variable EVICGenesis.TOTAL_REWARD_POOL_1_NEXT_PHASE (contracts/distribution/
EVICGenesis.sol#57) is too similar to EVICGenesis.TOTAL_REWARD_POOL_3_NEXT_PHASE
(contracts/distribution/EVICGenesis.sol#55)
Variable EVICGenesis.TOTAL_REWARD_POOL_2_NEXT_PHASE (contracts/distribution/
```

EVICGenesis.sol#56) is too similar to EVICGenesis.TOTAL_REWARD_POOL_3_NEXT_PHASE
(contracts/distribution/EVICGenesis.sol#55)
Variable EVICGenesis.TOTAL_REWARD_POOL_0_NEXT_PHASE (contracts/distribution/
EVICGenesis.sol#58) is too similar to EVICGenesis.TOTAL_REWARD_POOL_4_NEXT_PHASE
(contracts/distribution/EVICGenesis.sol#54)
Variable EVICGenesis.TOTAL_REWARD_POOL_1_NEXT_PHASE (contracts/distribution/
EVICGenesis.sol#57) is too similar to EVICGenesis.TOTAL_REWARD_POOL_4_NEXT_PHASE
(contracts/distribution/EVICGenesis.sol#54)
Variable EVICGenesis.TOTAL_REWARD_POOL_2_NEXT_PHASE (contracts/distribution/
EVICGenesis.sol#56) is too similar to EVICGenesis.TOTAL_REWARD_POOL_4_NEXT_PHASE
(contracts/distribution/EVICGenesis.sol#54)
Variable EVICGenesis.TOTAL_REWARD_POOL_3_NEXT_PHASE (contracts/distribution/
EVICGenesis.sol#55) is too similar to EVICGenesis.TOTAL_REWARD_POOL_4_NEXT_PHASE
(contracts/distribution/EVICGenesis.sol#54)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#variable-names-
are-too-similar

setBoardroomAllocPoint(uint256,uint256) should be declared external:
        - EVICTreasuryV2.setBoardroomAllocPoint(uint256,uint256) (contracts/
EVICTreasuryV2.sol#241-246)
getCurrentEpoch() should be declared external:
        - Epoch.getCurrentEpoch() (contracts/utils/Epoch.sol#57-59)
getPeriod() should be declared external:
        - Epoch.getPeriod() (contracts/utils/Epoch.sol#61-63)
getStartTime() should be declared external:
        - Epoch.getStartTime() (contracts/utils/Epoch.sol#65-67)
getLastEpochTime() should be declared external:
        - Epoch.getLastEpochTime() (contracts/utils/Epoch.sol#69-71)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#public-
function-that-could-be-declared-external

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