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Grażyna Ancyparowicz
Narodowy Bank Polski, Rada Polityki Pieniężnej
Górnośląska Wyższa Szkoła Handlowa

Finansowe i społeczne aspekty prywatyzacji oszczędności emerytalnych

FINANCIAL AND SOCIAL ASPECTS PRIVATIZATION OF RETIREMENT SAVINGS

Prywatyzacja funduszy emerytalnych w Polsce rozpoczęła się w 1999 r., kiedy system zdefiniowanego świadczenia zastąpiono systemem zdefiniowanej składki, w następnych latach sukcesywnie likwidując niemal wszystkie uprawnienia pracownicze. Podział składki między OFE a ZUS wygenerował ogromny (sięgający 300 mld zł) dług publiczny, którego obsługa była rujnująca dla budżetu państwa. Pod presją procedury nadmiernego deficytu, nałożonej na Polskę przez Unię Europejską, zainicjowano proces likwidacji tych funduszy, aby poprawić wynik polskiego sektora general government, co zakończyło się powodzeniem, ale prowadziłoby w kilkunastoletniej perspektywie do całkowitej likwidacji OFE. Może temu zapobiec „Plan Budowy Kapitału", który polega na wzmocnieniu rynku kapitałowego, ale niesie za sobą poważne ryzyko zagrożenia ubóstwem i wywłaszczenia osób, które weszły na rynek pracy po 1990 r. lub później. Prywatyzacja aktywów OFE przekreśla bowiem szanse na wzmocnienie publicznego systemu zabezpieczenia społecznego, a nowe obciążenia związane z przymusowym tworzeniem kapitałowego filara emerytalnego mogą negatywnie wpłynąć na kondycję i rozwój małych i średnich przedsiębiorstw produkcyjnych i usługowych, a tym samym znacznie osłabić potencjał realnej sfery polskiej gospodarki.

Słowa kluczowe: otwarte fundusze emerytalne, rynek kapitałowy, pracownicze plany kapitałowe, ryzyka socjalne.
JEL Codes: H55, H75

Wstęp

Po załamaniu ustanowionego w Bretton Woods globalnego ładu finansowego, gdy kształtowała się epoka pieniądza w pełni fiducjarnego, powstała potrzeba stworzenia nowego paradygmatu funkcjonowania rynków finansowych, których istotną częścią są ściśle ze sobą powiązane fundusze emerytalne i inwestycyjne. Poligonem doświadczalnym w tej dziedzinie była reforma emerytalna w Chile, przeprowadzona w 1980 roku pod wpływem koncepcji ekonomicznych Miltona Friedmana i jego współpracowników ze Szkoły Chicagowskiej. Ekonomiści tej szkoły nie byli jeszcze skonfrontowani z rzeczywistymi skutkami swoich idei i widzieli w emeryturach kapitałowych rozwiązanie poważnego problemu finansowo-społecznego. W ten sposób, w warunkach rządów autorytarnych sprawowanych przez Augusto Pinocheta, powstały

chilijskie fundusze emerytalne, dostarczając empirycznego dowodu, że piramidy finansowe można budować pod auspicjami państwa. Doświadczenie to wykorzystano w propagowaniu idei prywatyzacji emerytur w innych krajach zaliczanych do grupy rynków wschodzących, nie bacząc na długofalowe skutki tej decyzji dla finansów publicznych i bezpieczeństwa emerytów.

Jednym z mitów przemawiających za budową kapitałowego filara emerytalnego była jego rzekomo wysoka efektywność w pomnażaniu oszczędności emerytalnych. Wysoka stopa zwrotu może teoretycznie występować ponieważ filar ten *sam stwarza sobie zapotrzebowanie na papiery wartościowe i wszystko pnie się do góry, ale gdy zapotrzebowanie na papiery wartościowe spadnie do normalnego poziomu, wynikającego ze zmiany pokoleń, zabraknie środków na pokrycie zobowiązań wobec świadczeniobiorców,* [a w przypadku gdy jest to ich główne bądź jedyne źródło utrzymania – przyp. aut.] *pozostaną oni bez środków do życia* (Łaski, 2003, s. 83). Jeżeli wiadomo, że tak jest, to dlaczego – pomimo wielu negatywnych doświadczeń – wciąż powraca w Polsce idea częściowej, teoretycznie dobrowolnej, ale w praktyce przymusowej prywatyzacji emerytur pracowniczych?

Celem niniejszego artykułu jest wskazanie zagrożeń socjalnych, jakie niesie polskim emerytom system zdefiniowanej składki, wspomagany obarczonymi wysokim ryzykiem produktami oferowanymi przez instytucje rynku kapitałowego.

Przesłanki prywatyzacji emerytur

Pod koniec lat 80., Departament Skarbu wraz z Departamentem Handlu rządu federalnego USA zawarły porozumienie z Zarządem Rezerwy Federalnej, Międzynarodowym Funduszem Walutowym oraz Bankiem Światowym (tzw. Konsensus Waszyngtoński) w celu wzmocnienia wpływów transnarodowych korporacji finansowych w krajach o słabej walucie, z deklarowaną intencją wzmocnienia równowagi monetarnej w tych krajach, w oparciu o koncepcje Miltona Friedmana (Williamson, 2004, s. 2-3 i 593). Jednym z głównych filarów tego projektu była liberalizacja i deregulacja gospodarki, powiązana z redukcją pracowniczych uprawnień socjalnych i prywatyzacją emerytur na wzór „reformy" systemu emerytalnego w Chile, której wady jeszcze się wtedy nie ujawniły.

Faktycznym celem pełnego lub częściowego przejścia na system emerytur kapitałowych jest w rzeczywistości wsparcie instytucjonalnych inwestorów giełdowych (wielkich banków inwestycyjnych oraz powiązanych z nimi funduszy wysokiego ryzyka), ale fakt ten nie dotarł ani wówczas ani obecnie nie dociera do powszechnej świadomości. Ten segment rynku finansowego wybrano, mając na uwadze fakt, że ubezpieczenia emerytalne są z reguły ubezpieczeniami zdefiniowanej daty, toteż przez dziesięciolecia generują dochody firm inwestycyjnych, nie pociągając za sobą konieczności masowej wypłaty świadczeń. Ponadto, prywatyzacji emerytur z reguły towarzyszą drastyczne cięcia wydatków socjalnych, co – jak pisał Friedman w liście do Augusto Pinocheta – *przyspiesza rozwój rynku kapitałowego, który bardzo ułatwi przechodzenie przedsiębiorstw i przedsięwzięć znajdujących się wciąż jeszcze w rękach państwa w ręce prywatnych inwestorów* (cyt. za Klein, 2010).

Na początku lat 90. minionego wieku, zasadnicze elementy chilijskiego systemu emerytalnego, zostały zastosowane do budowy kapitałowego filara emerytalnego w innych krajach z grupy rynków wschodzących, a w szczególności w krajach Europy Środkowej i Wschodniej, natomiast kraje Europy zachodniej zdecydowanie odrzuciły ten model ochrony ryzyka starości.

Od czasu upowszechnienia praktyki systematycznego zasilania prywatnego sektora finansowego funduszami emerytalnymi w Stanach Zjednoczonych, Japonii oraz w niektórych innych krajach azjatyckich, globalny rynek finansowy rozwija się nieporównanie szybciej od realnej gospodarki, generując coraz wyższe zagrożenie kryzysami. Wykazuje przy tym nieporównanie większą odporność na generowane przez siebie szoki, głównie dzięki hojnej, rządowej pomocy kapitałowej dla wielkich korporacji finansowych, kosztem wzrostu zadłużenia sektora rządowego i spowolnienia procesu odrabiania strat w sektorze niefinansowym. Potwierdza to statystyka. W roku 1980 aktywa instytucji finansowych stanowiły 113% globalnego PKB, w roku 2007 wskaźnik ten wzrósł do 360%, aby dwa lata później, po ujawnieniu toksycznych właściwości niektórych finansowych produktów strukturyzowanych, obniżyć się do 250%. Jednak już w roku 2013 odbudowane aktywa instytucji finansowych stanowiły aż 360% globalnego PKB (odpowiednio 275 bln USD wobec 77 bln USD), koncentrując się głównie na tzw. dojrzałych rynkach finansowych krajów OECD. Według aktualnie dostępnych danych, w roku 2015 aktywa instytucji finansowych mających centralę w jednym z 28 takich krajów wzrosły do 321 bln USD, co stanowiło równowartość 430% PKB wytworzonego w tych krajach; w Holandii i innych małych krajach zachodnioeuropejskich relacja ta sięgała nawet ok. 700% (World Bank, 2019).

Mamy gigantyczny przemysł finansowy, który działa na zasadzie: gdy wygram, korzystam ja, gdy przegram traci ktoś inny, toteż [przemysł ten] *zdołał zubożyć nas wszystkich ciągnąc z tego pokaźne zyski* (Krugman, 2012). *W świecie finansów nie ma dziś żadnych hamulców, żadnej wstrzemięźliwości. Rządzi chciwość* (Kobosko, 2012), a wysoki stopień nasycenia produktami finansowymi macierzystych rynków skłania wielkie korporacje do rabunkowej penetracji rynków wschodzących, skąd do 2030 r. zamierzają pozyskać ok. 30 bln USD, sprzedając kapitałowe programy emerytalne, odwróconą hipotekę oraz inne instrumenty finansowe obarczone – po stronie nabywcy – wysokim ryzykiem (McKinsey, 2012). Strategię tę wspierają wszyscy sygnatariusze Konsensusu Waszyngtońskiego, powołujący się m.in. na alarmistyczny raport Banku Światowego *Averting the Old Age Crisis* (1994). Raport ten ma charakter naukowo-lobbystycznej argumentacji na rzecz zastępowania państwowych systemów emerytalnych, z pozoru bardziej efektywnymi prywatnymi planami emerytalnymi. Wykorzystano w nim alarmistyczne prognozy demograficzne dla udowodnienia tezy o rzekomej niewydolności publicznych systemów emerytalnych w warunkach starzejących się społeczności Europy. W rzeczywistości, stabilność tych systemów zależy głównie od sytuacji na rynku pracy, w szczególności od poziomu wynagrodzeń i powszechności ubezpieczeń społecznych, a tylko w niewielkim stopniu od ogólnej liczby mieszkańców i zmieniającej się (stosunkowo powoli, choć systematycznie) struktury demograficznej w większości krajów rozwiniętych gospodarczo. Jednakże, abstrahowanie od sytuacji na rynku pracy i powoływanie się na obiektywnie niekorzystne trendy demograficzne jest użytecznym narzędziem propagowania idei

prywatyzacji systemów emerytalnych, toteż środowiska powiązane biznesowo i towarzysko z rynkiem kapitałowym uporczywie trzymają się tej argumentacji, nie zważając na negatywne społeczne i finansowe konsekwencje prywatyzacji emerytur. Środowisko to wszelkimi dostępnymi metodami uparcie dąży do marginalizacji powszechnego, państwowego systemu ubezpieczeń pracowniczych, tylko po to aby wzmocnić kontrolowaną przez siebie giełdę i rynek komercyjnych papierów wartościowych.

Od czasu opublikowania raportu Banku Światowego na temat związków między demografią a bezpieczeństwem socjalnym emerytów minęło 25 lat, można więc było naocznie przekonać się, że *wymuszanie totalnej prywatyzacji* [emerytur – przyp. aut.] *to ekonomiczny absurd, którego jedynym celem jest przesunięcie kolejnych dziedzin życia ze sfery publicznej, podlegającej demokratycznej kontroli, w prywatne ręce* (Chomsky, 2004).

Mityczny rynek finansowy wobec wyzwań rozwojowych realnej gospodarki

Silny rynek kapitałowy jest niezbędny dla budowy silnych fundamentów gospodarki, podwyższania potencjału wzrostu dochodów indywidualnych i PKB, co długoterminowo sprzyja wzmocnieniu stabilności systemu emerytalnego oraz wzrostowi świadczeń emerytalnych. Tekst ten pochodzi z uzasadnienia do projektu ustawy z 27 maja 2019 r. o zmianie niektórych ustaw w związku z przeniesieniem środków z otwartych funduszy emerytalnych (OFE) na indywidualne konta emerytalne (IKE). Jest ewidentnym przykładem wpływu lobby reprezentującego interesy inwestorów z rynku kapitałowego na polityków, *bowiem kluczowym beneficjentem zapowiedzianych zmian będą jednak instytucje działające na rynku finansowym* (Oręziak, 2019), w szczególności zaś instytucjonalni oraz profesjonalni inwestorzy giełdowi, ale nie emeryci.

Bezpośredni związek między kapitalizacją spółek i ich wartością realną istniał pół wieku temu, ale obecnie w sensie absolutnym w ogóle już nie istnieje, a wybiórcze, nadmuchiwanie przez spekulantów poszczególnych sektorów giełdowych, a nawet windowanie notowań akcji pojedynczych spółek, niszczy kapitalizację spółek giełdowych jako miernik ich względnej wartości. Innymi słowy: wartość rynkowa w ogóle nie odzwierciedla rzeczywistej wartości spółki. W warunkach współczesnych, giełda papierów wartościowych może swymi rozmiarami przekraczać potencjał wytwórczy realnej gospodarki[1], ale od dawna przestała być miejscem pozyskiwania kapitału na inwestycje produkcyjne. Ten fakt przemilcza się, bo przez kilkadziesiąt ostatnich lat *szkoły biznesu, świątynie kształcenia kadr biznesowych, powtarzały mantrę mówiącą, że kurs giełdowy i wyniki finansowe powinny stanowić nadrzędny interes danego przedsiębiorstwa* (Dembinsky, 2012, s. 146). *Logika tej prostej idei była* (…) *przedstawiana jako wynikająca z nauk ścisłych, toteż stała się bazą kształcenia wielu pokoleń menedżerów. Jej wdrożenie do praktyki prowadzi do obsesji efektywności*

[1] Przyjmując jako miernik roli giełdy w gospodarce danego kraju relację między kapitalizacją spółek giełdowych a PKB można zauważyć, że spośród krajów OECD tylko w Stanach Zjednoczonych, Japonii i we Francji poziom tego wskaźnika przekraczał 100%. W 2017 r. (według danych Banku Światowego) wyniósł on w USA 164,8%, w Japonii – 127,7%, w strefie euro kształtował się na poziomie 77,6% (w tym we Francji 106,5%, ale w Niemczech tylko 61,3%), w Polsce – 38,2%, a na Węgrzech – 22,6% (World Bank, 2019).

finansowej [która] *deprawuje kierownictwo, a tym samym staje się źródłem wyzysku, który osłabia nie tylko przedsiębiorstwa, ale całą tkankę społeczną, a także instytucje publiczne* (Sumatra, 2005, s. 75).

W dużych przedsiębiorstwach nakłady na środki trwałe pochodzą przede wszystkim ze środków własnych, w następnej kolejności z instrumentów dłużnych, uporządkowanych według rosnącego ryzyka (Myers, Mayful 1984, s. 187-222; Myers 1984, s. 574-592). Ten model finansowania rozwoju realnej sfery gospodarki powoduje, że *spółki, które normalnie pożyczały oszczędności innych, aby je zainwestować, same stały się bardzo oszczędne. Nawet te, które cieszą się wysokimi zyskami i płynnością, zamiast rozwijać swój biznes poprzez inwestycje, rozbudowują swoje skarbce, ograniczając własne zadłużenie i odkupując własne akcje* (IMF, 2006, s. 107). Opóźnia to tempo wdrażania innowacji, hamując postęp techniczny i wzrost wydajności pracy, skłania natomiast do rozpraszania działalności przedsiębiorstw w celu ograniczania ryzyka i maksymalizacji krótkookresowej stopy zysku.

European Investment Bank (EIB) przeprowadził w 2016 roku, na reprezentatywnej próbie 12 500 niefinansowych przedsiębiorstw z całej Europy (w tym 479 z Polski), badanie źródeł finansowania inwestycji [2] . Wyniki tego badania potwierdzają, że w większości krajów europejskich już istniejące przedsiębiorstwa finansowały inwestycje przede wszystkim ze źródeł wewnętrznych. W Polsce udział środków własnych w finansowaniu inwestycji wynosił ok. 65%, podobnie jak w Czechach, Niemczech, czy na Litwie, a przeciętnie w Unii Europejskiej – ok. 60%. Z badania tego wynika również, że dominującą formą finansowania zewnętrznego inwestycji był kredyt bankowy; w Polsce jego udział wynosił ponad 15%, w całej UE ok. 25%. Ważną rolę w finansowaniu inwestycji ze źródeł zewnętrznych odgrywał leasing, którego udział wyniósł w Polsce ok. 8%, a średnio w Unii Europejskiej ok. 8-9%. Resztę stanowiły niemal w całości subwencje i dotacje dla przedsiębiorstw w ramach pomocy publicznej. Natomiast skala finansowania inwestycji za pomocą nowo wyemitowanych akcji była marginalna; w Polsce ich udział wyniósł 0,37% nakładów na środki trwałe brutto, a w całej badanej zbiorowości przedsiębiorstw funkcjonujących na obszarze Unii Europejskiej – 0,43%.

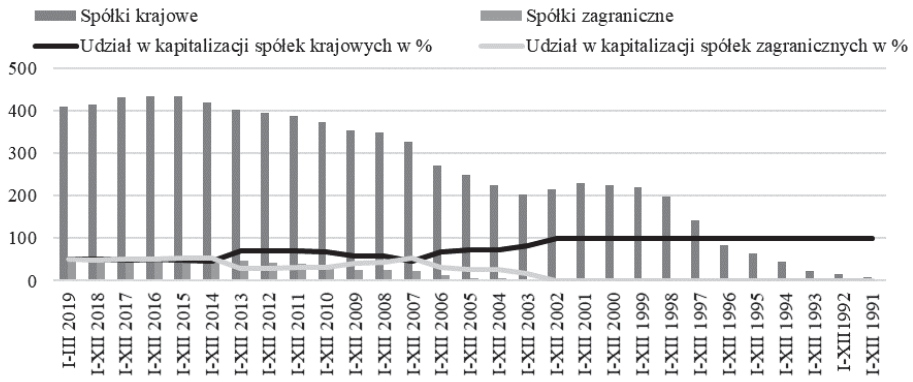
Emisja akcji to ryzykowna, a nierzadko także skomplikowana i kosztowna forma pozyskiwania kapitału, wiążąca się z dodatkowymi obowiązkami informacyjnymi. Należy także dodać, że nowa emisja często prowadzi do zmian w strukturze właścicielskiej spółki i do wzrostu liczby akcjonariuszy, którzy będą uczestniczyli w podziale potencjalnych zysków z inwestycji, co powoduje spadek zysku przypadającego na jedną akcję. Nowa emisja akcji może być też negatywnie interpretowana przez rynek jako oznaka problemów z płynnością finansową w przedsiębiorstwie lub sygnał wysokiego ryzyka danej inwestycji, a w konsekwencji będzie prowadzić do spadku cen już wcześniej wyemitowanych akcji. Z powyższych powodów rola nowych emisji w finansowaniu rozwoju przedsiębiorstw jest tak bardzo ograniczona.

Giełda przestała więc być miejscem pozyskiwania kapitału na rozwój realnej sfery gospodarki; przeciwnie, pogoń za stałym podnoszeniem bieżącej wartości rynkowej

[2] Pytanie brzmiało „*Approximately what proportion of your investment in the last financial year was financed by each of the following?*".

spółek ogranicza długoterminowe inwestycje, hamuje innowacje tylko po to, aby kadra menedżerska mogła dobrze wypaść w sprawozdaniach kwartalnych oraz rocznych rozliczeniach wyniku finansowego, od którego uzależnione są jej wynagrodzenia (Barton D., Wiseman M., 2014). Krótkowzroczna, oportunistyczna strategia menedżerów spółek giełdowych jest zarzewiem wielu kryzysów, jakie dotknęły światową gospodarkę w wieku XX i w bieżącym stuleciu. Również w Polsce nadzieja na wysokie stopy zwrotu z kapitału zachęca do stosowania różnego typu dźwigni finansowych i angażowania kapitału w transakcje o wysokim ryzyku, czego w swoim czasie boleśnie doświadczyli m.in. przedsiębiorcy zawierający niesymetryczne umowy na opcje walutowe. Ponadto, w Polsce, podobnie jak w innych krajach z grupy rynków wschodzących, gdzie zagraniczne inwestycje portfelowe odgrywają istotną rolę, giełda ułatwia drenaż kapitału i jego wywóz za granicę[3].

W początkach transformacji ustrojowej polski rynek kapitałowy był tworzony od zera. Reaktywowana (po ponad pięćdziesięciu latach) w kwietniu 1991 r. warszawska giełda papierów wartościowych stała się przede wszystkim platformą ułatwiającą wyprzedaż majątku narodowego, na czym korzystali tylko nieliczni wtajemniczeni. Obecnie instytucja ta, ze względów oczywistych, jest zdominowana liczebnie przez polskie spółki, ale w kapitalizacji dorównuje im niewielka grupa spółek zagranicznych (wykres 1). Jest to rzeczą naturalną; kapitał zagraniczny z zasady przejmuje tylko wielkie spółki kontrolujące znaczną część rynku w realnej gospodarce, bo (za wyjątkiem wrogich przejęć, mających na celu ograniczenie bądź wyeliminowanie konkurencji) koszty zarzadzania i kontroli małych firm są proporcjonalnie zbyt wysokie w stosunku do spodziewanych korzyści.

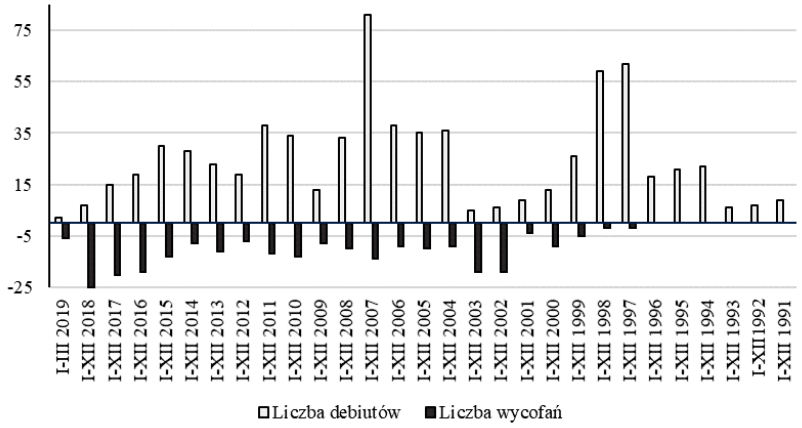


Wykres 1. Spółki notowane na GPW wg kryterium rezydenta
Źródło: GPW

Od 2016 roku, kiedy praktycznie nie ma już co prywatyzować, liczba wycofań przewyższa liczbę debiutów (wykres 2), a indeksy giełdowe nie rokują wysokich stóp

[3] W 2018 r. wykazane w bilansie płatniczym transfery (rozchody) z tytułu inwestycji portfelowych w Polsce wyniosły 16,4 mld zł, a dywidendy (rozchody) z tytułu inwestycji bezpośrednich 40,3 mld zł. Saldo dochodów, zarówno z inwestycji portfelowych jak i bezpośrednich było ujemne; odpowiednio: 14,3 mld zł i 72,3 mld zł (NBP 2019, s. 58).

zwrotu z inwestycji portfelowych. W debacie, jaka odbyła się trzy lata później na temat perspektyw rozwoju rynku kapitałowego w Polsce, inwestorzy ocenili kondycję warszawskiej giełdy na 2-3 punkty w skali sześciopunktowej (Pernet M., 2019), wyrażając równocześnie nadzieję na poprawę koniunktury za sprawą przekształcenia otwartych funduszy emerytalnych (OFE) w specjalistyczne fundusze inwestycyjne otwarte (SFIO) oraz wejścia w życie ustawy o pracowniczych planach kapitałowych (PPK). Oszacowano, że po tej operacji zaangażowanie oszczędności polskich gospodarstw domowych na rynku kapitałowym zwiększy się z ok. 170 mld zł do ok. 500 mld zł w perspektywie 2027 r.



Wykres 2. Liczba debiutów i wycofań spółek z rynku głównego GPW
Źródło: GPW

Istotnym celem SFIO i PPK jest więc przekierowanie funduszy pobranych z dochodów pracowników, pracodawców i budżetu państwa na giełdę, celem sfinansowania wzrostu indeksów (poprawy kondycji i koniunktury GPW), a nie poprawa położenia emerytów, którzy poniosą w całości ryzyko nietrafionych spekulacji, czego empirycznym dowodem są wyniki OFE.

OFE – piramidalna katastrofa emerytalna

Dożycie wieku emerytalnego jest jednym z dziewięciu ryzyk socjalnych wymienionych w konwencji 102 Międzynarodowej Organizacji Pracy i podlegających w krajach Unii Europejskiej obowiązkowej ochronie państwa. Emerytura jest świadczeniem zabezpieczającym byt człowieka, *który czerpie środki utrzymania z zatrudnienia lub innej działalności i dla którego zaprzestanie zatrudnienia (działalności) ze względu na wiek oznacza brak dochodu z pracy, także dochodu odłożonego (zaoszczędzonego, kapitalizowanego), bo kalkulacja płacy (przychodu) opiera się na założeniu, że okres starości zostanie objęty jakąś formą zabezpieczenia społecznego. (...) W aspekcie gwarancyjnym ubezpieczenie emerytalne, jako regularna ochrona tego ryzyka trwa najdłużej od podjęcia pierwszego zatrudnienia lub innej działalności* (Jończyk, 2001, s. 14-15). Inflacja, zmiana struktury cen i zmiana modelu konsumpcji powodują, że prawie nikt nie jest w stanie w okresie aktywności zawodowej

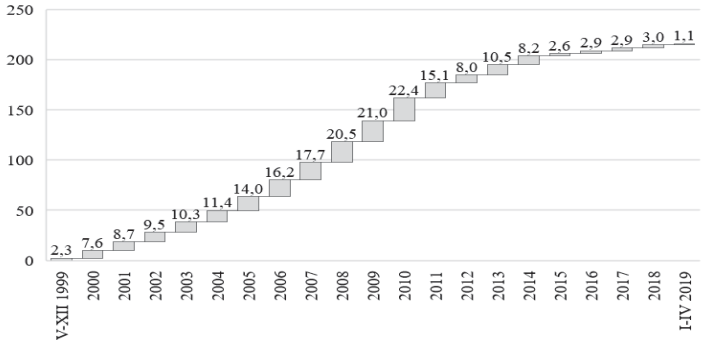
zaoszczędzić tyle, żeby po osiągnięciu wieku emerytalnego utrzymać się przez 20 i więcej lat. Nawet gdyby pracownik odkładał większość tego co zarobi, nie zdoła zabezpieczyć sobie bytu na starość, bo siła nabywcza zgromadzonych oszczędności obniża się wraz z upływem czasu pod wpływem różnych czynników, niekiedy w sposób gwałtowny i nieprzewidywalny. Emerytura nie jest jałmużną, ale rekompensatą za wiele lat opłacania składek i pracy na rzecz całego społeczeństwa, toteż w kalkulacji wysokości tego świadczenia powinien być stosowany algorytm, który daje gwarancje godziwej stopy zastąpienia wynagrodzenia świadczeniem emerytalnym.

Reforma systemowa z 1998 r. likwidująca klasyczny system emerytalny na rzecz systemu zdefiniowanej składki jest sprzeczna z definicją i funkcją emerytury. *Koncepcja przekształcenia systemu emerytalnego z tak zwanego repartycyjnego, jakim jest ZUS, w kapitałowy, oparta była na zawierzeniu iluzorycznej nadziei w „wiecznie rosnący rynek kapitałowy", a faktycznie na niezrozumieniu elementarnych kwestii ekonomicznych* (Żyżyński, 2013). Świadczenie, które otrzymują polscy emeryci objęci systemem zdefiniowanej składki, to w istocie dochód rentierski, którego źródłem jest zwaloryzowany kapitał początkowy i wpłacone (waloryzowane i/lub indeksowane) składki emerytalne. Taki system ochrony ryzyka starości przeczy istocie klasycznej emerytury, która nie jest i nie powinna być dochodem z (obarczonej wysokim ryzykiem) inwestycji kapitałowej.

Klasyczna emerytura powinna składać się z części osłonowej (zależnej od kosztów utrzymania i potencjału gospodarki narodowej) oraz osobistego wkładu pracownika do funduszu emerytalnego, zależnego od jego stażu pracy i zgromadzonych (waloryzowanych i/lub indeksowanych) oszczędności emerytalnych. Jej uzupełnieniem mogą być komercyjne produkty emerytalne, dobrowolnie nabywane na własne ryzyko przyszłego emeryta, na które – jak wskazuje doświadczenie – efektywny popyt wzrasta wraz z podnoszeniem się poziomu zamożności społeczeństwa; według szacunków Alliance, dopiero dochód rozporządzalny netto na jednego mieszkańca rzędu ok. 45-50 tys. USD rocznie umożliwia indywidualne inwestowanie w takie produkty. Dochody większości Polaków były i jeszcze długo będą znacznie niższe, toteż pierwszy etap prywatyzacji emerytur w Polsce wymagał transferu znacznej części składek emerytalnych zasilających Fundusz Ubezpieczeń Społecznych (zarządzany przez ZUS) do nowo powstałych firm inwestycyjnych (Powszechnych Towarzystw Emerytalnych – PTE, zarządzających OFE).

Prywatyzując emerytury pracownicze, świadomie lub nieświadomie utworzono swoisty trójkąt bermudzki, którego wierzchołkami były: Ministerstwo Finansów, Zakład Ubezpieczeń Społecznych i PTE wraz z OFE. Łącznie w latach 1999-2019 przekazano z ZUS do OFE składki emerytalne w kwocie ok. 216 mld zł, co w rachunku ciągnionym (wykres 1) – uwzględniającym obsługę długu wygenerowanego przez te fundusze – kosztowało polskich podatników grubo ponad 300 mld zł. Powstałe w wyniku tych transferów niedobory w emerytalnym systemie państwowym uzupełniano bowiem dotacjami rządowymi dla ZUS, które – w sytuacji utrzymującego się od 1991 r. deficytu budżetowego – powodowały niebezpiecznie szybkie narastanie zadłużenia skarbu państwa, a w konsekwencji coraz wyższe potrzeby pożyczkowe Ministra Finansów i wzrost kosztów odsetkowych obsługi tego długu. Licząc się z konsekwencjami budowy kapitałowego filara emerytalnego, starano się nie dopuścić do przekroczenia konstytucyjnych norm ostrożnościowych, przenosząc na emerytów konsekwencje tej

decyzji i spowalniając proces zadłużania państwa poprzez ograniczanie wydatków budżetowych, zwłaszcza na cele zdrowotne, edukację i pomoc społeczną.



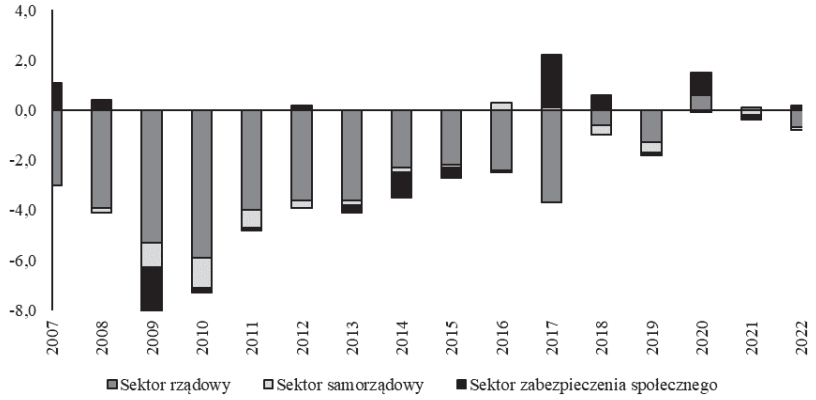
Wykres 3. Skumulowana roczna składka przekazana przez ZUS do OFE, w mld zł
Źródło: ZUS (2019), https://www.zus.pl/o-zus/o-nas/finanse/przekazywanie-skladek-do-ofe/2019/-/info/2578597

Już w momencie wdrażania reformy systemu ubezpieczeń społecznych (1998 r.) ustawowo zmieniono algorytm obliczania emerytury na niekorzyść świadczeniobiorców urodzonych po 31 grudnia 1948 r. Potem, pod różnymi pretekstami forsowano zmiany ustawowe, odbierające nabyte już uprawnienia emerytalne młodszym rocznikom. Oszczędności z tego tytułu (niewspółmiernie małe w stosunku do kosztów utrzymywania OFE) nie zahamowały tempa narastania deficytu i długu sektora rządowego (*general government*). Wprawdzie, w założeniach reformy emerytalnej przyjęto, że potrzeby pożyczkowe generowane przez transfery składki emerytalnej będą rekompensować przychody z prywatyzacji przedsiębiorstw państwowych, ale w rzeczywistości, przychody te były niewielkie i mimo ograniczeń ustawowych (do 5%), przekazywane w lwiej części na Fundusz Reprywatyzacji.

Permanentny, pogłębiający się deficyt sektora *general government* spowodował, że Polska znalazła się dwukrotnie (w latach 2006 i 2009) pod unijną procedurą nadmiernego deficytu. Starania o uznanie przez Komisję Europejską portfela OFE za integralną część aktywów polskiego sektora finansów publicznych zakończyły się niepowodzeniem (Kempa 2010). W tej sytuacji, gabinet Donalda Tuska przedłożył Sejmowi, a ten uchwalił w 2011 r. ustawę o ograniczeniu na dwa lata partycypacji OFE w składce emerytalnej z 7,3% do 2,3%; od 2013 r. Udział OFE w składce emerytalnej ponownie miał rosnąć, osiągając w 2017 r. wielkość docelową 3,5%. Reforma ta nie doprowadziła jednak do utrzymania na poziomie referencyjnym deficytu i długu sektora instytucji rządowych i samorządowych, więc zdecydowano się na rozwiązanie radykalnie odciążające budżet państwa od wypłat odsetek za obligacje skarbowe w portfelu OFE. Na podstawie ustawy z 6 grudnia 2013 r., w marcu 2014 r. przekazano do ZUS 51,5% aktywów OFE, księgując równocześnie równowartość zgromadzonych jednostek rozrachunkowych na indywidualnych subkontach pracowniczych. Wartość nominalna przekazanych do ZUS papierów wartościowych wyniosła łącznie 146,0 mld zł, z tego: 130,2 mld zł stanowiły obligacje skarbowe, 15,6 mld zł obligacje Banku Gospodarstwa Krajowego, a resztę inne papiery wartościowe gwarantowane przez Skarb

Państwa (252 mln zł) i gotówka (1862 mln zł). Wszystko to (wbrew obiegowym i krzywdzącym opiniom pojawiającym się do dziś dnia w różnych mediach)[4] odbyło się z poszanowaniem majątkowych praw uczestników OFE; nikt z oszczędzających nic nie stracił na tej operacji. Zniesiono przy tym przymus członkostwa w OFE, tak że liczba członków tych funduszy zmniejszyła się z ok. 16 mln do niespełna miliona w 2014 r. i pozostała na tym poziomie, zaś dotacje budżetowe na wyrównanie ubytku składki w ZUS spadły do ok. 3,0 mld zł.

Oprócz doraźnych korzyści, wynikających z ograniczenia liczby członków i znacznie mniejszych dotacji na wyrównanie ubytku składki w ZUS, reforma OFE zapewniła względnie trwałą poprawę wyniku sektora *general government* (wykres 4).



Wykres 4. Rzeczywisty i prognozowany na lata 2019-2022 wynik sektora *general government* jako % PKB
Źródło: opracowanie na podstawie danych GUS dot. notyfikacji fiskalnej oraz danych MF (2019, s. 39).

Nie pomniejszając znaczenia podjętych i realizowanych inicjatyw dotyczących dyscypliny finansów publicznych i uszczelnienia systemu podatkowego, należy stwierdzić, że przejęcie części obligacyjnej portfela OFE ułatwiło w latach 2016-2019 sfinansowanie kosztownych programów wspierających polskie rodziny. Nadal jednak nie znaleziono właściwego rozwiązania dla poprawy położenia materialnego milionów polskich emerytów, pomimo złych doświadczeń z przeszłości i alarmistycznych prognoz stopy zastąpienia ostatniego wynagrodzenia emeryturą (tabela 1). Relacja wysokości pierwszej przyznanej emerytury do średniego miesięcznego wynagrodzenia w ostatnim roku aktywności zawodowej (czyli stopa zastąpienia), która dla osób urodzonych przed 1 stycznia 1949 r. przed reformą systemową wynosiła ok. 70%, obniżyła się w 2018 r. do 56,4%. W ostatnim kwartale minionego roku wskaźnik ten był jeszcze niższy (53,3%) i będzie nadal spadał w tempie ok. 1% rocznie, w miarę obniżania udziału kapitału emerytalnego w ogólnej kwocie oszczędności emerytalnych.

[4] Najwyższa Izba Kontroli w 2014 r. zbadała dokładnie reformę OFE i doszła do wniosku, że gdyby jej zaniechano, to Polska w 2015 r. przekroczyłaby konstytucyjny próg zadłużenia, co przełożyłoby się na wielkość dotacji z budżetu do FUS i wymagałoby obniżenia emerytur, i tak bardzo niskich w stosunku do kosztów utrzymania.

Tabela 1. Udział składki emerytalnej w wynagrodzeniu i prognozowana przez OECD na rok 2060 stopa zastąpienia wynagrodzenia emeryturą, w %

Nazwa kraju	Udział składki emerytalnej w wynagrodzeniu	Stopa zastąpienia ostatniego wynagrodzenia emeryturą
Holandia	20,9	96,9
Dania	12,8	86,4
Włochy	33,0	83,1
Austria	22,8	78,4
Luksemburg	16,0	76,7
Portugalia	20,2	74,0
Hiszpania	28,3	72,3
Irlandia	14,8	72,1
Bułgaria	17,8	69,0
Islandia	19,4	69,0
Słowacja	18,0	63,4
Cypr	15,6	63,4
Belgia	16,4	60,8
Francja	25,4	60,5
Węgry	30,8	58,7
Finlandia	25,2	56,6
Szwecja	22,9	55,8
Litwa	26,3	54,1
Grecja	20,0	53,7
Wielka Brytania	25,8	52,2
Niemcy	18,7	50,9
Estonia	22,0	49,7
Chorwacja	20,0	47,5
Łotwa	20,0	47,5
Republika Czeska	28,0	45,8
Norwegia	22,3	45,1
Szwajcaria	16,2	42,1
Słowenia	24,4	38,1
Rumunia	26,3	36,6
Malta	20,0	33,7
Polska	**19,5**	**31,6**

Uwaga: prognozowana stopa zastąpienia emeryturą ostatniego wynagrodzenia została obliczona przy założeniu stałego i pełnego zatrudnienia do osiągnięcia wieku emerytalnego osoby, która rozpoczęła staż ubezpieczeniowy z dniem 1 stycznia 2016 r., otrzymując w całym okresie aktywności zawodowej płacę równą przeciętnemu wynagrodzeniu w gospodarce narodowej danego kraju. W obliczeniu stopy zastąpienia uwzględniono zarówno emerytury w systemie publicznym jak i z rynku kapitałowego.
Źródło: OECD Pensions Outlook 2018, https://read.oecd-ilibrary.org/finance-and-investment/oecd-pensions-outlook-2018_pens_outlook-2018-en#page21

Od 2020 r. wprowadzono doraźne rozwiązanie jakim jest tzw. trzynasta emerytura (w kwocie równej najniższemu gwarantowanemu świadczeniu) przyznawana wszystkim emerytom oraz czternasta emerytura wypłacana najuboższym, proporcjonalnie do kryterium dochodowego. Nie zmienia to faktu, że przy zbliżonym obciążeniu zarobków składką na fundusz emerytalny, przeciętna emerytura w relacji do przeciętnego wynagrodzenia będzie w Polsce najniższa w całej Europie (według niektórych prognoz w 2060 r. stopa zastąpienia wyniesie niespełna 25%, a więc mniej niż przewiduje to OECD). Grozi to zapaścią cywilizacyjną i katastrofą humanitarną.

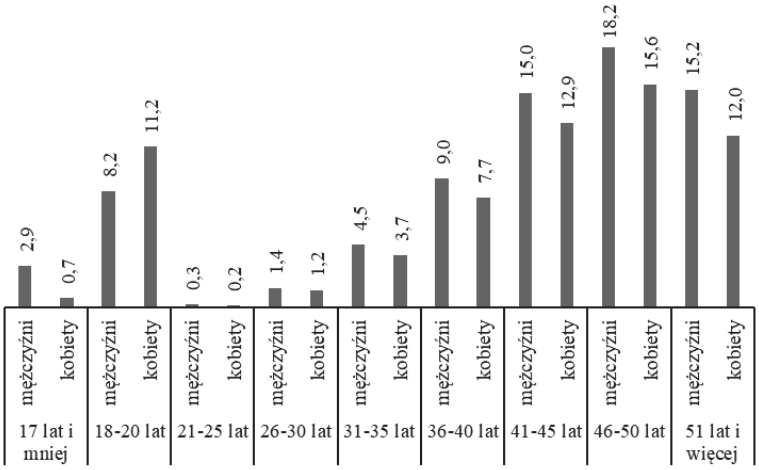
Program Budowy Kapitału – szansa czy iluzja poprawy bytu emerytów

„Wieloletni Plan Finansowy Państwa na lata 2020-2022" zawierał m.in. zapowiedź przebudowy modelu funkcjonowania OFE w ramach *Programu Budowy Kapitału*, *którego celem jest zwiększenie bezpieczeństwa finansowego obywateli przez stworzenie dobrowolnego kapitałowego systemu oszczędzania w Polsce oraz długoterminowych produktów inwestycyjnych* (MF, 2019, s.75). Brak jakichkolwiek racjonalnych przesłanek, aby sądzić, że emerytura z rynku kapitałowego zrównoważy systemową likwidację osłonowej części emerytury pracowniczej, która dotknęła pokolenie urodzone po 31 grudnia 1948 r. Z danych ZUS wynika, że w 2018 r. okresowa emerytura kapitałowa (głównie z OFE) kształtowała się średnio na poziomie 198,70 zł i otrzymywało ją zaledwie 240,5 tys. osób na ogólną liczbę 5 624 tys. emerytów. Emerytura kapitałowa była ponad jedenaście razy niższa od przeciętnej emerytury pracowniczej z Funduszu Ubezpieczeń Społecznych i nie wystarczałaby nawet na najskromniejsze utrzymanie (ZUS, 2019, s. 27). Nic nie wskazuje na to, aby sytuacja ta miała zmienić się w przyszłości. Biorąc pod uwagę wysokość środków zgromadzonych na rachunkach członków OFE (wykres 5), emerytura z tego źródła (przy oczekiwanej długości życia 208 miesięcy) wyniesie brutto najwyżej kilkadziesiąt złotych.

Inne prywatne programy emerytalne (IKE, IKZE) również mogą zapewnić co najwyżej kilkudziesięciozłotowe dodatki do podstawowej emerytury i m.in. dlatego (pomimo ulg podatkowych) nie cieszą się – jak dotąd – większym zainteresowaniem Polaków. Stosunkowo najbardziej korzystne dla oszczędzających są Pracownicze Programy Emerytalne, tworzone z inicjatywy pracodawcy i na jego koszt, przy ewentualnym współudziale pracowników; mają one jeszcze tę zaletę, że są względnie neutralne dla budżetu państwa, a korzystne dla instytucji rynku kapitałowego i beneficjentów. Jednak środki tam zgromadzone są najczęściej podejmowane jednorazowo przez uczestnika, zazwyczaj po osiągnięciu przez niego 60 lat. Pracownicy o długim stażu w PPE otrzymują jednorazowo spore kwoty, lecz najczęściej przeznaczają je w całości na spełnienie marzeń o własnej działce, na pomoc mieszkaniową dla dzieci, czy nowy samochód. PPE nie mogą zatem być podstawą utrzymania na starość, ani znaczącym stałym dodatkiem do emerytury z ZUS.

Program budowy kapitału, w części dotyczącej formalnej likwidacji OFE i zmiana nazwy tych funduszy na „specjalistyczne fundusze inwestycyjne otwarte" oznacza w istocie prywatyzację publicznych zasobów tam zgromadzonych. Zmiana nazwy przywraca możliwość inwestowania składek emerytalnych w obligacje skarbowe (czego po reformie z 2013 r. nie mogły czynić OFE). Jest także pretekstem do likwidacji tzw. suwaka emerytalnego, bowiem zniesiona ma być zasada przekazywania do ZUS oszczędności emerytalnych osób, którym do osiągnięcia wieku emerytalnego brakuje 10 lat; zwiększy to odpowiednio środki na kontach SFIO, ale także obciążenia państwa dotacjami do systemu ubezpieczeń pracowniczych. O tym, że reforma OFE jest czysto werbalna świadczy także tryb w jakim Powszechne Towarzystwa Emerytalne SA przekształcą się w Towarzystwa Funduszy Inwestycyjnych SA. Te same co dotychczas spółki, działające pod nową nazwą niemal automatyczne (z uwagi na duże obciążenia formalne, obliczone na zniechęcenie osób, które chciałyby zrezygnować z ich usług) przejmą aktywa OFE, rejestrując równowartość jednostek rozrachunkowych swych

członków na wyodrębnionych indywidualnych kontach emerytalnych w już istniejących lub nowo utworzonych IKE. Od tej operacji będzie pobrana (w dwu ratach) „opłata przekształceniowa" w wysokości 15% *ad walorem*, w zamian za zwolnienie w przyszłości emeryta z podatku od zysków kapitałowych. Alternatywą dla przystąpienia członka OFE do IKE jest bowiem możliwość złożenia przez niego deklaracji o przeniesieniu całości zgromadzonych przez niego oszczędności z OFE do Funduszu Rezerwy Demograficznej. Przy wyborze tej opcji nie ma żadnej opłaty, więc została ona bardzo negatywnie przyjęta przez uczestników rynku kapitałowego i ekspertów pracujących na ich rzecz, ale zapewne niewiele spośród 16 mln osób, które mają rachunki inwestycyjne w OFE skorzysta z tej możliwości, zarówno ze względu na skomplikowane procedury, jak i nieznajomość specyfiki konkretnych produktów finansowych.



Wykres 5. Średni kapitał emerytalny członków OFE; stan na 31 marca 2019 r., w tys. zł
Źródło: KNF (2019, tabl. 15)

Eksperci rządowi obliczyli, że w latach 2019-2020 do sektora finansów publicznych wpłynie ponad 13 mld zł z tytułu opłaty przekształceniowej, a ponadto powstaną oszczędności (szacowane na 3,5 mld zł rocznie w latach 2020-2022) z tytułu zniesienia transferów na wyrównanie ubytku składek w ZUS dla ok. miliona członków, którzy po reformie 2013 r. potwierdzili chęć kontynuowania członkostwa w OFE. Może wydawać się to niebagatelną sumą w sytuacji dużego obciążenia budżetu państwa programami socjalnymi, ale gdyby aktywa OFE w całości przekazano na Fundusz Rezerwy Demograficznej zarządzany przez ZUS (lub inny fundusz publiczny), państwo umocniłoby swoje udziały w największych polskich spółkach publicznych, uzyskiwałoby dywidendy i czerpało inne liczne korzyści przez wiele lat. Ten wariant likwidacji OFE byłby jednak sprzeczny z interesami prywatnych firm sektora finansowego i oczekiwaniami inwestorów giełdowych.

Prywatyzacji miały ulec również aktywa Funduszu Rezerwy Demograficznej, dotychczas usytuowanego w ZUS. Na mocy wprowadzanych zmian środkami FRD zarządzałoby prywatne towarzystwo funduszy inwestycyjnych, którego jedynym akcjonariuszem jest Polski Fundusz Rozwoju SA (nowy ust. 1 w art. 64 ustawy

o systemie ubezpieczeń społecznych – sus). Zarządzanie środkami FRD będzie odbywać się na podstawie umowy o zarządzanie portfelem, zawieranej w ramach przepisów ustawy z dnia 27 maja 2004 r. o funduszach inwestycyjnych i zarządzaniu alternatywnymi funduszami inwestycyjnymi, a koszty zarządzania zasobami tego funduszu zostaną sfinansowane z jego środków (do 0,05% wartości aktywów netto FRD w skali roku). Wynagrodzenia za zarządzanie funduszem inwestycyjnym będą obliczane na każdy dzień wyceny i płatne do 15. dnia roboczego po zakończeniu miesiąca, za który wynagrodzenie jest należne (nowy ust. 4 i 5 w art. 59 ustawy o sus).

O ile zapowiedź likwidacji OFE wywołała niepokój części środowisk powiązanych z warszawską giełdą papierów wartościowych, o tyle Pracownicze Plany Kapitałowe przyjęto tam entuzjastycznie. W istocie, główna różnica między OFE a SFIO i PPK sprowadza się do tego, że w przypadku otwartych funduszy emerytalnych odpowiedzialność za sfinansowanie tego programu, tj. utrzymanie płynności finansowej ZUS, spoczywała wyłącznie na budżecie państwa, to partycypacja budżetu w budowaniu filara kapitałowego będzie stosunkowo mała, przynajmniej do czasu objęcia systemem PPK całej sfery budżetowej; do SFIO – jak wiadomo – nie przewiduje się żadnych dopłat.

W obecnym kształcie, zasadniczy koszt finansowania PPK został przesunięty na przedsiębiorców (obligatoryjne płatności pracodawcy) oraz pracowników (składki potrącane od wynagrodzeń pracowników). Składka na PPK ma charakter powszechnego para-podatku, toteż układ ten może funkcjonować przez wiele lat, nie rujnując zbytnio finansów publicznych. Ponadto PPK zaprojektowano tak, aby kryzys związany z funkcjonowaniem funduszy emerytalnych odsunąć jak najdalej w czasie; uzyskano to poprzez przeniesienie ryzyka nietrafionych inwestycji na „beneficjentów" tego programu.

Paweł Borys, prezes Polskiego Funduszu Rozwoju otwarcie przyznał, że PPK będą wdrażane z użyciem techniki zalecanej przez ekonomię behawioralną, oddziałującej na podświadomość potencjalnych uczestników: *korzystamy z rekomendacji noblisty Richarda Thalera, ekonomisty, który mówi, że budując takie programy oszczędnościowe, emerytalne, warto dać silniejszy bodziec do tego, by ludzie podejmowali decyzję pozytywną. (...) Musimy ludziom wytłumaczyć, że PPK to zupełnie inny system niż OFE. Co więcej, to reforma, która wyciąga wnioski z błędów przy starcie OFE. I korzysta z najlepszych na świecie doświadczeń związanych z budową programów emerytalnych, kapitałowych. Dzięki temu programowi będziemy mogli powiedzieć, iż Warszawa jest realnym centrum finansowym Europy Środkowo-Wschodniej (Rzeczpospolita, 2018-08-03)*.

Zmuszając prawnie pracodawców do tworzenia PPK, a pracowników do uczestnictwa w tym programie, przewidziano stosunkowo niewielkie „zachęty" w postaci opłaty powitalnej i premii, a równocześnie wprowadzono niezwykle rygorystyczne sankcje finansowe za ewentualną wcześniejszą rezygnację z uczestnictwa; taki system kar z udziału w PPK jest wzorowany na umowach dotyczących polisolokat, chociaż ów proceder już dawno uznano za oszustwo instytucjonalne. Na tym nie kończą się manipulacje zakodowane w programie PPK, przewidziano bowiem automatyczne odnowienie udziału pracownika w PPK, który już wcześniej z udziału w tym programie zrezygnował. Wielu uczestników może nie zdawać sobie sprawy, że ponownie zapisano

ich do PPK; inni natomiast, widząc, że muszą ponawiać skomplikowaną procedurę, poddadzą się, wbrew własnym ocenom sensu istnienia tych funduszy.

Podsumowanie

W dobie pieniądza fiducjarnego, uporczywie niskich stóp procentowych i głębokiej alienacji rynku kapitałowego względem realnej gospodarki, otwarte fundusze emerytalne (w tym także SFIO wraz PPK), to nic innego jak gigantyczna piramida finansowa, o dużej żywotności ze względu na masowość członkostwa i prawny przymus wnoszenia składek oraz odległy termin wypłaty świadczeń.

Forsując prywatyzację emerytur, polskie rządy, niezależnie od opcji politycznej i przedwyborczych deklaracji programowych, świadomie lub nie, realizują ekspansywną strategię globalnych korporacji, dla których przecież większość mediów, polityków i ludzi nauki jest niczym więcej niż chwilowo użytecznym (a mimo to, w istocie pogardzanym) narzędziem do uzyskiwania swych egoistycznych celów. *Korporatokraci nie zostali wybrani w demokratycznych wyborach, nie odpowiadają przed nikim, za to doskonale wiedzą, jak podporządkować sobie polityków, media, środowiska naukowe* (Perkins, 2007). Na ich potrzeby pracują wybitni akademicy (w tym nobliści), którzy – podobnie jak dawni poszukiwacze kamienia filozoficznego, czy konstruktorzy *perpetuum mobile* – ustawicznie eksperymentują tworząc rzekomo niezawodne i wysoce rentowne modele inwestowania w produkty finansowe coraz to nowszych generacji.

Mając na uwadze wydarzenia z lat 2008-2009, państwo nie powinno ulegać lobbystom z rynku kapitałowego, ani wywierć nacisku na pracodawców, promując komercyjne produkty emerytalne obarczone wysokim ryzykiem. W sprawach dotyczących wielomilionowych grup społecznych rząd powinien dążyć do uzyskania rzeczywistego (a nie czysto formalnego) konsensusu społecznego; w żadnym wypadku stoickiej postawy obywateli wobec reformy emerytalnej nie należy mylić ze społeczną akceptacją, której skutkiem może być – niezamierzone, lecz realne – masowe wywłaszczenie polskich rodzin.

Polacy, zarówno zamożniejsi, jak i średnio sytuowani starali się bowiem ustabilizować swoją sytuację bytową, nabywając domy i mieszkania na własność; z badania przeprowadzonego przez NBP wynika, że nieruchomości stanowiły w 2016 r. aż 91,6% ich majątku netto (NBP, 2017a, s. 6). Emeryci, postawieni wobec alternatywy: utrzymać własność kosztem drastycznych ograniczeń własnej konsumpcji, czy skorzystać z odwróconej hipoteki, przekażą instytucjom finansowym, to co najcenniejsze w ich dorobku życiowym – nieruchomości i ziemię, na której zbudowali swoje domy. Jeśli proces wywłaszczenia emerytów będzie miał wymiar masowy i będzie przebiegał żywiołowo, może przynieść dramatyczne następstwa nie tylko w wymiarze indywidualnym, ale także społecznym. W polskim systemie prawnym brakuje bowiem rozwiązań, które skutecznie zapobiegłyby nadużyciom ze strony grup zarządzających odwróconą hipoteką i innymi ryzykownymi produktami finansowymi.

„Program Budowy Kapitału" – stanowiący integralną część „Strategii na Rzecz Odpowiedzialnego Rozwoju" – nie w pełni wszedł w życie, zarówno z uwagi na brak decyzji w sprawie OFE i dalece odbiegające od oczekiwań wyniki PPK, ale także konieczność działań osłonowych w obliczu kryzysu wywołanego Pandemią COVID-19. W tych okolicznościach, ogromnej wartości aktywa zabezpieczające główne ryzyka

socjalne (portfele OFE i FRD oraz środki Funduszu Pracy skąd wypłacane są „zachęty" dla członków PPK) mogłyby ułatwić przywrócenie – w niezbyt odległej przyszłości – klasycznej emerytury.

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Summary

Privatization of retirement funds in Poland began in 1999, when the defined benefits system was replaced by a defined contributions system, which led to the gradual cancelation of nearly all entitlements of employees. The partition of retirement contributions between the Open Retirement Fund (OFE) and the state-operated Social Security system (ZUS) has generated an enormous debt of the public sector (on the order of 300 billion PLN) and servicing of this debt has had devastating consequences for the state budget. Due to the pressure of the excessive deficit procedure imposed on Poland by the European Union, a process of phasing out the OFE scheme was initiated in order to improve the financial standing of the Polish general government sector, which has been achieved. However – in consequence – the introduced changes could have led to cancellation of the entire OFE program within several years. This has been prevented by the Program of Capital Building, which strengthens the capital market but carries significant risks of poverty and expropriation of persons who entered the labor market in 1990 or later. Privatization of assets in the OFE system makes the strengthening of the public Social Security system impossible; the financial burden of compulsory participation in the creation of the retirement capital market, imposed on small and medium enterprises, can adversely affect their financial standing and weaken the potential for development of the real economy in Poland.

Key words: open retirement funds, capital market, employee capital plans, social risks.
JEL Codes: H55, H75

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DOES THE SHADOW ECONOMY AFFECT FOREIGN DIRECT INVESTMENT? CASE STUDY OF POLAND AND POLISH REGIONS

The main goal of the research was to identify the relationship between the level of shadow economy and Foreign Direct Investment. The research was carried in Poland and Polish regions during 1990-2020. MIMIC approach was employed to calculate the level of shadow economy as a % of Polish and regional GDP. Pearson correlation index and Kolmogrov-Smirnov test were applied as well. The study proved there is a sound negative correlation (-0,636) between the shadow economy and foreign direct investment in Poland, but regional associations between those two variables demonstrated different results. Unlike in other Polish provinces, in Opolskie and Podkarpackie the correlation index confirmed a positive association between the level of shadow economy and FDI flow.

Key words: shadow economy, foreign direct investments, regions, transformation, macroeconomic situation
JEL Codes: E26, D52, E02

Introduction

Foreign Direct Investment (FDI) draws attention not only of economists but politicians and academics as well. Not every country can attract FDI and the effects of FDI have been discussed from many perspectives. Generally, FDI is regarded to be positive from the host country standpoint. It is commonly believed that overseas investors deliver technology, capital assets, access to international markets, and new management strategies. In this way, the host country can reduce the economic gap between well-developed and less-developed states (Faeth, 2009). Usually, researchers try to discover the motivations behind the flow of FDI.

Porto and Hoekman (2010) assert that the main factors fostering FDI relate to labor costs and access to natural resources. Whenever labor costs are low and foreign companies can gain the possibility to buy cheap raw materials, they will be more willing to invest in such a country. Vaseyechko (2012) points out the overall macroeconomic situation in host countries. If the macroeconomic situation improves, FDI goes up. Moosa (2002) refers to the earlier Markowitz (1991) work and argues that FDI is a suitable approach to minimize risk due to the diversification of market operations. Denisia (2010) developed this idea and postulated that FDI would expand whenever the benefits of offshore activity were higher than the costs of functioning in the mother country. Dunning and Lundan (2008) coined the OLI model [Ownership (O); Location (L) and Internalization (I)]. In this respect government policy is the essential issue. The authors point out that foreign companies should be granted at least similar conditions to

those they are given in their own country. This makes for fair business opportunity and investors can enhance export capabilities.

Internationalization of business is a crucial feature for companies both local and foreign. If they focus just on local markets the opportunities for growth are very limited. This view is shared by Hymer (1976) who was sure that companies preferred to invest overseas whenever they could exploit unique business advantages. Usually there is harsh competitiveness in well-developed market-oriented economies, therefore some companies are pushed away. Their skills may be employed more successfully abroad.

Krugman (1998) explained the location theory of production. In a way this idea refers to classical location theory. It explains the mechanism of the new economic geography (NEW). Krugman categorized two main groups of factors shaping NEW. The first group includes centripetal forces like market size, labor, general economic situation. The second - centrifugal characteristics like land rents, immobile assets and external features. In this way Krugman gave birth to a more sophisticated approach of FDI. He made an assumption of the new growth theory in respect to imperfect competition, as well as a new trade theory.

Whenever companies follow the path of increasing returns, they do not obey equal circumstances of business handling. The typical problem relates to transaction costs, especially those associated with information. Every time transaction costs are supposed to be low, FDI is going to increase. Dixit and Stiglitz (1977) explained the flow of FDI by the monopolistic assumption. Companies invest more willingly in those regions where they can gain sound market share. In such a situation, investors occupy a favorable place and they can multiply their profits. Kinoshita and Campos (2006) neglected those considerations. They claim that the quality of institutions in the host country is the main factor tailoring FDI. Foreign investors frequently follow transparent modes of business and prefer to obey regulations that are already in place. If institutional order is opportune, FDI will increase. This view is especially important for countries under economic transformation. If they introduce a proper institutional order that is similar to market oriented, democratic and well-developed countries, they can expect higher FDI flow (Navoi, 2008).

Some researchers and academics prefer to analyze the flow of FDI against the background of international trade theories (Graham, 1996, Helpman, Melitz, Yeaple, 2003). Companies, especially big ones, do not rely just on a single market – generally they are export-oriented. They try to be closer to their final clients and can exploit local labor forces – usually taking into consideration the level skills to the costs that are borne. In this respect Poland proves to be an attractive FDI destination. Poland can offer a well-educated, skilled labor force for moderate costs. In this way both final export products and services become cheaper and stay attractive on the international markets. Moreover, the quality is kept on a high level.

Aliber (1970) forwarded the currency strength theory. He researched countries with weak and strong currencies and analyzed the level of FDI. He proved that a country with weaker currency is more attractive for foreign investors, since the capitalization rate is higher. It is possible to argue with this approach since Aliber studied only Canada, USA and United Kingdom. Those countries represent matching economic models and have similar institutional orders. The situation will likely differ when dissimilar economies are evaluated. The currency rate is not the only important factor shaping FDI levels.

Referring to FDI theories, the consideration of perfect and imperfect markets should have been highlighted as well. The first approach was demonstrated by MacDougall (1958) and later on by Kemp (1964). They focused on a marginal productivity approach, asserting that a higher level of productivity attracts foreign capital. Whenever the marginal productivity of capital is equalized, then FDI will stop. The theory of the perfect market is based on neoclassical assumptions and builds from the position that each product or service is perfectly elastic, and that market equilibrium is determined by the price node of demand and supply. Each producer is then forced to follow the market equilibrium price since a higher price would bring no sales. Perfect market theory is commonly criticized due to many important annotations. Profit margin is not the only imperative factor fostering producers' market behavior. Thus, market equilibrium does not exploit the collective income of the industry as a whole (Nomidis, 2016). Companies do not adjust their production capabilities according to price equilibrium, and costs of production can vary. Therefore, profit margins differ among firms both domestic and foreign. The similar costs of market entry are just theoretical assumptions since companies try to exploit their unique competencies as much as possible and attempt to gain a monopolistic market position. So, any discussion of the perfect market should also address the monopolistic character of competition. Which is why some researchers, such as Caves (1971), support imperfect market theory as the main driver shaping foreign direct investments. Markets behave in sophisticated ways and each individual company, especially those operating overseas, is going to gain market advantage. Based on this approach each individual company creates its own incomparable strategy which makes the company exceptional in the market.

Imperfect market theory produced interesting ideas, such as: heterodox economics, game theory, transaction cost approach, behavioral-empirical concepts, experimental economics, industrial organization, neuroeconomics and more (Buckley, Casson 1976; Dunning, 1988).

Perfect market theories ignore the shadow economy, where market equilibrium is violated by companies operating illegally. They deliver products and services usually below market price equilibrium and legally functioning companies cannot cope with their counterparts. Whenever the shadow economy operates at a high level and occupies a sound place in the market niche, the sanctioned price equilibrium is difficult to achieve.

Some economies face big problems with informal activity and have most social motions supported by the shadow economy. Venezuela is a typical case. In Venezuela perfect market theory does not apply. In other countries, the shadow economy is a characteristic feature of conducting business. Its level can remain remarkably high and constitute more than 60% of a country's GDP – therefore the shadow economy affects and modifies the business environment significantly (Buszko, 2021).

Methodological assumptions

The level of shadow economy for 1990-2020 was calculated employing an MIMIC approach. This technique is recognized, accepted and widely applied to evaluate the level of shadow economy in market-oriented economies. MIMIC technique is based on the structural equation model. It consists of statistical relationships among latent

(unobserved – the level of shadow economy) and evident (observed) variables. The following observed data were accepted in the research: GDP per capita, unemployment rate, number of private companies, medium paid salary, social transfers, GINI index. The data was accurately filtered to avoid redundant statistics. The Pearson correlation index was used to check the correlation between independent variables. The Index was calculated in the following way:

$$rxy = \frac{\sum_{i=1}^{n}(xi-\bar{x})(yi-\bar{y})}{\sqrt{\sum_{i=1}^{n}(xi-\bar{x})^2}\sqrt{(yi-\bar{y})^2}}$$

Since it is based on the method of covariance, the index is assumed as the best approach of measuring the relationship among assumed research variables. It gives information about the magnitude of the correlation, as well as the direction of the relationship. The Kolmogorov–Smirnov (KS) test for normality of residuals was applied and was calculated by the formula:

$$Fn(x) = \frac{1}{n}\sum_{i=1}^{n} IXi \leq x$$

KS is a nonparametric test of the equality of continuous one-dimensional probability distributions that can be used to compare a sample with a reference of probability distribution.

The following hypothesis was taken: There is a negative correlation between the level of shadow economy and foreign direct investment both in Poland and in Polish regions.

Statistical software was used to carry out the calculations.

Barriers and opportunities for foreign direct investment: the case of the shadow economy – literature review

Literature devoted to FDI has focused on hurdles and prospects as well as effects of capital flow. However, researchers do not pay much attention to the shadow economy itself, but rather emphasise the characteristic features that constitute motion of the shadow economy. The shadow economy exists in any country and just varies in its level and category (Feige, 2015). The shadow economy affects many important spheres of legal activity. It causes inefficiency and limits fair market play. Those who are involved in the shadow economy occupy better market position and are favored not due to their skills and knowledge, but because they are able to rely on informal relations. The shadow economy deprives legal businesses and fosters corruption and internal debt; it also decreases poverty, as well as unemployment. Schneider and Hametner discovered a positive relation between the size of the shadow economy and GDP growth. The study was carried out in Colombia. They found that the shadow economy upgraded GDP progress (Schneider, Hametner, 2007). The shadow economy is a challenging economic category and is difficult to measure, (Williams, Schneider, 2016). Adair (2017) proved that the shadow economy displayed large discrepancies throughout the European Union. Daron and Dell (2010) go a step further - claiming that the shadow economy causes problems in regional development (2010). Mara (2011) noted that the shadow economy devastates legal activity and reduces the level of FDI. Westerlund and Edgerton (2007)

pointed out that a high level of shadow economy negatively affected foreign capital flows. The same standpoint was shared by Lee and Park (2013). Their exploration proves that countries with better institutional order and a low level of shadow economy attract better foreign direct investment than do countries with weak institutional quality and a high level of shadow economy.

Tanzi (2002) notes that the shadow economy negatively affects all business activity (including FDI) due to the high level of uncertainty. Deilami (2010) voices the opposite opinion. He highlighted the relation between tax avoidance, shadow economy and FDI. Based upon his research it could have been stated that the shadow economy assured good tax avoidance and that foreign investors would exploit this opportunity very skillfully. Davidescu and Alecsandru (2015) studied FDI in Romania in respect of the shadow economy. They found unidirectional causality between FDI and the shadow economy. However, they also proved that FDI, especially over the longer run, required a relatively small level of shadow economy motion.

Some researchers, especially in early studies (Leff, 1964; Leys, 1965; Huntington, 1968) assert a positive relation between corruption and business activity. They claim that the corruption could have been treated as "grease for the wheel" that clearly supports economic motion. Abotsi (2016) analyzed the impact of corruption on foreign direct investment. He created a simple but interesting model of the relation between corruption and FDI, arguing that the quality of institutional order in the host country amplified the rate of capital return. The quality of institutional solutions shapes productivity and whenever the return of capital was higher than the institutional level of quality, corruption did not affect FDI. This is contrary to situations when the return of capital is beyond this level. In such cases, corruption hammers FDI. Overall, a high quality institutional order reduces corruption.

Dreher and Gassebner (2013) discussed corruption in very regulated business environments. They coined it "overregulated settings" and they were pretty sure that corruption enhanced creativity as well as entrepreneurship. It might also support foreign direct investment. Based upon corruption, entry to the host country may be reduced and foreign companies will be not overly taxed. The due taxes will be preserved by corruption. In such a case the investor needs to calculate the level of corruption (measured by bribes) and profit returns. Whenever profit returns are higher than the level of corruption, still the risk of foreign direct investment reduction is limited (Lianju, Luyan, 2011). Lianju and Luyan have not mentioned that some internationally recognized companies follow ethical business practices and do not pay bribes. So, foreign investors should be divided into two groups. The first includes those who employ bribes as normal business practice and the second are those who avoid doing this. Countries with higher levels of corruption lose the second group of investors and overall capital flow is narrowed. Aidt (2009) posited interesting results from his studies. He investigated the relation between value added and corruption. Aidt found a negative correlation between these two factors. This may have serious ramifications for both the host country and foreign direct investment. The host country will be not benefit from high know-how investment flow, and investors cannot expect a high level of value added. That means investors will be more eager to transfer old technologies, and the host country's expectation of technology gap reduction will be not met. Investors will deliver products or services just to corrupted markets.

Sustainability proves to be another interesting feature fostering foreign direct investment. Well-developed countries pay close attention to sustainable growth. Companies are forced to abolish aggressive strategies that neglect the environment and threaten the existence of the global environment and future generations (Mebratu, 1998). They should spend more money for environment protection, reducing fossils consumption of fossil raw materials and following strict manufacturing regulations related, for example, to pollution (Neumayer, 2003). Large shadow economy motion can attract those investors who do not care about sustainability. They exploit raw materials without any restrictions and do not follow any norms regulating the standards of manufacturing. In this way foreign investors can very easily multiply their profits. Such a path is noticed even by recognized multinational companies. Especially, chemical as well as wood processing firms choose countries where sustainable growth does not play an important role and which are associated with a high level of shadow economy performance.

Saravia, Canavire-Bacarrez and Rios-Avil (2012) focused on the very important issue relating to intellectual property rights, shadow economy and foreign direct investment. They constructed both a theoretical model and conducted empirical analyses. Research showed that whenever intellectual property rights are violated, especially in the shadow economy countries, it reduced the flow of international capital.

Those results seem to be obvious ones, unless the problem of speculative capital flows is raised. Speculative capital flows generally are short-term oriented and they cannot be considered with "pure direct investment". International speculators generally transfer their assets to those markets where they can quickly (even based on hourly transactions) realize their profits (Reinhart, Rogoff, 2009). The situation changes significantly when the origin of speculative capital is traced. Frequently the capital is created in an unlawful way and seeks opportunities for legalization. There are many possibilities to do this, but without any doubt foreign direct investment may be employed both in countries with high and even moderate levels of shadow economy. It can be argued that the more problematic the origin of speculative capital, the more investment is directed to countries heavily affected by shadow economy motion. The change of assets category is a convenient way to legalize capital. Moreover, it provides prospects for transferring legal money (in the form of earned profits based upon FDI) to any other country. This statement aligns with the research of Nikopour, Habibullah, Schneider and Law (2009). They analyzed 145 countries and five periods covering the years 1999/2000, 2001/2002, 2002/2003, 2003/2004, 2004/2005. They asserted the result that FDI produced a shadow economy. Unfortunately, they did not trace the origin of capital: legal capital hesitating to operate within the shadow economy framework, versus illegal capital.

This is why those two types of capital and foreign direct investment patterns should have been distinguished. Goel, Ram, Schneider, Potempa (2020) studied the correlation between FDI and the shadow economy and exposed a slight positive 0,15 association between these two variables. In other words, it means that the growth of FDI supports enlargement of the shadow economy.

Foreign Direct Investment Flow to Poland

Starting from 1990 when market-oriented reforms were introduced, Poland has enjoyed a tremendous flow of FDI. Even though the level of foreign capital has been increasing, it varies in its structure and origin. By 2020 FDI in Poland exceeded $240 billion, which accounted for 25% of the external capital transferred to Central and Eastern European countries.

By 2010 based upon foreign capital nearly 25 000 companies started their operation in Poland, and they represent owners from 107 countries. The medium capital flow to Poland on a yearly basis varied between $11-15 billion USD and constituted 40% of GDP (Rocznik Statystyczny, 2020). This figure is close to well-developed market-oriented economies, even though their GDP both in real and per capita terms are far higher than in Poland. Foreigners are mainly involved in green field investment or purchasing existing local companies. 70% of investors come from Germany, USA, France, Italy, Japan, Netherlands, Switzerland, Austria.

Privatization was a very crucial factor that encouraged overseas firms to come to Poland. The market size, access to skilled and well-educated workers, central localization and liberal approach to economic development offered challenging opportunities for growth. In 2020 the assets of foreign companies increased to $415 billion. The biggest company in the respect of assets is French Orange – a giant in the telecommunications industry in Poland. The second place belongs to ArcelorMittal group, formally registered in Luxemburg, which was formed by a merger between the Spanish firm Arcelor and Indian Mittal family. ArcelorMittal Poland controls the steel manufacturing industry in Poland. The third place is occupied by the Porsche-Piëch group, engaged in motor vehicle production and sales. This group is mainly recognized since it is the owner of Volkswagen, Porsche, Scania and MAN Trucks brands. American companies focus more on financial services and forwarding private equity funds to Poland, although Americans control Żabka retail chain shops and are involved in the energy business as well. Sociedade Francisco Manuel Dos Santos SGPS, S.E, is a Portuguese company that developed an efficient network of popular shops named Biedronka, Hebe and Bliska. Those shops occupy a sound position in the Polish retail market and are prevalently accepted by local customers.

External companies operating in Poland introduced long term strategies by generally reinvesting earned profits. In 2017 alone, they reinvested $11 billion while net capital flow was only $9 billion (Rocznik Statystyczny, 2020). A positive trend is observed with operating revenue. Companies with foreign capital have been constantly increasing their operating revenue. In 2019 it reached the level of $472 billion.

Taking into the consideration the size of the foreign companies operating in Poland, the majority (65%) are firms employing up 49 people. Medium-size companies (50-200 workers) constitute 23%, and large companies (more than 200 employees), 15%. The structure of foreign companies is different from the structure of local firms. The predominant share of local companies are small entities (99.1%), medium-sized only 0.7%, and just 0,2% are large organizations – mainly state-owned corporations. Foreign companies hire nearly 2 million people. The most favored industries which attract foreign investors are real estate construction and services, manufacturing motor vehicles as well as accessories. Foreign decision makers are interested in banking

sectors, financial services and wholesale trading, excessively. Those activities occupy nearly 80 % of all capital flow sent to Poland. Foreign companies have proved to be very skillful and deliver market-oriented strategies, know-how, and new technologies. In this way they have gained sound market share. In order to compete successfully, Polish local companies were forced to change old-fashioned strategies into new ones.

The Foreign Direct Investments in Poland have been diverse. The predominant share have been in the Mazowieckie province. Mazowieckie received ca. 50% of all FDI transferred to Poland between 1990 - 2020. The average annual amount of foreign capital sent to this region was approx. 40 billion PLN, although FDI varied significantly during 1990-2020. Mazowieckie is the most populated area in Poland, with a population of 5,9 million. Warsaw is its metropolitan zone and is home to the most important financial institutions (e.g. Warsaw Stock Exchange, the largest domestic and international banks), governmental offices, companies operating worldwide. The capital of Poland, Warsaw also offers well-developed infrastructure. Mazowieckie is recognized as the best developed region in Poland with the highest level of GDP per capita. In 2020, its GDP per capita was 176% times the country's average, and 105% times the average GDP per capita indicated for the entire European Union. Warsaw is the leading city not only in Mazowieckie, but in Poland, with other cities far below Warsaw's results.

Figure 1. Foreign Direct Investment in Poland (BoP, current USD) 1990-2020 $ billion
Source: World Bank Data Retrieved https://databank.worldbank.org/reports.aspx? Source =2 & series = BX. KL .DINV.CD.WD&country=POL date of access 2021/07/07.

Also in Mazowieckie province, the Radom area has just 45% of the average GDP per capita calculated for the European Union. A similar situation is found in other places like Ostrołęka, Siedlce, even Płock (a well-industrialized city where the giant petrochemical refinery Orlen is located), Grójec and others. Mazowieckie, especially Warsaw, offers for foreign investors not only a central location but access to a well-educated labor force (the best Polish universities are located in the capital of Poland), and the well-managed Chopin international airport (50% of all passengers use this airport). Fitch Agency scored BBB+ for Mazowieckie, taking into an account its investment attractiveness.

The Dolnośląskie, Małopolskie, Śląskie and Wielkopolskie provinces could also attract FDI quite skillfully. Their singular share of total FDI sent to Poland constitutes ca. 8%. Dolnośląskie, Małopolskie, Śląskie and Wielkopolskie are quite well industrialized and provide good opportunities for foreign investors. Wielkopolska draws attention from Western European investors, especially from Germany. Dolnośląskie as well as Śląskie offer respectable opportunities for foreign manufacturing capabilities and logistic systems. Małopolskie is specialized in B2B services.

The other regions in Poland occupied a very small share in total Polish FDI flow. Their singular share varied but did not exceed 5% during 1990-2020. Habitually, foreign investors are not especially active in the Warmińsko-Mazurkie, Świętkorzystkie, and Podlaskie regions. Their share of FDI was ca. 2% during 1990-2020 period. Although some recognized international companies like Ikea, Michelin and Egger Group came to Warmińsko-Mazurskie and started export-oriented activity there.

Michelin, a known French tire manufacturing and wholesaler company, bought the existing Polish Stomil firm and expanded its successful business in this part of Europe. Ikea and Egger Group gained access to raw materials (furniture businesses) and started their green field activity in Wielbark and Biskupiec, respectively. Unfortunately, regions like Pomorskie and Zachodniopomorskie were seen as very challenging in attracting FDI, which proved to be limited. This is somewhat surprising, as they offer good infrastructure, a skilled labor force, as well as a high number of private local companies ready for cooperation. They have a long tradition in ship production (famous shipyards in Szczecin, Gdansk and Gdynia) but no foreign investors were interested in investing in this business.

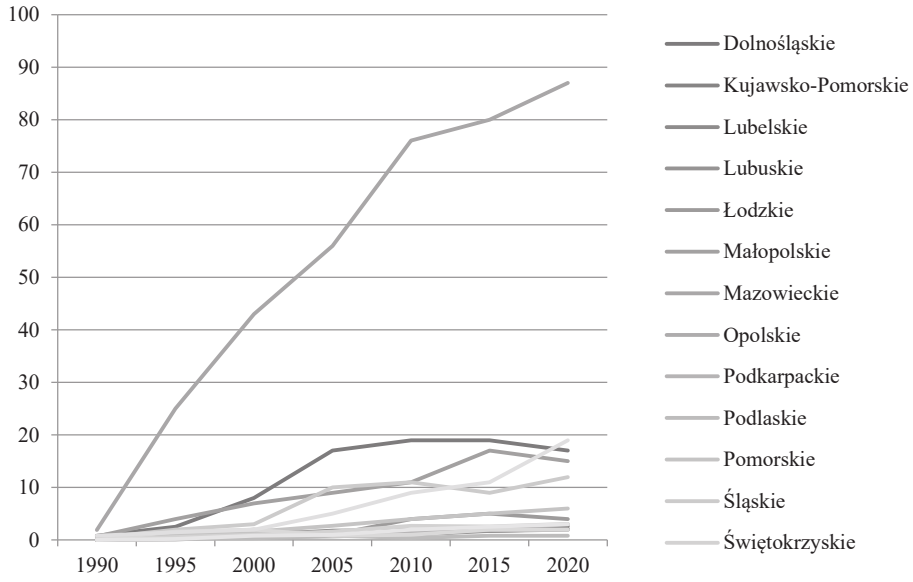

Figure 2. The level of Foreign Direct Investment in Polish Regions 1990-2020 / PLN billions
Source: GUS (2021). Economic Activities of Entities with Foreign Capital, Warsaw. (Działalność gospodarcza podmiotów z kapitałem zagranicznym. Warszawa.)

Podlaskie, Lubelskie regions could be operating as “the gate to Ukraine, Belarus or Russia” but they have not exploited this opportunity successfully. After 2015, an interesting trend was noticed. Investors from Ukraine, Belarus and Russia started to be more vigorous in the Polish market. In 2018 investors from Ukraine created 2016 companies in Poland, from Belarus 333 firms were created and from Russia, 275 firms. Even though the number of companies from those countries is quite impressive, their share of total foreign capital remains insignificant. The assets from Ukraine, Russia and Belarus did not exceed 0,3% of all foreign capital engaged in Poland. Moreover, the majority of those firms are located in the Mazowieckie region and they are commonly involved in services.

Shadow economy performance in Poland and its regions 1990-2020

Like other countries, Poland has been affected by shadow economy motion. The roots and the effects of this illegal activity seem to be recognized. The origins of the shadow economy usually relate to:

- taxation system,
- low level of tax morality,
- weak institutional order,
- GDP and overall macroeconomic situation. Whenever a poor economic situation is observed, the shadow economy tends to grow and become stronger
- national culture and business organizational culture,
- criminality and organized crime groups,
- corruption,
- high costs of labor force,
- overregulated labor market,
- history. In some countries like Poland the shadow economy has been widely accepted and many Poles participate in it,
- globalization (Schneider, Medina, 2018; Schneider, 1998; Thomas, 1992; Fichtenbaum,1989).

When Poland introduced market-oriented reforms the shadow economy proved to be very active. The command economy (commonly named as planned, shortage, socialist) did not offer an effective approach to fulfilling society’s needs and created many market loops. Investment in heavy industrialization made for a lopsided economic structure. Light industry, especially consumer manufacturing and food production were not correctly invested or developed. Those sectors were practically marginalized. Market loops were typical patterns of economic performance and consumers were satisfied by shadow economy activity, which helped fill a supply void. Individuals commonly employed corruption in order to get access to consumer goods or services.

The first years of Polish transformation created good opportunities for growth of the shadow economy. Although the assumptions of the Balcerowicz Plan – labelled as “shock therapy” – could have been evaluated as the right path in the long-run , since decision- makers wanted to reduce inflation, improve efficiency of companies, and diminish the role of central planning, many state-owned companies went into bankruptcy

and unemployment quickly grew. In 1991 nearly 1,2 million jobless were registered. Furthermore, comparing 1990 to 1989, GDP declined by $6,2 billion (Rocznik Statystyczny, 1992). The situation was quite harsh, especially where former big state-owned agriculture companies (PGR) were formed. Employees were fired and the shadow economy was often the only option for survival. Moreover, PGR were popular in less developed Polish regions, and when unemployment occurred – the shadow economy was given impetus to develop.

Government revenue institutions, tax officials and police were not prepared to cope with the new economic reality, and the shadow economy bloomed.

Staring from 1990, the shadow economy in Poland increased. In 1990 the its level constituted 27% of GDP and in 1995 it had reached 31% of GDP. Such an upsurge of the shadow economy was fostered by many factors, including the time needed for adapting from a planned economy to the new business environment of a market economy. This situation was tough not only for Polish entrepreneurs but for foreign investors as well. Some characteristic features of the planned economy were not abolished immediately. Still, especially in the beginning of the 1990s, the active role of government was noticed. Government played an active role in the privatization process and external businessmen vigorously participated in it (Buszko, 2021). The Polish market was ranked as promising and challenging, it became the biggest market in Central Europe, and the state was deemed a leader of introducing a market-oriented economy. The reforms were made quickly and relatively complexly. Other countries like Bulgaria, Romania, and the Baltic States implemented "stop and go" reforms. The future of those reforms was not so clear, therefore foreign direct investment was not as high as it in Poland. In the 1990s Poland was regarded as setting the blueprint of market-oriented reforms (Balcerowicz, 1995).

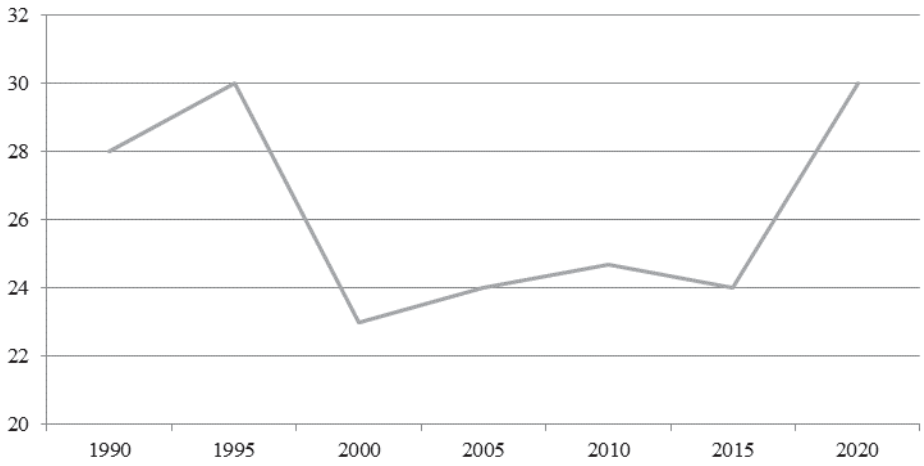

Figure 3. The level of shadow economy in Poland during 1990-2020 (% GDP)
Source: Author's own estimation based upon methodological assumption.

After 1995, a decrease in the shadow economy was observed. By 2000, the level had dropped to 23% of GDP. Within the next 15 years the shadow economy varied between 23-26% of GDP. After 2019, the shadow economy again increased, mainly due to the Covid pandemic situation. The overall macroeconomic situation worsened. The level of GDP decreased, and unemployment grew. The pandemic locked down many industries and negatively affected export activity of Polish companies, both domestic and foreign. The pandemic cut demand from Germany, which is a key importer of Polish products and services. Nearly 80% of German companies noticed a decrease of turnover and were forced to cut operation costs. Consumption was reduced by 15% and imports fluctuated. Since unemployment grew by 2%, the German government also focused on facilitating local manufacturing activity over imports (Folkerts-Landau, 2020).

The overall performance of the shadow economy in Poland has varied by region and over time. In the beginning of the 1990s, it operated at similar levels across all regions. Later, much higher levels were seen in less developed regions, while in well-developed provinces, the level was significantly lower.

Starting from 1990 in Wielkopolska the shadow economy has decreased. In the beginning of the transformation period, the shadow economy constituted 29% of regional GDP; in 2020 it had reached the level of 19%. Surprisingly even during the pandemic this process has not been stopped. A similar trend was observed in two other regions: Małopolskie and Dolnośląskie, although the decline of illegal economic activity was not as significant as in Wielkoplska. In Małopolskie the shadow economy in 1990 was 30% of regional GDP, and in 2020 it had dropped to 21%. Up until 1995 the shadow economy in this region remained at a relatively high level. Dolnośląskie could cope with the shadow economy comparatively well. As with other Polish regions, in Dolnośląskie at the beginning of the 1990s, the shadow economy occupied a significant place in business activity, at 30% of local GDP. In 2020 its level was reduced by 10%.

During the planned economy, the Śląskie region was known as the heavy industrial center of Poland. Although there have been many attempts to modernize this area and liquidate inefficiency – mainly in the coal mines and steel works – many of them are still under operation. Unemployment rate as a crucial factor of shadow economy movement did not play important role there. The problem of unemployment did, however, become serious in the eastern and northern Polish provinces. Which is why the shadow economy in Podlaskie, Warmińsko-Mazurskie, Lubelskie, and Podlaskie persisted at a very high level – in excess of 25% of their local GDP. A high level of the shadow economy was also observed in other less developed regions like Świętokrzyskie, Kujawsko-Pomorskie and even Łódzkie. Łodzkie was the strong textile center and after bankruptcy of many state-owned manufacturing companies, unemployment grew and unfortunately an adequate strategy for this region was slow to develop. So, the market loops were fulfilled by shadow economy motion.

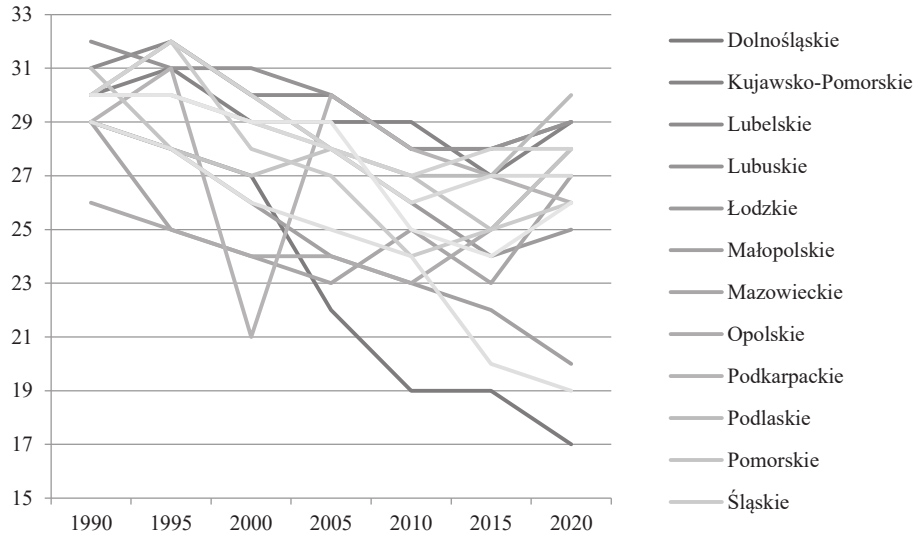

Figure 4. The level of shadow economy in Polish regions 1990-2020 (% GDP)
Source: Author's own estimation based upon MIMIC approach.

Findings

Based upon a methodological approach, Table 1 presents the correlation between the shadow economy and foreign direct investment in Poland.

Table 1. The correlation level between shadow economy and foreign direct investment in Poland

Category	Shadow economy	Foreign direct investment
Foreign direct investment	- 0,636	1
Shadow economy	1	-0,636

Source: Author's own estimation based upon methodological approach $p<0,05$.

The correlation constitutes -0,636 level. It represents sound negative association. It means that whenever FDI increases in Poland, the shadow economy is reduced and vice versa. An increase in shadow economy activities diminishes FDI capital flow.

The situation in Polish regions proved to be different.

In Dolnośląskie, Małopolskie and Wielkopolskie the correlation between the shadow economy and foreign direct investment flows were on very high level. The Pearson correlation index was on the level -0,94; -0,95 and -0,93 respectively. In those regions the association between analyzed variables proved to be very important. FDI negatively affected shadow economy growth. A similar tendency was noticed in Zachodniopomorskie, Lubuskie, Łódzkie Śląskie and even Świętkorzyskie, unlike the Opolskie and Podkarpackie regions. In Opolskie and Podkarpackie the association between shadow economy and foreign direct investment proved to be positive. In

Opolskie the index was 0,58 and in Podkarpackie 0,16, which means that the growth of FDI supported shadow economy enlargement.

In Warmińsko-Mazurskie the correlation index between shadow economy and foreign direct investment was low and demonstrated a level of -0,29. Based upon this result it can be stated that the increase of FDI reduced shadow economy growth but less significantly.

Table 2. The correlation level between shadow economy and foreign direct investment in Polish regions 1990-2020

Region	The correlation value
Dolnośląskie	-0,94
Kujawsko-Pomorskie	-0,63
Lubelskie	-0,82
Lubuskie	-0,84
Łódzkie	-0,87
Małopolskie	-0,95
Mazowieckie	-0,45
Opolskie	0,58
Podkarpackie	0,16
Podlaskie	-0,45
Pomorskie	-0,59
Śląskie	-0,85
Świętokrzyskie	-0,80
Warmińsko – Mazurskie	-0,29
Wielkopolskie	-0,93
Zachodniopomorskie	-0,90

Source: Author's own calculation based upon methodological approach, $p < 0,05$.

Conclusions

The research provided more questions than answers. The shadow economy affects foreign direct investments. It can be stated that a high level of shadow economy commonly is a barrier to any investment, including overseas as well. Speculative capital that is trying to hide its origin may be interested in targeting countries or regions with high shadow economy motion. Those who prefer transparent business and stable economic environments are not as willingly to be active in those areas. The shadow economy makes for an unpredictable and complicated situation for both domestic and external investors. It would be interesting to explore the extent that the level of shadow economy can threaten legal businesses. The shadow economy exists in any country, it just varies in level and category. A low level may not noticeably affect business activity.

The hypothesis was partly confirmed. There is not a strong negative correlation between the shadow economy and FDI in Polish regions.

Generally, FDI supported Polish development. Overseas investors created job opportunities and enhanced export-oriented activity. Large well-known foreign companies prefer to work in a transparent way and their operation in local markets diminishes shadow economy performance. Foreigners choose regional subcontractors legally. The increasing flow of FDI benefits regional development. Local as well as central authorities can then attract good overseas companies, generally operating legally.

This case is applied to Wielkoplskie, Dolnośląskie and Małopolskie provinces, especially.

The situation proved to be different in less developed regions with high levels of shadow economy motion. Those regions did not attract much foreign capital. Overall it did not change the economic situation in the provinces, even though some improvements could be noticed locally. For example, the Ikea company located itself in a tiny place – Wielbark in Warmińsko-Mazurskie – upgraded the local labor market (1600 people found jobs there), and started cooperation with Polish companies. Workers were trained and became familiar with new technologies and management skills. On the other hand, Ikea did not change the situation in other neighboring towns like Szczytno, Nidzica or Działdowo. Finally, FDI did not decrease the shadow economy motion in the entire Warmińsko-Mazurskie region.

Some provinces that benefit from both FDI flow and the increase of shadow economy may be observed. This process can be explained in three ways. First, the shadow economy occupies the predominant sphere of business and all other entities should join the shadow economy framework or quit the market. Secondly, FDI represents just a very minor part of economic motion and it does not impact on any unlawful activity. Thirdly, FDI comes to the region (or state) but foreign capital flow is originated from the shadow economy. Its presence enhances all illegal performance in the province or state.

This research opened new areas of possible investigations. It would be challenging to know the structure of economy affected by overseas capital flow and shadow economy motion. Some industries, like manufacturing, are not so friendly to the shadow economy, unlike agriculture, construction, entertainment, restaurants or even hotel businesses. It would be interesting also to see if there is a specific pattern of cooperation between foreign and local companies both in Poland and in Polish regions against the background of shadow economy activity. It is likely that each specific situation modifies the means of cooperation and influences the vibrancy of the shadow economy.

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Czy szara strefa rzutuje na poziom Bezpośrednich Inwestycji Zagranicznych? Przypadek Polski i polskich regionów

Streszczenie

Głównym celem podjętych badan była identyfikacja zależności pomiędzy poziomem szarej strefy a Bezpośrednimi Inwestycjami Zagranicznymi. Badonie dotyczyło Polski i polskich regionów w latach 1999-2020. Wykorzystano metodę MIMIC w celu wyliczenia poziomu szarej strefy jako % PKB. Posłużono się także współczynnikiem korelacji. Pearsona oraz testem Kolmogrova-Smirnova. Na podstawie przeprowadzonych badan należy stwierdzić, że wystąpiła negatywna korelacja pomiędzy szarą strefą a poziomem BIZ(-0,636). Natomiast w odróżnieniu do Polski oraz innych regionów w Opolskiem i Podkarpackiem związek okazał się pozytywny.

Słowa kluczowe: szara strefa, bezpośrednie inwestycje zagraniczne, regiony, transformacja, sytuacja makroekonomiczna.
JEL Codes: E26, D52, E02

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ESTIMATION OF FINANCIAL STABILITY OF AGRARIAN ENTERPRISES IN UKRAINE

In this paper the system of factors influencing the formation of financial solvency was investigated, the financial sustainability of agricultural enterprises of Ukraine was evaluated, and an approach was developed to define and help ensure the financial sustainability of enterprises in the face of contemporary economic and market challenges. According to the research, the main principles for maintaining financial sustainability are: responsiveness to internal and external changes; governance systems; risk management; analysis of financial ratios; real assessment of the financial solvency of the enterprise; integration with the overall management system; orientation towards achieving the strategic goals of the enterprise; use of qualitative methods to inform financial decisions in the face of uncertainty and risk.

Keywords: financial equilibrium, financial stability, enterprise financing, the mechanism of financial stability provision, risk, uncertainty.
JEL Codes: O13, O16

Introduction

Developing the agro-industrial sector into one of the most important sectors of the national economy is can be a way to increase national economic capacity and competitiveness. But the current state of Ukraine's economy is unsatisfactory and is characterized by rather complex economic conditions. The activities of agribusiness enterprises are being carried out under conditions of uncertainty, such as: the slow development of scientific progress; an unstable political situation; Russian military actions in the east of Ukraine; the increase of market competition; the intensification of globalization processes; and the scarcity of information. Under such conditions, a modern farming system requires enterprises to improve production efficiency and the competitiveness of products and services, as well as to monitor economic performance in a timely manner. The volatility of the external environment has a significant impact on businesses; their economic situation and their stable development. The problem of ensuring financial sustainability is therefore very relevant in today's business environment.

The aim of the research is to comprehensively investigate the financial sustainability of agricultural enterprises in Ukraine and to substantiate the method of its evaluation.

Literature review

The issue of financial sustainability has figured prominently in the writings of many scholars. A study of economic literature revealed the lack of a unified approach to defining the category of "financial stability". An analysis of different interpretations of this concept shows the presence of different views on the economic content of financial stability depending on the goals and objectives of the study in question.

Thus, some scholars consider financial stability in the context of a company's independence from external sources of funding. From this definition it follows that a financially stable enterprise is one which finances activities only at its own expense. But the use of only equity significantly limits the efficiency and options of economic activity for an enterprise.

The Ukrainian researcher N. Tarasenko places financial stability on conforming activity to the generalizing ratios which characterize the economic components of stability: maintaining sufficient financial continuity for the main types of activities. L. Sokolova (1996), in considering financial stability, stated that a financial condition is considered stable if the enterprise achieves the necessary parameters in the areas of profitability, the availability of its own financial resources; rational allocation of noncurrent and current assets, solvency and liquidity.

However, it is incorrect to determine financial stability only by the compliance of an enterprise's activity with the normative generalizing ratios, because they are only a reference point and often have different calculation algorithms and normative values.

Most researchers rightly define financial stability as one of the characteristics of the financial condition of the enterprise. I. Blank determined financial stability as a characteristic which is provided by a high share of equity in the total amount of financial resources used (Blank, 1999). In a broad sense, financial stability can be interpreted as the ability of the enterprise to function close to the financial and economic equilibrium under the conditions of constant external and internal influences of factors. In a narrower sense, the financial stability of an enterprise is a financial and economic condition of the organization, in which it is liquid, solvent and has sufficient funds. M. Kreynina stated that financial stability is provided by a sufficient share of equity in the sources of funding (Kreynina, 2021). At the same time, a sufficient share of equity means that the loan sources of financing are used to ensure their full and timely repayment. From this point of view, short-term liabilities in total should not exceed the value of liquid assets in terms of inventories and work in progress.

Another author understands financial stability as the state of financial resources of an enterprise, their structure and level of maneuvering, which ensures financial independence and development on the basis of profit growth and capital, provided by an allowable level of risk (Kovalenko, 2005).

Research on the analysis and evaluation of the financial soundness of an enterprise dates back to the 1960s. E. Altman and U. Beaver have undertaken financial evaluations aimed at the financial stability of enterprises (Altman, 1968). The problem of financial sustainability has been studied in the works of such known scientists as U. Briggem and L. Gapensky, J. Van Horn, B. Kallus and others whose works are devoted to financial analysis and management. With regard to Ukrainian researchers, an analysis of recent research and publications leads to the conclusion that different authors suggest

alternative ways of measuring the sustainability of economic systems that not only differ from each other in economic content but often quite distort the original meaning of the concept of sustainability (Goncharenko, 2010).

In view of the excessive imbalance of the methodological bases, V. Podolskaya and A. Orzhinska take the position that it is necessary to develop the methodology, and fundamentally new approaches to the analysis of financial sustainability, including studies of the efficiency of activities and the threat of bankruptcy (Podolskaya and Orzhinska, 2009). A. Zhuravleveva, researching problematic aspects of objectively establishing the financial stability of modern economic subjects, notes that one of the most important economic problems is the definition of financial stability (Zhuravleva, 2009). Taking into account a number of problematic aspects in this area, A. Pacula notes that, in general, questions of operational analysis and basic ratios of activity of economic entities remain relevant (Pacula, 2010). As a result of literature review on this *subject, it is apparent* a lot of important questions still need to be investigated. The nature of financial sustainability is not clearly defined, and the features and the methods of its measurement are not fully disclosed. The influence financial stability on the aspects of an enterprise's financial health remain insufficiently studied in the literature.

Research methodology

Currently in Ukrainian practice, the fundamental principle of enterprise management regarding any type of economic activities, in particular financial management, is largely based on ratios that have financial stability and financial condition as the starting point of its development (Kondrat, 2017).

Determining the financial stability of an enterprise has important scientific and practical significance. It is an objective indicator of the level of economic and financial activity of agricultural enterprises.

The financial sustainability of an enterprise is one of the most important features of its operations and financial well-being. It describes the outcome of current, investment and financial development, provides necessary information for investors, and reflects the ability of an enterprise to meet its debts and obligations and to build economic capacity. In the face of current challenges, financial sustainability is the main condition for existence and the basis for the stability of the enterprise. Financial stability characterizes the level of financial independence of an enterprise in terms of ownership of its property and its use (Bagatskaya, Govorushko, Sheremet, 2014).

To ensure the sustainable development of agribusiness, it is important to draw attention to the harmonization of selected ratios of companies' financial sustainability, which are calculated as the ratio of individual parts of a whole (Dorofeyev, Voronina, Toryanik, 2019). If an agricultural enterprise has an insufficient level of financial sustainability (unstable or crisis financial condition) it can lead to insolvency or bankruptcy (Lesyuk, 2020). If an enterprise is financially sustainable, it has an advantage over other businesses in attracting investment, obtaining credit, selecting suppliers and selecting skilled personnel. Moreover, it does not conflict with the State and society, since it pays taxes on time to the budget, makes social contributions to the Pension Fund and other contributions, pays salaries of employees, pays dividends to

shareholders, and guarantees to banks the repayment of loans and the payment of interest.

Today there are various methodological approaches to assessing the financial sustainability of agricultural enterprises, and a variety of ratios that do not reflect a complete and objective assessment of production and economic activities of agricultural enterprises. Therefore, the establishment of a single system of ratios for an in-depth assessment of the financial status of agricultural enterprises will contribute to the objective analysis of their production and economic activities. The monitoring of financial sustainability ratios shows the current state of the financial system and allows for the rapid monitoring of all changes. Ratios are part of a large information block that is used to monitor financial stability (Rodica, Alexandru, Angela, 2014). The financial sustainability of an agricultural enterprise involves the use of ratios that reflect various aspects of the enterprise's production and management. The financial stability assessment should be able to determine whether an enterprise has managed its financial resources properly during the period.

It is important that the state of financial resources meets market conditions and the needs of the enterprise, because insufficient financial stability can lead to a lack of funds for further development, while excessive funds can hinder development, burdening the company's costs with excessive reserves (Kruppelitskaya, Yushko, 2013). The financial sustainability of an enterprise depends on the optimal structure of the sources of capital (the ratio of equity to debt), the optimal structure of assets (current and noncurrent assets), as well as the balance of assets and liabilities. Therefore, there is a need to assess the structure of an enterprise's sources and to assess the degree of financial sustainability and financial risk (Lesyuk, 2020).

Three sets of ratios are useful for assessing the financial sustainability of agricultural enterprises: ratios of the structure, capital cost, and other ratios related to capital.

The use of ratios in assessing financial sustainability allows the identification of specific areas for improvement of an enterprise's performance. The first group of ratios of the structure and value of the sources of capital of agricultural enterprises describes the relationship between the division of liabilities: equity; long-term liabilities and security; current liabilities and security, as well as liabilities related to non-current assets held for sale.

The second and the third groups of ratios of the capital condition of agricultural enterprises describes the relationship between the divisions and items of on the balance sheet, namely: noncurrent and current assets, liabilities, equity and liabilities, as well as liabilities related to non-current assets held for sale.

In practice, financial ratios are used to analyse the financial stability of an enterprise and are calculated with respect to the absolute values of the assets and liability. Their comparison with critical values allows to determine the level of financial stability of an enterprise (Kurganski, 2011).

In our opinion, the main elements of financial stability of an enterprise are: (Figure 1): solvency; liquidity; profitability; financial activity; creditworthiness.

In general, the essence of these definitions can not be considered contradictory because they differ in the degree of detail and characterize different aspects of the

category, which determines certain methodological approaches to assessing financial stability.

It should be noted that in the financial and economic analysis there is a division of ratios into ratios that characterize the assessment of the financial stability of an enterprise, as well as ratios that aim to assess the management of financial stability. This is because the state of financial stability is assessed in static terms and is characterized by ratios for a specific date, as such ratios are normalized. The state of management of financial stability of enterprises can be assessed only by dynamic ratios.

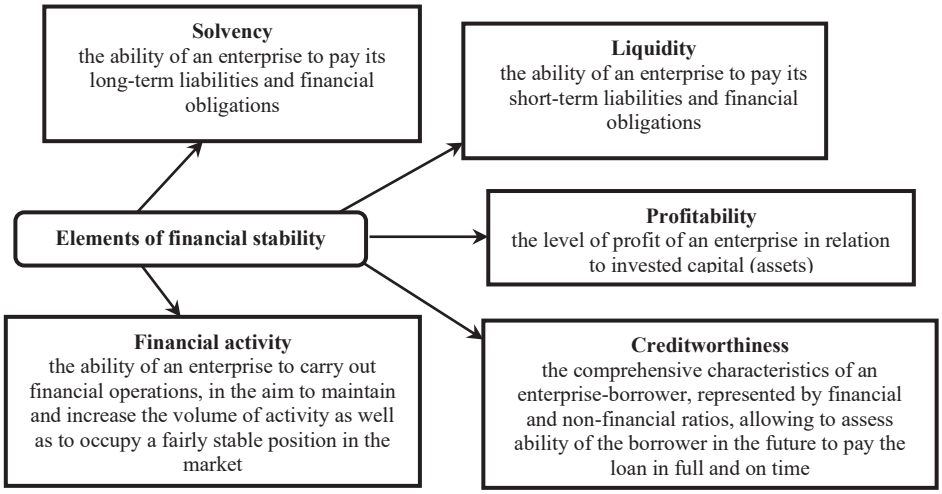

Figure 1. The main features of the financial stability of an enterprise
Source: compiled by the authors based on literature review.

Analysis of the financial stability of an enterprise using relative ratios allows to identify the nature of the ratio of equity and debt capital, the rate of accumulation of equity as a result of current and financial activities, mobile and immobilized assets, and the level of working capital.

Results and Discussion

In the conditions of deep quantitative and qualitative, organizational and managerial changes as well as contemporary challenges in Ukraine, one of the prerequisites for sustainable development of economic activities of enterprises is to ensure that they are able to operate sustainably under the conditions of disturbed external influences.

The concept of stability is one of the basic concepts of mathematical modeling and is closely related to the idea of invariance. The following stages are distinguished:

- forecasting future targets;
- determination of an enterprise's overall financial resource needs;
- forecasting the structure of funding sources;
- justification of the chosen option from all possible solutions in order to achieve the planned results of an enterprise's activities.

The financial sustainability of an enterprise is the stable availability of financial resources sufficient to meet financial obligations, the ability of an enterprise to finance its economic and productive activities, a balance between positive and negative cash flows, an aggregate assessment of the level of its solvency, liquidity, profitability, creditworthiness and other ratios, as well as a prerequisite for the enterprise to achieve long-term financial equilibrium (Davydenko, 2009). We believe that, in the current economic climate, the liquidity and solvency of agricultural enterprises are among the most important ratios of the financial sustainability of agricultural enterprises.

During the period from 2015 to 2019 there was a slight increase of Ukrainian agricultural enterprises' solvency ratio (from 0.05 to 0.06), but despite a slight increase of this ratio it does not correspond to the norm value (≥ 0.2 or more than 20%). As a result, agricultural enterprises in Ukraine had insufficient financial solvency (5.3 % in 2015, and 6.1 % in 2019) (Table 1).

Table 1. The liquidity and solvency ratios of Ukrainian agricultural enterprises

Ratios	Years					2019 comparison with 2015, (+/-)
	2015	2016	2017	2018	2019	
Cash ratio	0.053	0.019	0.053	0.057	0.61	0.008
Quick ratio	1.125	1.032	1.002	0.896	0.831	-0.294
Overall liquidity ratio	1.503	1.191	1.537	1.563	1.547	0.044
Inventory coverage ratio	3.580	7.421	2.867	2.325	2.155	-1.425
Solvency ratio	0.049	0.018	0.049	0.053	0.057	0.008

Source: compiled by the authors based on statistical data [State Statistical Service of Ukraine, 2020]

Overall liquidity ratio of agricultural enterprises of Ukraine for 2015–2019 showed an increase from 1.50 to 1.55, which was an indication that the enterprises had sufficient working capital and were able to repay financial obligations to creditors.

The value of the quick liquidity ratio for the period under this research shows a slight negative downward trend of 0.294 (from 1.13 to 0.83), but the ratio corresponds to the standard value (≥ 0.7) Therefore, agricultural enterprises have a high level of calculated solvency. During the period under review, the capacity to pay had increased from 0.05 to 0.06. The value of this coefficient is lower than the norm value (≥ 0.1), which indicates an insufficient cash supply within Ukrainian agricultural enterprises.

The level of the price range of Ukrainian agricultural enterprises in fulfilling current obligations has decreased. The State should devote efforts to the reproduction and modernization of the productive and resource potential of agro-industrial production, promote the revitalization of foreign economic activities of the agricultural sector, and ensure effective demand for agricultural products.

The financial sustainability of agricultural enterprises reflects the efficiency of their use of equity capital and the ability to attract external financing and to pay their obligations in a timely manner. The estimation of the structure and value of capital of agricultural enterprises in Ukraine shows a significant financial dependence on creditors (Table 2).

For example, the ratio of equity concentration indicates that at the end of 2019, equity to total assets was 50.7 %; this is an increase of 0.11 compared to 2015. The financial dependency ratio for the study period fell from 2.49 in 2015 to 1.97 in 2019, indicating a decrease in the share of borrowed funds in financing Ukrainian agricultural enterprises and an increase in their financial independence. The debt to equity ratio

decreased from 0.56 in 2015 to 0.50 in 2019. Despite this, Ukrainian agricultural enterprises have a high level of financial dependence on creditors.

The increase in the level of financial stability of agricultural enterprises in Ukraine is evidenced by the value of the financial stability ratio, which increased from 0.50 in 2015 to 0.60 in 2019. 1 UAH of equity covered 1.49 UAH of borrowed capital and 0.97 UAH in 2019. Accordingly, the value of the debt to equity ratio shows that equity exceeded debt capital by 0.7 times in 2015, and by 1 time in 2019.

Table 2. The structure and value of capital ratios of Ukrainian agricultural enterprises

Ratios	Years					2019 comparison with 2015, (+/-)
	2015	2016	2017	2018	2019	
Capital concentration ratio	0.40	0.24	0.48	0.49	0.51	0.11
Financial dependence ratio	2.49	4.16	2.09	2.04	1.97	-0.52
Financial stability ratio	0.50	0.28	0.54	0.58	0.60	0.10
Debt concentration ratio	0.60	0.76	0.52	0.51	0.49	-0.11
Leverage ratio	1.49	3.16	1.10	1.04	0.97	-0.52
Debt to equity ratio	0.67	0.32	0.92	0.97	1.03	0.36
Long-term leverage ratio	0.20	0.14	0.12	0.15	0.15	-0.05
Financial independence ratio of capitalized sources	0.80	0.86	0.88	0.85	0.85	0.05
Long-term liabilities ratio	0.17	0.05	0.12	0.16	0.18	0.01
Current liabilities ratio	0.83	0.95	0.88	0.84	0.82	-0.01
Current debt ratio	0.50	0.72	0.46	0.43	0.40	-0.10

Source: compiled by the authors based on statistical data [State Statistical Service of Ukraine 2020]

In 2015-2019, the long-term borrowing ratio decreased from 0.2 in 2015 to 0.15 in 2019. This indicates a decrease in the dependence of Ukrainian agricultural enterprises on long-term external sources of financing. The reduction of the current debt ratio from 0.50 in 2015 to 0.40 in 2019 (which reflects the share of short-term debt of Ukrainian agricultural enterprises) also has a positive impact on the financial sustainability of Ukrainian agricultural enterprises.

The assessment of the assets of Ukrainian agricultural enterprises shows an increase in the value of the property and a sufficient level of financial stability (Table 3).

Table 3. The capital ratios of Ukrainian agricultural enterprises

Ratios	Years					2019 comparison with 2015, (+/-)
	2015	2016	2017	2018	2019	
The ratio of the real value of fixed assets in the property	0.16	0.10	0.20	0.24	0.28	0.12
Ratio of current assets to working capital	0.20	0.11	0.26	0.24	0.21	0.01
Inventory to working capital ratio	0.81	0.85	0.74	0.55	0.45	-0.36
Manoeuvrability ratio	0.16	0.13	0.12	0.14	0.18	0.02
Long-term debt coverage ratio	0.40	0.28	0.22	0.25	0.24	-0.16

Source: compiled by the authors based on statistical data [State Statistical Service of Ukraine. 2020].

So, during the period from 2015 to 2019, there was an increase in the ratio of the real value of fixed assets in the property from 0.16 in 2015 to 0.28 in 2019, which indicates an increase in the value of the property for productive purposes of Ukrainian

agricultural enterprises. The capital manoeuvrability ratio increased from 1.61 in 2015 to 1.34 in 2019. During the period under review, the level of equity mobility decreased by 0.27. Despite this situation, Ukrainian agricultural enterprises have the possibility to finance their operating activity. At the end of 2019 in the structure of current assets, 20.8% were assets financed by private financial resources. Additionally, 1 UAH of inventory was financed by about 0.45 UAH of working capital, which is an indication of the high level of self-financing of agricultural enterprises in Ukraine.

There was an increase of the manoeuvrability ratio by 0.02. Thus, agricultural enterprises in Ukraine have a sufficient level of financial stability in terms of providing highly liquid current assets. The ratio of long-term debt coverage decreased from 0.40 in 2015 to 0.24 in 2019. This shows a decrease in the financing by external investors of capital assets and other non-current assets of Ukrainian agricultural enterprises.

The evaluation of the use of capital in agricultural enterprises in Ukraine shows an increase (renewal) of the technical condition of means of production (Table 4).

Table 4. The Capital ratios of Ukrainian agricultural enterprises

Ratios	Years					2019 comparison with 2015, (+/-)
	2015	2016	2017	2018	2019	
Production equipment ratio	0.36	0.22	0.46	0.53	0.58	0.22
Real value of fixed assets ratio	0.16	0.10	0.20	0.24	0.28	0.12
Ratio of current to non-current assets	3.01	6.03	2.35	1.99	1.65	-1.36
Depreciation accumulation ratio	0.42	0.39	0.38	0.38	0.38	-0.04

Source: compiled by the authors based on statistical data [State Statistical Service of Ukraine. 2020].

For example, the ratio of production equipment increased from 0.36 in 2015 to 0.58 in 2019, indicating strengthening of financial stability. The share of non-current in the total assets increased from 0.16 in 2015 to 0.28 in 2019. A decrease in the level of depreciation of fixed assets is evidenced by the value of the coefficient of depreciation of fixed assets. For example, the depreciation ratio of noncurrent assets decreased from 0.42 in 2015 to 0.38 in 2019.

Thus, an assessment of financial sustainability of Ukrainian agricultural enterprises has been made for three groups of ratios. The structure of capital and level of financial risk are directly related to the specialization of agricultural production. It is worth noting that the combination of low level of capital turnover ratio and high level of financial risk should not be so high.

The structure of capital is a factor that directly affects the financial health of agricultural enterprises; their financial stability, long-term solvency, income and financial performance, profitability of operating activity. An evaluation of the sources of capital formation of Ukrainian agricultural enterprises was conducted (Table 5). The share of equity in total capital increased by 10.6 % (from 40.1 to 50.7%) and the share of liabilities decreased by 10.6 % (from 59.9 to 49.3%).

The growth of capitalization is the most important condition for financial security and financial stability of enterprises. Financial stability ensures a stable excess of revenues over costs, provides free maneuvering of the company's funds as well as provides the continuous production and sale process by efficient use of cash flows. In

other words, financial stability shows the state of financial resources of an enterprise, and the distribution and use of financial resources that provides development based on the growth of profits (at an acceptable level of liquidity and solvency).

Table 5. The sources of capital formation in Ukrainian agricultural enterprises

Sources of capital formation	Years					2019 comparison with 2015, (+/-)
	2015	2016	2017	2018	2019	
Sources of capital formation - total	685 844.9	1 537 319.1	911 614.1	983 593.6	1 030 366.7	344 521.8
Equity	275 303.8	369 370.9	436 337.7	482 978.7	522 778.7	247 474.9
Registered capital	33 580.2	40 053.5	43 762	54 397.9	55 255.3	21 675.1
Liabilities	410 541.1	1 167 948.2	475 276.4	500 614.9	507 588.0	97 046.9
Long-term liabilities	68 127.2	61898.2	59 080.5	82 254	92 966.3	24 839.1
Current liabilities	342 359	1 105 991.9	416 146.2	418 283.2	414 566.5	72 207.5
Liabilities related to non-current assets held for sale	54.9	58.1	49.7	77.7	-	22.8

Source: compiled by the authors based on statistical data [State Statistical Service of Ukraine 2020]

The operation of Ukrainian agricultural enterprises is aimed at obtaining financial results (profits). Therefore, a timely and qualitative assessment of the efficiency of the use of available financial resources in the enterprise is important. The evaluation of the efficiency of using financial resources of agricultural enterprises provides an opportunity to assess how well agricultural enterprises use their own and borrowed capital. The main purpose of assessing the efficiency of how financial resources are used is to improve the profitability of capital and ensure the stability of the enterprise. Therefore, the next step of our research was evaluating the efficiency with which Ukrainian agricultural enterprises use financial resources (Table 6).

Financial stability depends on internal and external factors affecting the level of financial resource mobilization. In the first place, internal factors include the adequacy of profits. Financial stability depends on the range and quality of products, structure, volume and capabilities of mobilizing financial resources, reserves and achievement level of the main function of financial management.

An essential factor in an enterprise's financial stability is the optimal composition and structure of assets, as well as their efficient management and the types of products or services produced. The stability of an enterprise and the potential effectiveness of the business largely depend on the quality of management of current assets, as well as level of investment in working capital and level of cash and near-cash assets, etc. The next significant internal factor of financial stability is the composition and structure of financial resources, the right choice of tactics and strategies for managing them.

Additional funds raised in the loan capital market have a significant impact on the financial stability of enterprises. It is clear that the more an enterprise can attract funds, the greater its financial capacity. At the same time, the financial risk of the enterprise's inability to pay its creditors in full and on time is also increasing. In such

a situation, reserves can play an important role as one of the ways to guarantee an enterprise's solvency. A financially stable entity is an economic entity that is able to cover funds that have been invested in assets (current and non-current), does not allow doubtful receivables and fulfills its obligations (Form, 2004). The basis of financial stability is the rational organization and use of working capital.

Table 6. Evaluation of the efficiency of using financial resources for Ukrainian agricultural enterprises

Ratios	Years					2019 comparison with 2015, (+/-)
	2015	2016	2017	2018	2019	
Leverage ratio	1.49	3.16	1.10	1.04	0.97	-0.52
Financial stability ratio	0.67	0.32	0.92	0.97	1.03	0.36
Long-term leverage ratio	0.20	0.14	0.12	0.15	0.15	-0.05
Long-term liabilities ratio	0.17	0.05	0.12	0.16	0.18	0.01
Current liabilities ratio	0.83	0.95	0.88	0.84	0.82	-0.01
Overall liquidity ratio	1.50	1.19	1.54	1.56	1.55	0.05
Solvency ratio	0.05	0.02	0.05	0.05	0.06	0.01
Return on assets	15.0	5.9	7.6	7.3	9.1	-5.9
Net return on equity	37.4	24.5	15.8	14.7	17.8	-19.6

Source: compiled by the authors based on statistical data [State Statistical Service of Ukraine. 2020].

The financial stability of an enterprise is closely related to its solvency. Solvency analysis of an enterprise allows to determine the its capabilities in the future. The financial activities of an enterprise involve many risks. The impact of such risks on performance is significantly increased by the instability of Ukraine's current economy. The aggressive external environment has a significant influence on the efficiency of an enterprise's activities. This situation leads to the development of ways of ensuring its ability to adapt and maintain its integrity and efficiency. The financial risks are identified as a separate group of risks, and they play the most significant role in the financial stability of enterprises.

The constant maintenance of financial stability is conditioned by the objective for each economic entity: to ensure the financial sustainability of the operation and to achieve the enterprise's main strategic goals.

Conclusion

1. Financial stability and financial security can be defined by ensuring the liquidity and solvency of an enterprise, efficient use of available financial resources, organization of internal control of the main activities of the enterprise, analysis of possible internal and external threats to economic security as well as an enterprise's level of quality management.

2. It has been established that during the period under review the level of equity mobility decreased by 0.27, but despite this, agricultural enterprises in Ukraine have

the capacity to finance production and other activities. It should be noted that during the period from 2015 to 2019, the financing of current assets with equity was at the level of about 20%, while at the end of 2019 the rate of financing of inventories with equity was 45%.

3. During the analyzed period, the cost of capital of agricultural enterprises of Ukraine was extremely high – about 50%. The share of equity in total capital increased by 11 % and was on the level of 51% at the end of 2019. Such changes indicate a positive tendency related to an increase in the financial stability of Ukrainian agrarian enterprises even under such difficult operating conditions.

4. The main objective of the financial stability analysis is to determine the ability of an agribusiness to withstand the negative impact of external and internal factors on its financial health. In the current context of the development of Ukraine's national economy, which is characterized by political and economic instability and by imperfections in legal and tax legislation, the activities of enterprises may be complicated by various crisis situations which can lead to insolvency or bankruptcy.

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Zapewnienie równowagi finansowej przedsiębiorstw rolnych na Ukrainie

Streszczenie

W artykule zbadano system czynników wpływających na kształtowanie się wypłacalności finansowej, oceniono stabilność finansową przedsiębiorstw rolnych Ukrainy, opracowano podejście do określenia i zapewnienia stabilności finansowej przedsiębiorstw w obliczu współczesnych wyzwań i zagrożeń. Stwierdzono, że głównymi warunkami utrzymania stabilności finansowej są: reagowanie na zmiany wewnętrzne i zewnętrzne, systemy zarządzania, zarządzanie ryzykiem, wykorzystanie wskaźników w celu oceny sytuacji finansowej, rzeczywista ocena wypłacalności finansowej przedsiębiorstwa, integracja z całym systemem zarządzania, orientacja na realizację strategicznych celów przedsiębiorstwa, opracowywanie i wykorzystywanie narzędzi jakościowych do podejmowania decyzji finansowych w obliczu niepewności i ryzyka.

Słowa kluczowe: równowaga finansowa, stabilność finansowa, finansowanie przedsiębiorstwa, mechanizm zapewniania stabilności finansowej, ryzyko, niepewność.
JEL Codes: O13, O16

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PARTNERSHIP IN OPEN INNOVATIONS – EXPERIENCE FROM THE AGRICULTURAL MARKET: POLAND CASE STUDY

The ability to build and manage a knowledge transfer partnership is one of the most highly demanded skills. Knowledge is widely dispersed, so it should be acquired from the environment. For this purpose, partnerships should be established with different entities. Presumably, the most mature type of partnership is the innovation ecosystem. Hence empirical research was conducted among Poland's Grupa Azoty (GA) Puławy's consortium members based on an in-depth, partially structured interview, supported by an analysis of several innovation ecosystems of chemical companies. The aim of the research was to assess the phenomenon of open innovations in the GA along with the characteristics of the selection of partners, cooperation strategies and declared resources for jointly implemented projects.

Keywords: partnership, open innovation, innovation ecosystem, innovation management, knowledge transfer.
JEL Codes: O320, M21

Introduction

In conditions of turbulent changes in the business environment, seeking innovation requires the cooperation of various partners, including those from the public sector and non-governmental organizations. Therefore, some kind of partnership is necessary to co-create value. Partners share their knowledge and experience as well as the benefits of jointly conducted innovative projects. The company uses external knowledge, but also shares some of its ideas and solutions. Innovations are created on the basis of co-production. Partnerships are established to implement individual stages as well as the entire innovation process. The selection of participants can be focused on specific partners or to multiple entities interested in solving a defined problem, and even to entire communities of users or customers. The most important stakeholders are:

- cooperation with partners along the supply chain,
- cooperation with buyers/customers,
- cooperation with competitors,
- cooperation with scientific partners,
- cooperation with partners from the public sector,
- cooperation with partners from multiple sectors.

Obviously, cooperation may also involve partners jointly interested in the same market segment, e.g. the agri-food segment.

Partnership cooperation may be carried out on the basis of various organizational and legal structures. The most popular are the consortium and the strategic alliance. The concept of a consortium does not have its official definition in the Polish legislative acquis, therefore, it is very difficult to clearly define its constitutive features. According to the definition adopted in the literature, this concept is used to describe two or more entrepreneurs jointly pursuing a certain economic goal. The difference between a consortium and a strategic alliance lies primarily in the temporary nature of the consortium, as opposed to a strategic alliance which usually takes the form of long-term cooperation. It is worth noting that a consortium may sometimes take the form of a strategic alliance.

In collaborative innovation partnerships, especially with undefined user/customer communities, project participants share their intellectual capital as well as, to a certain extent, the effects of cooperation. The flow of knowledge between an organization and its external environment is bilateral. Collaboration with communities is often informal and involves great problems in managing such projects. Such partnerships require development of open innovation platforms on the Internet:

- crowdsourcing (using the crowd as a source of knowledge, its wisdom)[5],
- co-production or coopetition (common participation, cooperation of people or companies in search of innovation, even companies competing with each other)[6],
- open source software[7].

Crowdsourcing is sponsored by an organization that directly manages the "crowd" to achieve its goals. Crowdsourcing platforms act as intermediaries in multilateral markets and as such are at the core of the knowledge sharing and intellectual property transfer process between multiple actors.

Activity based on co-production, which means universal participation and cooperation in production, refers to a new production model based on the cooperation of a large number of entities in the implementation of projects outside the hierarchical, traditional structures of the organization. Coopetition means cooperation between competitors in areas where it is necessary, without ceasing to compete with each other. Today, companies are engaging in strategic partnerships that have both collaborative and competitive elements. These partnerships can be created, changed and terminated depending on the evolution of the market environment, even in very short periods of time[8].

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[8] R. Gulati at al., 2000, op. cit.

The platform with the broadest, most open formula of participation is open source[9]. Increasingly, open source is perceived more as a concept on which many companies base their innovative activities, rather than a kind of technological process. Open source software enables companies to acquire, often free of charge, new solutions for their ideas or processes. Until recently, business viewed the open source movement more as a threat, but with the success of the Linux project, that perception has changed. Today, many companies see open source as an opportunity to create new competitive advantages.

Recently, the concept of the innovation ecosystem has been gaining more and more popularity in the literature on the subject. Innovation ecosystems are forms of cooperation in which companies integrate their individual offer proposals into homogeneous solutions with significant value for the client[10]. It can be said that the innovation ecosystem is the most advanced form of partnership. Authors define this ecosystem as a business ecosystem that aims to create and capture value from innovative activities (related to technological or business innovations)[11]. The authors note that value creation refers to collaborative processes and activities to create value for customers and other stakeholders, while value identification or capture (some use the term "appropriation") refers to individual, enterprise-level profit, meaning that companies strive to achieve their own competitive advantages and profit therefrom.[12]

Managing partnerships, networks or, more broadly speaking, ecosystems is nowadays considered a key competence of an organization[13]. Therefore, scientists and business practitioners are interested in searching for ways to build and manage such structures both in the business and innovative dimensions[14].Usually cooperating entities implement innovative projects based on IT tools on the initiative and under the leadership of a leader[15]. The ecosystem should also be viewed from the perspective of a developing community that uses the resources of cooperating partners to implement its

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innovative projects[16]. The ecosystem also has a social dimension and offers the potential not only to create and share economic but also social value. In the process of creating value for society and business, five elements are important - social goal, defined need, value measures, appropriate structure for an innovation project and co-creation. Thanks to the application of a model composed of these elements, by creating common value many corporations achieve their basic business goals - value for investors/shareholders. Authors provide many examples of projects carried out by Dow Chemicals, Nestlé, Novartis, Mars, Intel, Becton Dickinson and Vodafone, which have achieved social and economic success with their innovation systems[17].

Material and methods

Innovative activity of selected companies in the chemical sector

In order to examine the functioning of the innovation ecosystem, the analysis covered international corporations that are leaders in the chemical industry in the area of agricultural products with a business profile similar to that of Grupa Azoty Puławy: BASF, MONSANTO, SOLVAY and YARA, as well as structures such as: The Fertilizers Institute in the United States, UNIFA - Association of French fertilizer manufacturers, CropLife, Axelera (Solvay).

The analysis was used not only to study the organization of research and development processes but also to prepare the concept of an organization model that is open to innovation. In the broadly understood openness of chemical companies to building open innovation ecosystems, it was possible to distinguish five areas of innovative activity or support in building the value of the organization: research and development activity, activity within the open innovation formula, consulting and education, public relations, lobbying and think tanks. The author analysed chemical companies in the context of these areas and the understanding of their expert functions.

All analysed companies put a lot of effort into research and development activities, not limited to their own departments, but developing it "beyond the borders" of their companies. They are also not limited to searching for and implementing new, innovative products or technologies, but they develop their activities based on new organizational and marketing solutions aimed at building value for their customers. A frequently quoted argument is the proposal to jointly search with other stakeholders for solutions to global challenges. To this end, they try to build open innovation ecosystems, including education, Think tanks (expert functions), and advocacy of interests.

In research and development projects in the field of agriculture, the most popular trend in conducting research and development is going beyond own organizational structures and laboratories. They are very willing to engage in joint projects with other stakeholders by appointing new specialized entities to coordinate these activities. Prospective innovations are developed on the basis of Special Purpose Vehicles (SPVs),

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[17] M.W. Pfitzer, V. Bockstette & M. Stamp: Innovating for shared value, Harvard Business Review, 2013, 86: 100-107.

mainly to minimize investment risk[18]. New investments most often take the form of start-up, spin-off or joint ventures.

New entities in the innovation ecosystem of chemical companies are looking for additional sources of financial support based on public funds intended for the stakeholders of the agri-food sector; they need to use venture capital or fundraising tools. In this way, they expand the possibilities of commercializing innovations, increasing the potential of the market. They develop new mechanisms for building and managing the ecosystem. Intellectual property becomes a strategic asset in building the company's value.

Another noticeable trend is investing in the biotechnology and nanotechnology sectors in search of solutions to meet difficult challenges, such as food and drinking water shortages, and food insecurity with a constantly growing population of inhabitants. It is unpopular to run R&D projects focused on only one branch of industry. The analysed companies, together with universities and institutes, try to open up to innovations in other sectors of the economy in search of solutions, ideas and ideas for building value. The African continent is of particular interest.

An important area of interest of the analysed companies is activity in the form of think-tanks. The communication of the chemical company with the environment is of limited effectiveness, while the message provided by independent experts is more credible. Hence, the above-mentioned entities are willing to organize or support think-tanks to make their actions more credible in the eyes of public opinion, as well as decision-makers. The following activities of think-tanks are the most popular:

- Creating online platforms for specialists, scientists, hobbyists and enthusiasts in order to create the opportunity to discuss global challenges of humankind,
- Promoting membership in organizations working for environmental protection, sustainable development, climate change dilemmas, food security, circular economy, etc.,
- Preparing reports, expressing opinions and positions by authorities invited to cooperate.

A popular activity of the analysed companies is to group into non-profit organizations in order to adequately represent their interests, on the one hand, and to promote solutions that improve the image of their business on the other hand. They eagerly create rules, norms and canons for self-regulation of behaviour in order to ensure proper regulations, often in response to public criticism or ahead of the actions of regulators. An example of such an activity is a Product Stewardship project. Chemical companies actively participate in lobbying activities. Some talk about it directly by

[18] The name of the special purpose vehicle SPV (Special Purpose Vehicle) appeared in the 1990's together with the so-called political transformation in Poland. Initially, the SPV operated as a joint venture and limited the investment risk by the partners of the special purpose vehicle, also known as project sponsors. K. Czerkas, Special purpose vehicle: creation, application, functioning, financing, ODDK, Gdańsk 2017, p. 32. Currently, a special purpose vehicle (SPV) is a company established to achieve specific goals set by its partners, i.e. project sponsors. Typically, the parent company decides to form a subsidiary that serves the specific economic purpose of the parent company. This solution allows the parent company to reduce the risk associated with participation in a new project. A. Roguska-Kikoła, D. Rutkowska, H. Dessoulavy-Śliwińska, SPV and a consortium, Difin, Warsaw 2016, p. 39; G.B. Gorton, & N.S.Souleles, 2007.

creating special cells in their structures, others point to the activities of advocacy groups, which in fact boils down to exerting influence on decision-making processes and centres.

Summarizing the analysis of selected chemical companies, it should be noted that all of them build wider structures, based on partnerships with other business entities, and more and more willingly with public sector entities, non-governmental organizations, individual users or Internet communities. The analyzed chemical companies, developing their innovative activities, create innovation ecosystems. They open up to global cooperation in the implementation of research and development projects by sharing their know-how, while using the knowledge and skills of specialists from various industries, units and regions of the world.

Scientific literature is more and more willing to take up the subject of concepts and case studies of creating and managing such innovation ecosystems. However, there is a lack of research by leaders of innovation ecosystems on value creation as well as its capture in their ecosystem. Understanding the creation and capture of value in the ecosystem is the search for answers to the question of how markets are created and how different partners can pursue common and their own business goals.

Empirical research on the consortium

In October 2019, the authors conducted empirical research among the consortium members of Grupa Azoty Puławy according to an in-depth, partially structured interview scenario. Established in 2011, the consortium called Puławy Competence Center (Consortium) grouped 12 entities representing three types of entities: research centres, producers of agricultural products and their clients and organizations representing agricultural entrepreneurs. It was an attempt to open up the Group primarily to incoming innovations. It should be emphasized that the strategic goal of the Consortium was to build the foundations of an innovation ecosystem aimed at developing the value of end customers in the agri-food market segment. The initiators who established the Consortium wanted to increase Grupa Azoty Puławy's absorption capacity for innovation and thus increase the market value of the Group and its cooperating partners.

The analysis of this case is valuable because the practice of using open innovations on agricultural markets is extremely rare, therefore, we are dealing with an early stage of knowledge development in this area of research[19]. It should be added that the attempt to open up to innovation was unsuccessful, because since 2016 the above-mentioned Consortium, after changing the composition of the Group's management board, did not take any further activity. It could be said that the Group was not prepared to use open innovation, which was a source of dissatisfaction and abandonment of this formula of innovative activities[20].

In total, 14 interviews were conducted, including seven with representatives of Polish science, four with business representatives (3 with members of the top

[19] Z. Pokojski: In searching for business model open for innovations on agricultural market – conceptual approach, Proceedings of the 2018 International Scientific Conference 'Economic Sciences for Agribusiness and Rural Economy' No 1, Warsaw, 7–8 June 2018, 237–242, Available at DOI: 10.22630/ESARE.2018.1.33.
[20] H. Chesbrough & S. Brunswicker: The adoption of open innovation in large firms. Technology Management, 2018, 61: 35-45. Available at https://doi.org/10.1080/08956308.2018.1399022 (accessed Jan 2021).

management and 1 with the head of the CK Puławy cell at GAP) and three with the chairmen of agricultural entrepreneurs' organizations.

Scientific literature is more and more willing to take up the subject of concepts and case studies of creating and managing innovation ecosystems[21]. However, there is a lack of research on innovation ecosystem leaders at the intra-organizational level of analysis.

Results and discussion

The first research problem is the partnership evaluation. Answers were sought to the question: which partners, according to the respondents, are the most important for the success of the projects and who is to decide on their selection. Respondents were asked to rate the importance of external partners on a scale of 1-5 (1 - negligible, 5 - very important) for the success of the projects. The results are shown in Figure 1.

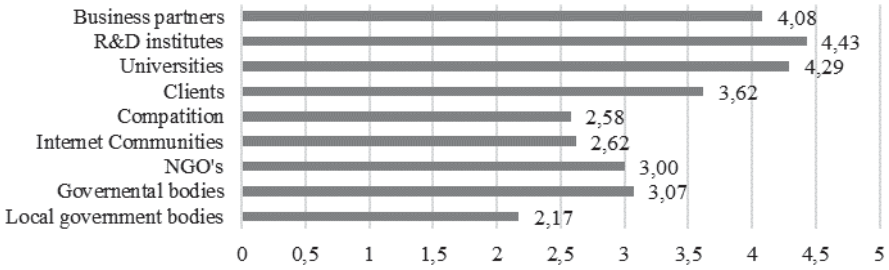

Figure 1. The significance of external partners for the success of projects carried out in the Consortium on a scale of 1 - 5
Source: Author's own study.

According to the respondents, the most "valuable" partners are research institutes (4.43), universities (4.29) and business partners (4.08), provided that they are not competitors. The least expected partners are local government organizations (2.17), competitors (2.58) and Internet communities (2.62). It is quite surprising that respondents underestimate online communities as a source of potential innovation.

It should be emphasised that Chesbrough and Brunswicker (2018) studies have shown that the most valuable element for partnerships is cooperation both at the stage of defining and solving the problem with clients, then with universities and research centres and other entrepreneurs (mainly suppliers). Competitors and different kinds of communities, just as with this case study, were the least preferred source of knowledge acquisition or project partner. Competitive companies and Internet communities were similarly viewed with reluctance, both in terms of participation in the creation of open innovations and the expected future cooperation in the authors' previous studies[22].

[21] P. Ritala, P. Hurmelinna-Laukkanen & S. Nätti: Coordination in innovation-generating business networks – the case of Finnish mobile TV development. Journal of Business & Industrial Marketing, 2012, 27 (4): 324-334. Available at . https://doi.org/10.1108/08858621211221698 (accessed Jan 2021).
[22] H. Chesbrough & S. Brunswicker: Managing open innovation in large firms. Garwood Center for Corporate Innovation at California University, Berkeley in US & Fraunhofer Society in Germany, 2013. Available at http://www.iot.ntnu.no/innovation/norsi-pims-courses/chesbrough/ (accessed Jan 2021).

Interesting observations concern the method of selecting partners for the Consortium. Four possibilities of selecting partners were indicated (Figure 2):

- open to any interested entity servicing the agri-food market;
- open, controlled by the Consortium leader;
- open, controlled according to the Consortium's indications;
- closed to additional partners.

The respondents are open to the selection of additional partners, but in a controlled or, in other words, selective manner, as indicated by the Consortium leader (71.4%). This suggestion is not surprising, given that the leader is the initiator and sponsor of the project. None of the respondents was closed to additional partners.

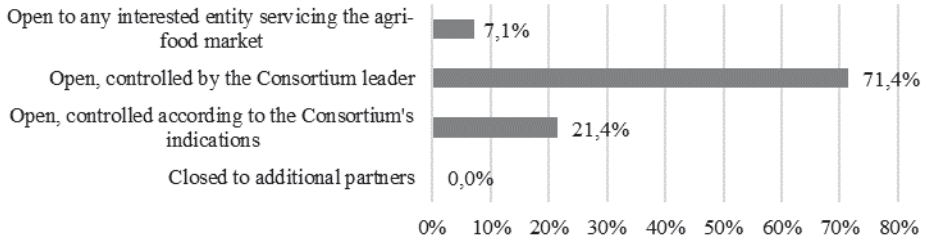

Figure 2. Method of selecting partners for the Consortium
Source: Author's own study.

Ecosystem management requires the establishment of material mechanisms (contracts, regulations, intellectual property rights) and intangible cooperation (open communication, trust, organizational culture) [23]. Olander et al. refer to them as contractual and relational management mechanisms[24]. Laursen and Slater call openness 'soft' and 'hard' [25]. Both mechanisms are complementary and necessary in open innovation processes. For the research, the authors decided to divide the cooperation strategy into: conservative, limited trust, full of trust and innovative.

In CK Puławy's research, most responses (50.0%) chose the strategy of limited trust, consisting in formalized cooperation with partners from outside the economic path (Figure 3). It was similarly attractive to representatives of science and business.

[23] Ø. Fjelstad, C. Snow, R. Miles & C. Lettl: The architecture of collaboration, Strategic Management Journal, 2012, 33 (6), pp.734-750. Available at https://doi.org/10.1002/smj.1968 (accessed Jan 2021).
[24] H. Olander, P. Hurmelinna-Laukkanen, K. Blomqvist & P. Ritala: The dynamics of relational and contractual governance mechanisms in knowledge sharing of collaborative R&D projects, Knowledge and Process Management, 2010, 17 (4), pp. 188-204. Available at doi: https://doi.org/10.1002/kpm.356 (accessed Jan 2021).
[25] K. Laursen & A. Salter: Open innovation: The Role of Openness in Explaining Innovation Performance Among U. K. Manufacturing Firms, Strategic Management Journal, 2006, 27. Available at doi: https://doi.org/10.1002/smj.507 (accessed Jan 2021).

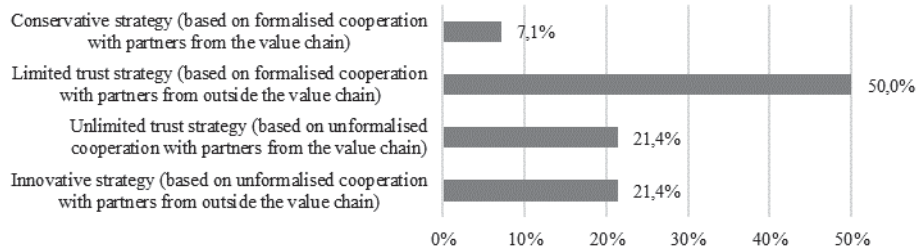

Figure 3. Cooperation strategy in the Consortium
Source: Author's own study.

The importance of formalizing cooperation for partners is notable. The innovative strategy was attractive only to representatives of science. Similarly, in the study by Du, Leten and Vanhaverbeke (2014) representatives of science achieve better results in partnerships if they are managed "loosely" or less formally (*loosely manager project*)[26]. It is notable that the respondents indicated the cooperation of partners from outside the value chain, in line with the idea of establishing a Consortium. The partners were selected according to the criterion of interest in the same market segment. The strategy of formalized cooperation with partners from the economic path would be the least attractive in the opinion of the respondents.

The survey did not indicate a more favourable model of openness, according to the respondents. "Soft openness" and "hard openness" have the same number of supporters. A closer analysis of the results showed that the first type of openness was most often indicated by representatives of science and customers (agricultural entrepreneurs). On the other hand, all producers were supporters of "hard openness", which consisted in formalizing cooperation based on appropriate agreements (Figure 4).

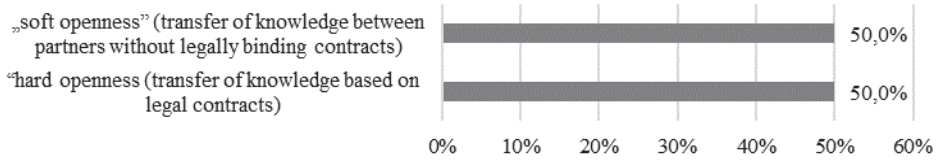

Figure 4. The model of openness in the transfer of knowledge between members of the Consortium
Source: Author's own study.

Another research problem concerned the attempt to resolve the paradox dilemma related to the natural tension between sharing knowledge and protecting it. The dilemma boiled down to the choice of the openness model in the transfer of knowledge between partners. The respondents could choose between "soft openness", consisting in the transfer of knowledge between partners without legally formalizing this transfer, and "hard openness", understood as cooperation based on contracts and agreements.

[26] J. Du, B. Leten & W. Vanhaverbeke: Managing open innovation projects with science-based and market-based partners. Research Policy, 2014, 43(5), pp. 828-840. Available at https://doi.org/10.1016/j.respol.2013.12.008 (accessed Jan 2021).

Another research problem was to identify the interests of partners in research and development projects and in open innovation. The respondents were asked to indicate in their opinion the most important research areas that were of interest to its members in 2011-2016. The respondents could indicate a few most important aspects in their opinion (Figure 5).

The respondents pointed primarily to the issues of limitations in the access of plants to water and nutrients, as well as research and development projects concerning fertilizers with slow release of ingredients, blending, etc. (78.6% of indications). Sustainable agriculture and the efficiency of uptake and use of nutrients by plants had slightly less indications (71.4% of indications). Therefore, the respondents pay attention to the problem of fertilization optimization in the situation of more and more frequent droughts in Poland and in conditions of worsening climatic problems.

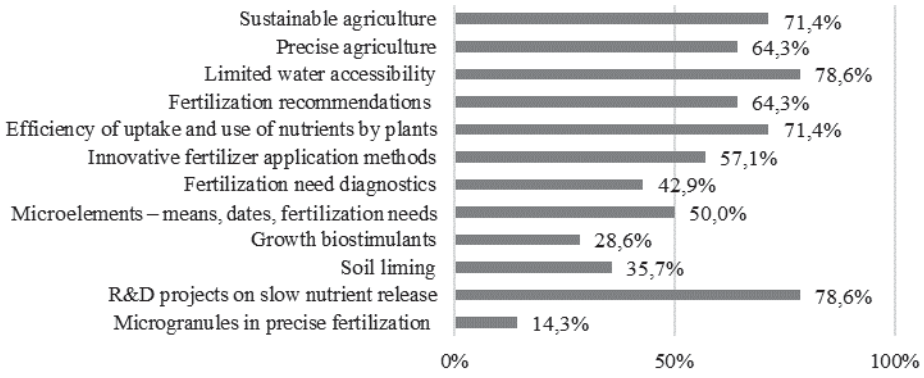

Figure 5. Areas of research and development interests of the Consortium members
Source: Author's own study.

The least attention was paid to the use of microgranules in precise fertilization (14.3% of indications) and to biostimulants supporting plant growth (28.6% of indications). Interestingly, biostimulants are more interesting for producers of means for agricultural production and agricultural entrepreneurs (3 respondents) than representatives of science (1 respondent). Chesbrough and Brunswicker (2018) point out that organizations should use external and internal ideas as well as external and internal market paths to find opportunities for growth. The respondents were asked about the areas of interest of the Consortium Members within the open innovation formula (Figure 6).

The respondents would most willingly participate in organizing events aimed at exchanging agricultural knowledge (92.0% of indications) and creating a platform for communication of partners in implemented projects (71.4% of indications). This proves the huge demand for knowledge exchange between communities, generally speaking, of science, producers and their customers.

The importance of the exchange of knowledge from the Consortium's research carried out in 2015 is confirmed. The Consortium members, on the other hand, are not

particularly interested in advisory, organizational and financial support, probably leaving it to the project sponsor. What may be interesting is the interest of science and customer representatives in advising on agricultural crops, in the absence of this interest shown by producers. It would seem that this type of business-related service should be used to build better relationships with customers and manage their value. The respondents do not share this opinion.

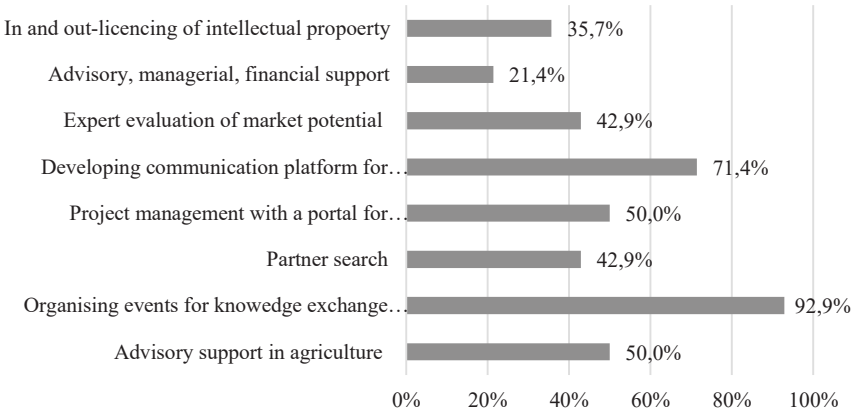

Figure 6. The areas of interest of Consortium members within the open innovation formula
Source: Author's own study.

The importance of the exchange of knowledge from the Consortium's research carried out in 2015 is confirmed. The Consortium members, on the other hand, are not particularly interested in advisory, organizational and financial support, probably leaving it to the project sponsor. What may be interesting is the interest of science and customer representatives in advising on agricultural crops, in the absence of this interest shown by producers. It would seem that this type of business-related service should be used to build better relationships with customers and manage their value. The respondents do not share this opinion.

The respondents were also asked what resources they are able to allocate for joint implementation of research and development projects (Figure 7). The most frequently indicated were access to technology and material resources or research infrastructure (50.0% of responses). The question did not contain a suggestion whether this sharing should be for a fee or for free, but knowing the realities of the market, it should be presumed that the partners would most willingly provide the mentioned resources for a fee.

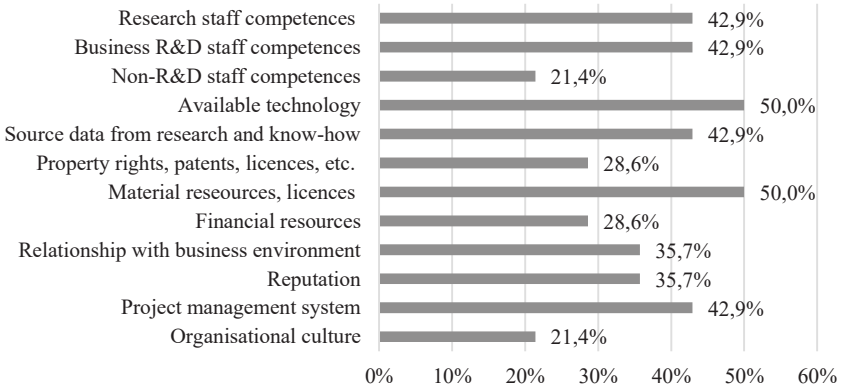

Figure 7. Resources declared by Consortium members for cooperation
Source: Author's own study.

The willingness to share the competences of scientific and research staff, source data from conducted research and project management systems with the Consortium was declared by 43.9% of respondents. The willingness to transfer the partners' own resources, such as intellectual property or financial resources, is relatively low. Generally speaking, the Consortium members would be willing to take part in the Consortium's projects, most likely using the resources of the sponsor, the Consortium leader, in these areas. They would be less willing to lend their own organizational culture and the competences of employees other than academics and research and development workers (21.4%). The relatively high assessment of the importance of organizational culture and reputation for the success of the projects carried out is noticeable, with the Consortium members quite reluctant to share them.

The last research problem concerned the declaration of commitment of the Consortium members in particular phases of the project life cycle (Figure 8). It turned out that the respondents would most willingly take part in initiating projects (71.4%) and planning them (64.3%). Thus, as in the Chesbrough and Brunswicker (2018) studies, who call this stage in their research the 'definition of the project', partners participate and open up more willingly to collaboration.

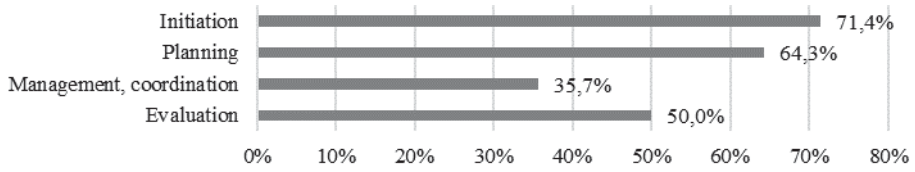

Figure 8. Phases of the project life cycle in which the Consortium members are interested
Source: Author's own study.

Less interest is manifested for managing or coordinating projects (35.7%). Half of the responses refer to the interest in the evaluation of the project (50%), which could prove that the Consortium members are more interested in the results of the work.

Conclusions

Summarizing the research, several phenomena can be indicated. On the one hand, the Consortium members appreciate the importance of the competences of employees of scientific centres, business research and development employees and the source data of the conducted research, but they approach the Consortium with a certain reserve. Hence, they most willingly indicate the strategy of limited trust as the most appropriate model of organizational cooperation. This cooperation should be based on the contractual regulations of the parties involved. It is therefore surprising that there is such large support for the model of "soft openness" in the transfer of knowledge between participants. A certain explanation for this phenomenon is the fact that this kind of openness was most often indicated by representatives of research institutions, who are not so strongly associated with the pressure for success of the implementation of research.

The respondents are "hungry" for the exchange of agricultural knowledge, hence they attach importance to the organization of events serving this exchange and building a platform for partner communication under jointly implemented projects. This is good news – the only question is whether the acquired knowledge would serve to increase one's own value or a joint project. The bad news is a reluctance to share this knowledge, for example as part of consulting services.

The respondents most willingly declare the involvement of their "hard" resources, apart from financial resources, underestimating the importance of "soft" skills, such as organizational culture or reputation. They probably underestimate their importance for building the value of their projects. It also seems that since the expectations of the respondents is primarily the involvement of the sponsor's resources (primarily financial resources), they should give consent to its dominant influence in the management of the Consortium. The respondents reluctantly agree to such a solution. They are also reluctant to lead or coordinate the entire project, leaving this role to the leader. Whether it possible to reconcile the apparently contradictory expectations of Consortium members in the pursuit of increasing openness to innovation between all cooperating partners – this is the challenge for the cooperating parties.

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Partnerstwo w otwartych innowacjach, doświadczenia rynku rolnego. Studium przypadku

Streszczenie
Umiejętność budowania i zarządzania partnerstwem w transferze wiedzy jest jedną z najbardziej pożądanych umiejętności nowoczesnych organizacji. Wiedza jest szeroko rozproszona, tak więc należy pozyskiwać ją z otoczenia a niewykorzystywaną przez organizację udostępniać innym. W tym celu należy zawiązywać współpracę partnerską z różnymi podmiotami nie tylko z sektora biznesu, ale również z sektora organizacji publicznych i non profit. Można przyjąć, że najbardziej dojrzałym rodzajem partnerstwa jest ekosystem innowacji. Niewielu jeszcze ludzi nauki w Polsce podejmowało temat partnerstwa w zarzadzaniu innowacjami stąd też postanowiono przeprowadzić badania empiryczne wśród konsorcjantów Grupy Azoty Puławy w oparciu o wywiad pogłębiony, częściowo ustrukturyzowany, wsparty analizą kilku wybranych ekosystemów innowacji koncernów chemicznych. Celem badań była ocena zjawiska otwartych innowacji w Grupie wraz z charakterystyką doboru partnerów, strategii współpracy oraz deklarowanych zasobów do wspólnie realizowanych projektów.

Słowa kluczowe: partnerstwo, otwarte innowacje, ekosystem innowacji, zarządzanie innowacjami, transfer wiedzy.
JEL Codes: O320, M21

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MEASUREMENT OF THE EFFECTIVENESS OF PUBLIC AID FOR FARMS IN POLAND

Agricultural policy is an attempt to put into practice the laws of economic theory, in order to achieve goals defined by the State. This research, carried out on a sample of four groups of Polish farms, contributes to the question of how to improve short-term economic policy in order to stimulate market mechanisms for the long-term development of the sector. Using data from the Polish FADN for 2008-2019, the authors of the study apply the modified PSM method to determine the economic effects of changes taking place on farms. The research indicates that effective investments are the source of long-term development and economic success. At the same time, it shows that economic entities, by optimizing their microeconomic objective function, adjust investments to the objectives of public aid, which reduces the effectiveness of the use of financial resources.

Keywords: efficiency of agricultural policy, investments in agriculture, farm development, agricultural policy.
JEL Codes: Q12, Q18, O13.

Introduction

The objective of agricultural policy, apart from solving ad hoc market problems, is to support the economic development of the agri-food sector and rural areas. Effective allocation of public funds to the activities of economic entities should lead to the maximization of multiplier effects. This result can be obtained by combining budgetary funds and spending private funds. Such a solution minimizes the risk of ineffective investments. Entrepreneurs who seek to maximize their primary goal, which is always profit (on farms - income), apart from the transfer of aid funds, should also consider the efficiency of investments in their economic calculations. The theory of rational expectations suggests that entrepreneurs (including farmers) willingly substitute more expensive sources of investment financing (e.g., commercial loans) with less expensive sources (e.g., state aid). Usually, however, the unfortunate effect of such support is to reduce the need for improved efficiency. Other economic entities, e.g., due to their reluctance for administrative procedures or to the need to make quick investment decisions, give up public aid, relying on market sources of financing or their own funds.

Contemporary nations commonly and with the use of significant financial resources undertake various types of intervention in the economy. A modern and well-defined agricultural policy should lead to the practical application of the laws disclosed by economic theory in achieving the goals set by the State. The choices made by the public

sector, however, always determine manufacturers' decisions. They influence what to produce, how to produce, for whom to produce and how to make decisions, i.e., they influence the basic economic dilemmas.

Public authorities have a direct impact on the allocation of production resources and the redistribution of financial resources between farmers and entrepreneurs. However the extent of state interference in the economy is controversial, and views on intervention change over time, in line with the "pendulum theory". The Keynesian model of interventionism, which is a reaction to market imperfections, assumes that only the state can effectively influence the course of the business cycle and stabilize the economy. Liberals, on the other hand, believe that state institutions should be focused on achieving long-term goals, which means resigning from short-term economic regulation that disrupts the natural functioning of the market because it is counterproductive.

Considering the above, the aim of this article is to present the effectiveness of state aid in achieving the optimal allocation of available resources and the division of remuneration of production factors based on the FADN data. In the Paretsky sense, effective resource allocation is one in which it is impossible to improve someone's situation without making someone else's situation worse. This principle refers to individualistic values, i.e., whenever a change serves to improve the situation of some people without worsening the situation of others, it must be introduced. Most often, however, decisions made by the state relate to the necessity to make a choice, i.e., to improve the position of some people and diminish the position of others (for example by disturbing competitive balance or transferring money flows).

Methodology

To assess effectiveness of investments on farms financed with public funds, data from the agricultural accounting system of the Polish FADN was used. The PSM (propensity score matching) method was used to measure the net effect of investments in 2008-2019. In principle, this method consists of selecting two statistically similar groups of entities, the so-called experimental and control group, and then observing the changes that take place in the groups over time and assessing the impact of the applied "stimulus" on the changes taking place in both groups.

In the selection of the research sample, appropriately selected statistical methods were used. The aim was to equalize the "differences" between the observed groups and to bring the initial parameters to the maximally homogeneous state. Mathematically, the relations can be represented by the following formula:

$$Y_i = D_i * Y_1 + (D_i - 1) * Y_0$$

where:

Y_i – observed effect,

Y_1 – effect in the case of implementing an intervention (i.e., using investment support programs),

Y_0 – effect in the absence of intervention,

D_i – presence of intervention (1 - there is, 0 - there is not)

In this study, however, some extension and modification of the PSM method was made. Using statistical methods, a total of four different groups of farms were selected, i.e.:

- farms that have invested in development for at least 5 years, and have used public funds to co-finance these investments, from programs intended for investments in agricultural holdings for at least 3 years - they were called "farms with subsidies" for further purposes of the analysis;
- farms that have invested in development for at least 5 years, but have not co-financed the investments with public funds from programs for investments on farms, they have only financed the investments for at least 5 years with commercial loans - they were called "farms with liabilities" for further purposes of the analysis;
- farms that have carried out investments for at least 5 investments, but have not financed them with subsidies from programs intended for investments on farms or a bank loan, but only with saved own funds - they were called "farms with equity" for further purposes of the analysis;
- farms without investments or those which have had them for a maximum of 1 year, financing them with public funds from programs intended for investments in agricultural holdings - they were called "farms without investments" for further purposes of the analysis;

Each of the above-mentioned groups consisted of about 80 farms. In total, 320 entities were included in observation and analysis. The subject of the assessment mainly concerned investments carried out under RDP 2007-2013 and 2014-2020.

Results

The standard production value (SO) of farms that were under observation in 2008 was relatively similar and ranged from approx. 40 to less than 50 thousand euro (Figure 1). After eleven years, i.e., in 2019, the difference in standard production between farms whose economic potential increased the most, i.e., "with subsidies", and farms "without investment", was doubled. In the other two groups, the value of the SO parameter increased, even though the increase was slight, and the difference between farms "without investment" and farms that invested using a bank loan for this purpose increased to approx. 22% (in favor of the latter).

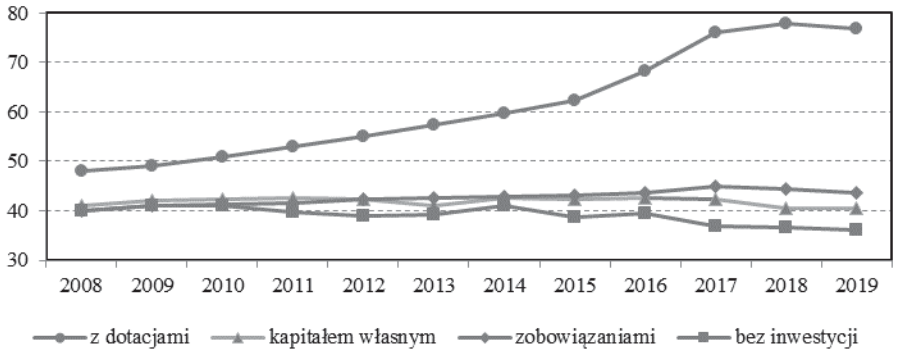

Figure 1. Average economic size of farms (in EUR thousand)
Sources: Authors' own calculations based on the FADN data.

Ownership of agricultural land in the four analyzed groups of farms in 2008 was similar. They used an average of 30 to 34 ha (Figure 2). In 2019, the area of farms actively investing and benefiting from subsidies increased by approx. 50% to 51 ha. In two groups, i.e., those investing on the basis of equity or with the use of a loan, the increase in the area of land used was small (2-4 ha), while in the group of farms "without investment", there was a total stagnation of the agricultural land owned.

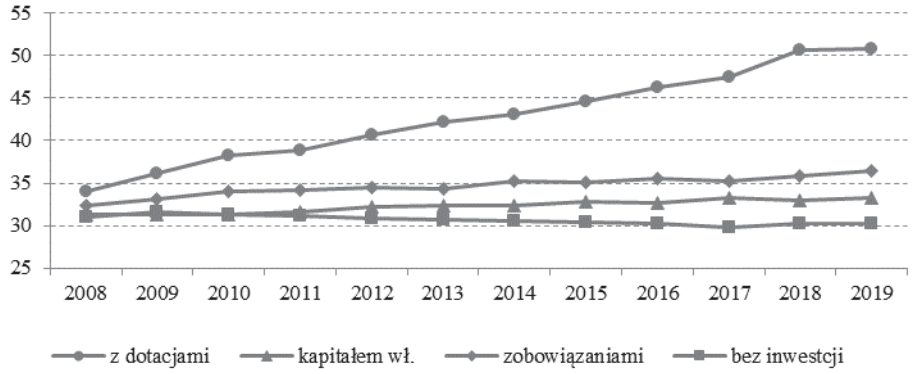

Figure 2. Average agricultural area per farm (in ha)
Source: Authors' own calculations based on the FADN data.

The nominal value of agricultural production in 2008-2019 increased in all analyzed groups of farms (Figure 3). However, the pace of the changes varied. On farms "without investment" it increased by only 19% (to PLN 169 thousand), on farms investing on the basis of equity and on farms investing with the use of commercial loans there was an increase in production by approx. 60-70% (respectively PLN 223 thousand and PLN 241 thousand). As expected, the highest (by 244%) increase in production value took place on farms in the group "with subsidies". It reached 488 thousand PLN, with a clearly outlined growing trend in 2016-2019. This means that farms actively

investing at least doubled the value of market production, while the remaining farms at most retained their shares.

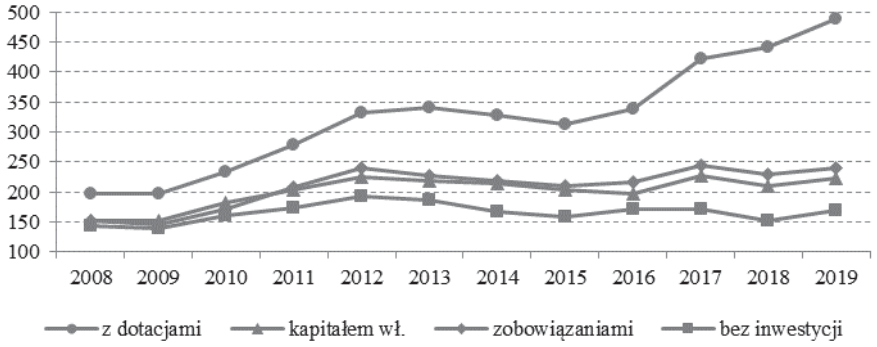

Figure 3. Average value of total production per farm (in PLN thousand)
Source: Authors' own calculations based on the FADN data.

Increase in production value was also accompanied by a proportional increase in its costs. On average, they increased by 57%. The highest increase in production costs (by 135%) took place in the group of farms "with subsidies" (Figure 4). In the other two groups, i.e., those investing on the basis of a commercial loan and in the group financed only with equity, the costs increased by 52% and 32%, respectively. The smallest (only by 7%) was the increase in the costs in the group of farms "without investment". The increase in costs resulted primarily from increased scale of production resulting from increased acreage of crops, as well as the application of new cultivation and breeding techniques based on the investments made.

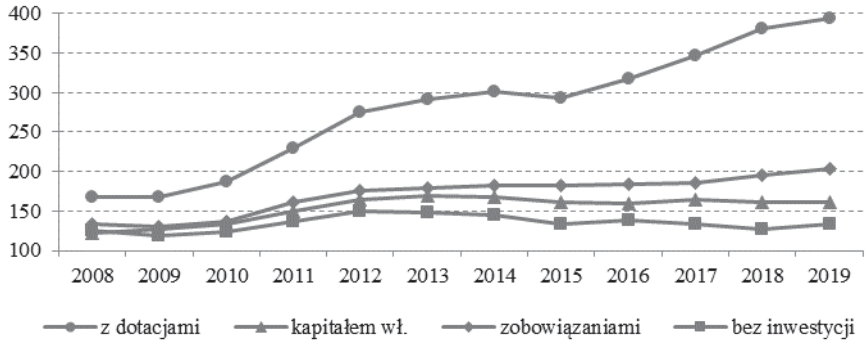

Figure 4. Average value of total production costs per farm (in PLN thousand)
Source: Authors' own calculations based on the FADN data.

Analyzing total investment expenditure and changes in the value of long-term liabilities brings us closer to the problem of assessing effects of state aid in agriculture. The largest investment outlays (100-150 thousand per year) were incurred in 2008-2019 by farms belonging to the group "with subsidies" (Figure 5). The expenses were also strongly correlated with the cyclical nature of the rural development programs

implemented in 2007-2013 and 2014-2020. In the periods at the beginning of the implementation of the programs, or at the end of their implementation (or at the end of the call for proposals in subsequent rounds), the value of investments was lower by approx. PLN 40 thousand in relation to other periods. It can be simplified to say that it was an amount approximately equal to the value of the subsidy received. Significantly lower investments (ranging from PLN 20,000 to PLN 60,000 per year) were carried out by farms from groups financed with "equity" or with "liabilities". We can also observe a delay of the investment peak period in these two groups, as compared to the peak investment period of farms using public subsidies by approx. two years. This attitude results, among others, from the expectation of lower prices (or more favorable offers from machine dealers) dictated by lower demand from farmers waiting for new aid programs. Farmers investing on the basis of equity, or a commercial loan, often purchase fully functional equipment on the secondary market because of its lower prices. The investment "delay" and lower investment value are also the result of rational assessment of needs and monitoring of investments in farmers who received the subsidy, and then imitating them.

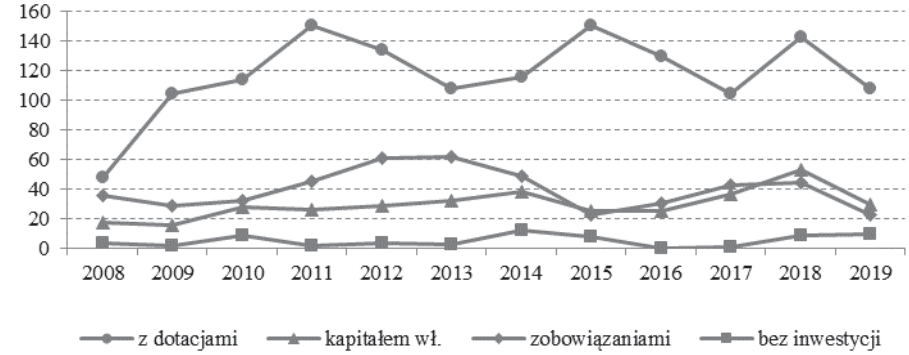

Figure. 5 Average value of expenditure on investment activity per farm (in PLN thousand)
Source: Authors' own calculations based on the FADN data.

Conducting capital-intensive investments, co-financed by public aid, farms often take out long-term bank loans. The consequence of this is a disturbingly high increase in the value of long-term debt per farm from approx. 60 thousand PLN up to nearly 270 thousand PLN (Figure 6). This increase (by approx. 90%) can specifically be observed in 2014-2016. Investments in this period were often forced by the need to buy additional equipment, which was not financed from the RDP funds, but was necessary for the completion of investments financed by public aid. Another reason may be farmers taking so-called "loans for loans"; that is, financing debt servicing with external funds to maintain financial liquidity. In the group of farms financed only with external capital (without the participation of public funds), we can observe the maintenance of a constant debt at a relatively stable level of approx. 60-90 thousand PLN depending on the year. On the other hand, in the group of farms with "equity", we can see a clearly outlined trend of slow reduction of long-term debt. Owners of the farms systematically pay off the debts incurred in previous years. They also do not see the need for further investment

in development, and maybe even think about the cessation of commercial agricultural production, similar to farmers from the group of farms "without investment".

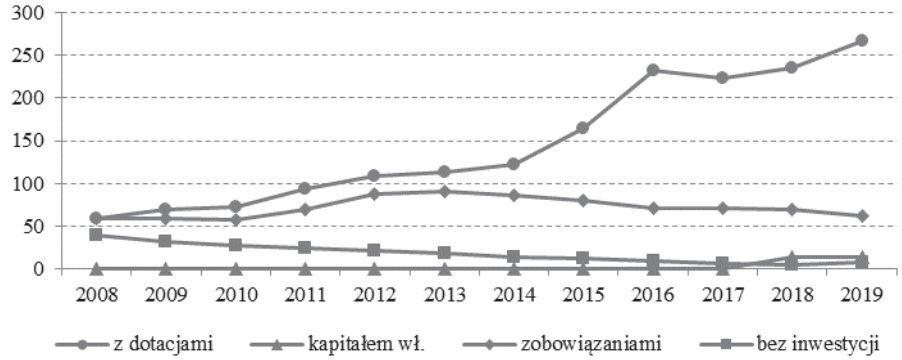

Figure 6. Average value of long-term liabilities per farm (in PLN thousand)
Source: Authors' own calculations based on the FADN data.

The investments carried out in 2008-2019 resulted in the development of most farms, a change in their economic potential and production value, and consequently also a change in the level of income (Figure 7). Even though these changes were not identical in all groups, their direction was similar, determined mainly by macroeconomic market factors. In general, the average income for the entire population in 2019 doubled, as compared to 2008. The highest increase in income (by 172% to PLN 182 thousand) concerned the group of farms "with subsidies". In the remaining three groups, the income growth was similar. At the end of the observation period, income in all the groups was approximately 70-90% higher. However, the distance between the highest (farms "with subsidies") and the lowest income (farms with "no investment") widened. The income was respectively 152% higher (by 63% in 2008).

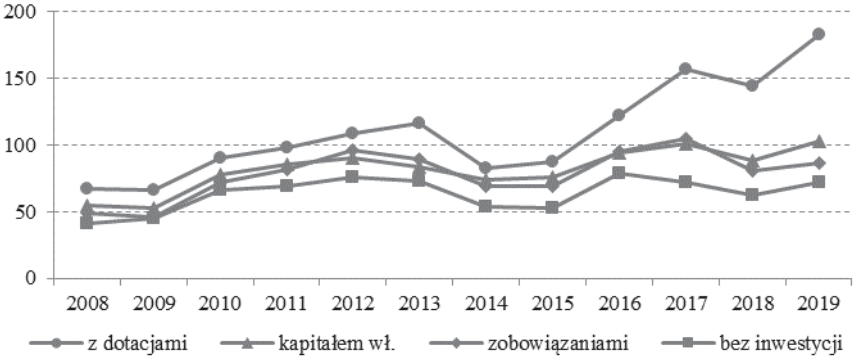

Figure 7. Average income per farm (in PLN thousand)
Source: Authors' own calculations based on the FADN data.

When assessing the effectiveness of public aid, the value of total income obtained in each of the analyzed groups of farms was converted into basic economic factors of production, i.e., labor, land and capital. The obtained results prove that after converting

farm income to a full-time employee, it increased in all analyzed groups (Figure 8). This indicates both the good economic situation on agricultural markets in this period and its skillful use by all groups of farms. Nominally, however, this increase was varied. The highest (by approx. 160%) occurred in the group of farms "with subsidies" (from PLN 34 thousand to PLN 87 thousand), the lowest (by approx. 74%) in the group "with liabilities" (from PLN 26 thousand to 45 thousand PLN). However, the lowest income per full-time employee throughout the entire period was maintained by farms "without investment" (approx. PLN 44 thousand in 2019). In the initial period of the analysis, the difference in income between the group of farms with the highest income ("with subsidies") and the group with the lowest income ("without investments") reached 48% in favor of the former, and in 2019 it increased to 93%. The distance separating the group of farms "with subsidies" from the other groups remained unchanged for most of the analysis period but increased significantly in 2017-2019. The data proves that investments carried out by farms using state aid funds contributed to the increase in agricultural income in 2019 to a level exceeding by approx. 45% the value of the average income in the national economy. In the "equity" group, this income only approached the level comparable to the average income in the economy, and in the remaining groups it will not reach this level.

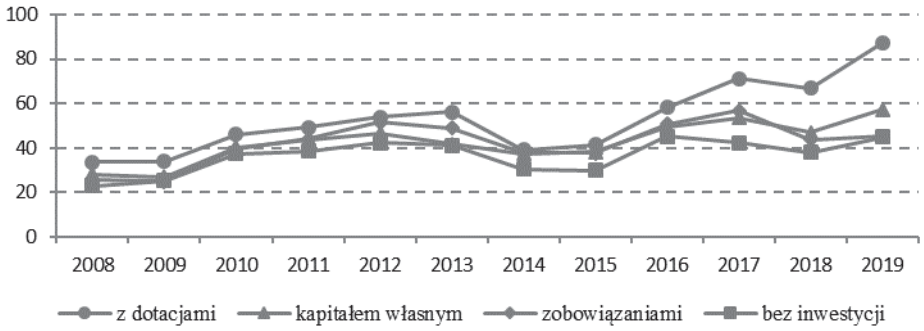

Figure 8. Average income per full-time employee (in PLN thousand)
Source: Authors' own calculations based on the FADN data.

The comparison of the amount of income per ha of agricultural land does not indicate such obvious trends (Figure 9). The difference between the group of farms with the highest and the lowest income per ha ranged from 10% in 2013 to 55% in 2019. For six years the highest income was reported by farms "with subsidies", for five years - farms from the group "with equity", and in one year - farms financing their development mainly on the basis of commercial loans. The lowest income per ha of arable land was recorded by farms from the group "without investment" throughout the entire period.

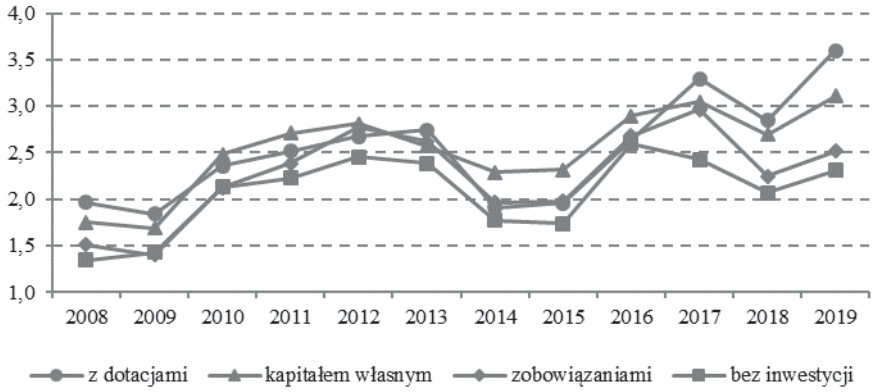

Figure 9. Average income per ha of agricultural land (in PLN thousand)
Source: Authors' own calculations based on the FADN data.

The analysis of the amount of income per PLN of a full-time employee proves, however, that the rapid growth of the production potential based on the significant involvement of "easy" external capital does not guarantee the highest efficiency of its use. Farms financing investments mainly with subsidies decreased their income in 2019, as compared to 2008, by as much as 30%. The situation continued throughout the observation period. Decrease in income (by approx. 15%) also concerned the group financing its development only with equity, and the group of farms without investments. Only the group of farms "with liabilities" maintained the status quo from 2008 in 2019 (Figure 10). In conclusion, it can be stated that incorrectly planned investments usually bring a decrease in the effectiveness of the capital employed. In the group of farms "with subsidies", reduction of this ratio is also influenced by the high value of long-term liabilities.

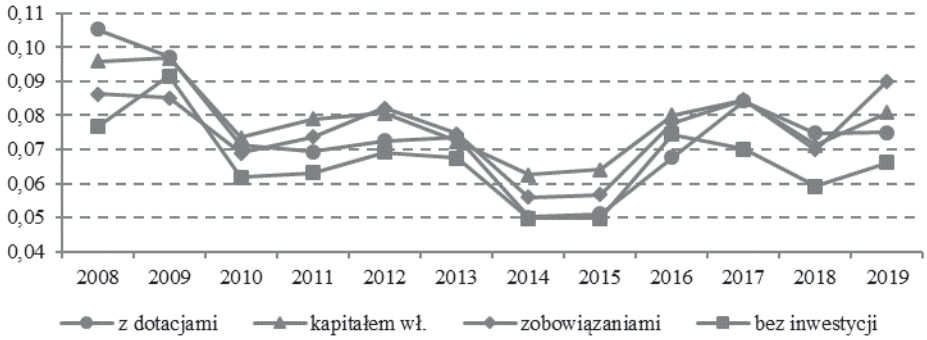

Figure 10, Average income per PLN of total assets (in PLN thousand)
Source: Authors' own calculations based on the FADN data.

Conclusions

Analyses carried out for four groups of farms show that well-planned investments are the decisive factor of economic success. This means implementing a development strategy that is optimal for maximizing achievement of goals, and considering the available possibilities. An investor - that is a farmer - when making investment decisions, should not be guided by choices of other entities (should not imitate others), but rather make a reliable assessment of the situation to increase their own efficiency. The optimal allocation of resources is related to the utility of proper capital allocation. The conducted research shows that the so-called flight "forward" and large investment expenditures do not always bring the desired economic effect. Choosing an investing strategy is much more complicated. This is reflected in the less obvious economic effects after considering the obtained effects in relation to the incurred financial outlays.

Research shows that development is inseparable from investment. State aid accelerates investments and modernization activities on farms, which results in the modernization of production techniques and technologies, structural changes, and commercialization of farms. Farms that are modern and well-equipped, thanks to public aid, significantly increased their production and economic potential in 2008-2019. This is mainly reflected in a significant increase in their productive and economic potential as well as in income per full-time employee.

In the involvement of public funds in private activities, we can observe the so-called the "crowding out" effect, which consists in replacing own funds or bank loans with aid from public sources. Obtained subsidies often prompt beneficiaries of aid programs to evaluate the profitability of investments in a less thorough manner (since we have public funds, it would be a "sin" not to take them). Without public support, some investments consisting in the purchase of machinery and equipment would be implemented, but their scope would be much smaller, and they would be spread over a longer period. State aid accelerated investments and modernization activities, which resulted in a significant modernization of production techniques and technologies.

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Pomiar efektywności pomocy publicznej dla gospodarstwach rolnych w Polsce

Streszczenie

Polityka rolna jest próbą praktycznego zastosowania praw ujawnionych przez teorię ekonomii dla osiągnięcia celów określanych przez Państwo. Przeprowadzone na przykładzie czterech grup gospodarstw rolnych badania przybliżają nas do odpowiedzi na pytanie jak usprawnić krótkookresowa politykę ekonomiczną celem stymulowania mechanizmu rynkowego dla długookresowego rozwoju sektora. Wykorzystując dane polskiego FADN z lat 2008-2019 autorzy badania zastosowują zmodyfikowaną metodę PSM dla określenia efektów ekonomicznych zmian zachodzących w gospodarstwach rolnych. Dowodzą, że źródłem długotrwałego rozwoju i sukcesu ekonomicznego są efektywne inwestycje. Wskazują równocześnie, że podmioty gospodarcze optymalizując swoją mikroekonomiczną funkcję celu dostosowują inwestycje do celów pomocy publicznej, czym obniżają efektywność wykorzystania środków finansowych.

Słowa kluczowe: efektywność polityki rolnej, inwestycje w rolnictwie, rozwój gospodarstw rolnych, polityka rolna
JEL Codes: Q12, Q18, O13,

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