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Review article

TO WHAT EXTENT ARE SMALL OPEN ECONOMIES EXPOSED TO FOREIGN CAPITAL? INSIGHTS INTO THE FELDSTEIN-HORIOKA PUZZLE IN MACEDONIA

The objective of this paper is to investigate the correlation between domestic savings and investment in Macedonia, so as to find evidence of the extent to which the country is open to capital. The theoretical framework of the analysis is the Feldstein-Horioka puzzle. We use annual data for the period 1991-2014 and the Johansen cointegration technique. We find a value of the openness coefficient of 0.685, which does not refute the existence of the puzzle and indicates limited capital mobility but not complete financial closeness in Macedonia. Moreover, the size of the coefficient indicates that Macedonia does not have enough domestic savings to finance investment, which means it is dependent on foreign capital. These results give some support to the government policy and strong focus on attracting FDIs.

Keywords: Feldstein-Horioka puzzle, domestic savings, investment, capital mobility, Macedonia

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1. Introduction

By setting the hypothesis that high correlation between domestic savings and investment in a country is an indicator for low capital mobility, Martin Feldstein and Charles Horioka (1980) created one of the most famous puzzles in economics. Using a cross-section regression on 21 OECD countries they estimated a value of the so-called β coefficient of 0.89, meaning that for every additional dollar of savings, domestic investment increased by 0.89 dollars. This result is inconsistent with the theory of perfect capital mobility, according to which there should be no link between domestic savings and domestic investment: domestic savings will seek best opportunities for investment and domestic investment will be financed by international financial funds. Many other economists like Golub (1990), Dooley et al. (1987) and Feldstein and Bachetta (1983), examining the correlation between domestic savings and investment in many countries, proved the existence of this puzzle. But, there are plenty of researchers who found values of this ratio close to zero and declined the claim of Feldstein and Horioka (Coakley et al. 2004 and Sinn, 1992). Some economists, like Murphy (1984) and Harberger (1980), proved that in countries where perfect capital mobility exists, savings and investment are highly correlated under the influence of some specific factors, such as the size of the country.

This paper examines the existence of the Feldstein-Horioka Puzzle in the small open economy of Macedonia, using a data for the period 1991-2014 and a vector error-correction model. The paper is organized as follows. Section 2 provides the theoretical foundations of the Feldstein-Horioka puzzle and examines the existing literature. Section 3 gives a descriptive analysis of the domestic savings and investment in Macedonia. Section 4 gives the results and offers a discussion, and the last section concludes.

2. Literature review

The Feldstein-Horioka puzzle is related with the paper of Martin Feldstein and Charles Horioka, published in 1980 in *Economic Journal*, whereby they estimated a cross-section regression of this form:

$$(I / Y)_i = \alpha + \beta (S / Y)_i, \qquad i = 1,2,3,4.... N, \tag{1}$$

where I is domestic investment (private and public) in country i, S is domestic savings (private and public) for country i, Y is GDP. The most important role in this

equation has the coefficient β, also known as a link between domestic savings and investment. The value of β ranges from 0 to 1. If β = 1, there is a perfect positive correlation between domestic investment and domestic savings. This is an absolute financial autarky, which means that there is no foreign investment in the country, i.e. mobility of the capital is zero. Another extreme situation is when β = 0, where the overall domestic investment is financed with foreign capital, which indicates perfect capital mobility.

The hypothesis of Feldstein and Horioka is that high positive correlation between domestic savings and investment indicates low capital mobility and domestic savings are transformed into domestic investment with very small allowance for foreign capital. To investigate this relationship, they used data for national savings, investment and GDP for 16 OECD countries for the period 1960-1974. The β coefficient was found close to 1, i.e. a value of 0.89, suggesting that for every additional dollar of domestic savings, investment in the domestic economy increased by 0.89 dollars, which contradicts the theory of perfect capital mobility.

The findings and claims of Feldstein and Horioka, supplemented with the current massive capital flows among the countries, spurred a rather extensive research on this issue. Studies vary by exploring single country cases and groups of countries, and by using different estimation techniques.

Initially, many of the research studies used the same econometric technique as Feldstein and Horioka, and most of them confirmed the existence of the puzzle in the OECD countries. Feldstein and Bachetta (1991) confirmed the hypothesis of Feldstein and Horioka for existence of a high correlation between domestic savings and investment in 23 OECD countries, obtaining a β coefficient of 0.833. Golub (1990) calculated the β coefficient for 16 OECD countries, dividing the time period to two sub-periods, 1970-1979 and 1980-1986, where the latter period was characterized with larger current account imbalances (and hence, lower capital mobility was expected). The estimated β coefficients were 0.85 and 0.74, respectively. These results lend evidence for the capital mobility though at the same time suggest that it is far from perfect.

Economists also applied time-series technique to examine the existence of the puzzle over time. Ghosh and Dutt (2011) estimated the relationship between domestic savings and investment in five countries (USA, UK, France, Germany and Japan) and found high value of the β coefficient only in France. Cooray and Sinha (2005) examined the relationship in 20 poor countries in Africa finding a very weak link, meaning that most of the investment is financed by foreign rather than domestic savings. Indeed, one can expect that small and poor countries lack sufficient financial resources to finance their investment so that foreign investments will dominate.

There are also studies focusing on a single country. For instance, Kumar et al. (2012) explore the relationship in Australia for the period 1960-2007 and docu-

ment the Feldstein-Horioka puzzle in a weak form. Mastroyiannis (2007) examined the relationship in Greece and finds that there is a stable long-term link only in the period 1960-1992. From 1992 onwards, the test suggested that savings and investment react differently to shocks due to the increased integration of the Greek economy into international capital markets. One of the more recent studies is that of Mishra et al. (2010) on India finding that savings and investment were moving in the same direction in the analyzed period, although investments were of greater size than savings which might suggest that these two variables are independent of each other.

Many authors accepted the high correlation between savings and investment as empirical evidence, but refused to accept that it indicates low capital mobility. They suggest that even in models where perfect capital mobility exists, savings and investment are correlated due to changes in exogenous variables that impact on savings and investment. One of the main reasons why savings and investment might be highly correlated in the presence of high capital mobility is the 'country size' effect, for instance. There are in general two channels through which country size may affect the correlation between savings and investments. First, if the country is large enough to influence interest rates, increased national savings will reduce world interest rates and consequently boost investment in that country (Sinn, 1992). In this case we would observe high correlation between savings and investments along with high capital mobility. Secondly, as countries become larger, their need to borrow from outside might be reduced because their investment is financed with domestic funds (Harberger, 1980). Moreover, it is believed that the correlation of savings and investment in developing countries is weaker than in developed countries, as the latter have more integrated capital markets and less regulatory burden. This can be explained by several factors, such as the presence of foreign aid (Isaksson, 2001), the degree of openness of the economy (Wong, 1990), and countries' financial structures (Kasuga, 2004). Openness of a country is found to affect the link between investments and domestic savings, with weaker correlation found in more integrated countries in the international trade (Bahmani-Oskooee and Chakrabarti, 2005).

Many studies add the size and development level of countries into the estimation of the β coefficient, finding fairly similar results. Bahmani-Oskooee and Chakrabarti (2005) find positive and high (0.54 to 0.69) relationship between savings and investment, and a higher β coefficient for developed countries. In addition, they find that the correlation between savings and investment varies depending on the degree of openness of the economy such that economies that are more integrated into the global trade exhibit a weaker correlation between savings and investment. Similarly, Dooley et al. (1987) and Payne and Kumazawa (2006) find statistically significant relationship between savings and investment in developing countries, as well as lower β coefficients in less developed countries relative to

developed ones. On the contrary, Sinha and Sinha (2004) find that capital mobility was higher in lower income countries. Regarding the country size, Murphy (1984.) finds lower β coefficient in small economies compared to large countries (0.59 vs. 0.98, respectively) across 17 OECD countries. He argues that these results are consistent with the expected country size effect in terms of high capital mobility between countries.

The existence of the FH puzzle in transition countries has been little explored. Josic and Josic (2012) tested the validity of the Feldstein Horioka puzzle in Croatia, using a VAR model and data for savings and investments for the period 1994-2010. They find a β coefficient of 0.88, indicating a strong correlation between domestic savings and investment. Bineau (2014) investigates regional savings-investment correlation in the period 1999-2009 in the small economy of Bulgaria. The author uses several tests that confirm low correlation between regional savings and investment rates. It means that regional capital mobility increased over time and openness exerts a positive impact on regional investment. A one percent change in openness induces a change of regional investment rate by 0.47%. Petrovic (2013) researched the presence of the puzzle in Serbia for the period 1997-2010, but finds no cointegration relation between the domestic savings and investment. The analysis showed that almost everything produced in Serbia is consumed, which results in a very modest gross domestic savings compared to gross domestic investment. This fact clearly shows that gross domestic investments are not bound by domestic savings, which is consistent with a relatively free flow of capital that Serbia generates with foreign countries. Petreska and Mojsoska-Blazevski (2013) estimate the value of the β coefficient in three panels of countries: Southeast Europe (SEE), Central and Eastern Europe (CEE) and Commonwealth of Independent States (CIS). The result suggests that as we move towards a panel composed of larger and richer countries - from CIS, to SEE and to CEE - the value of the β coefficient increases: from 0.465 to 0.581 and to 0.859, respectively. This confirms the findings that country size and the level of development have an impact on the relationship between the domestic savings and investments.

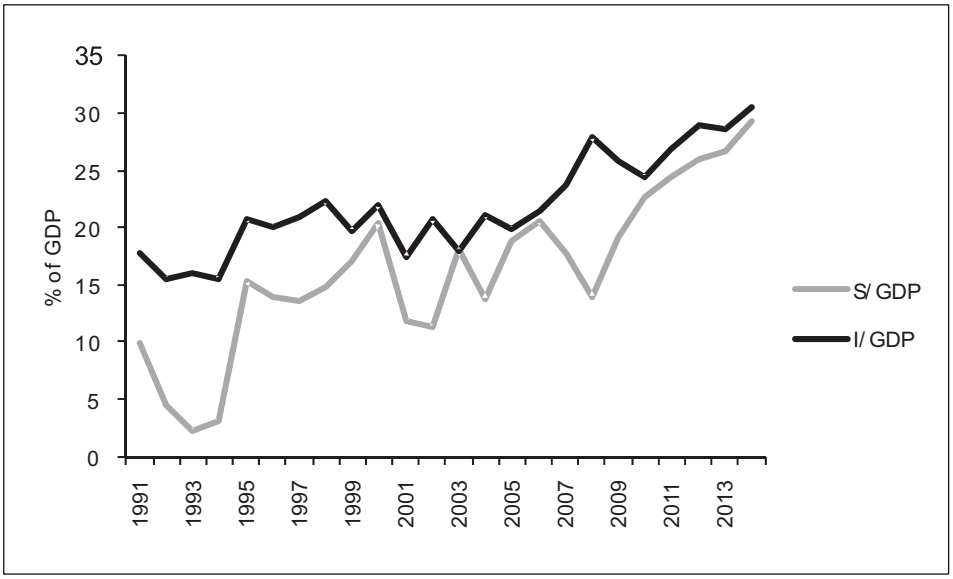
3. Stylized facts

We now turn the focus of our interest to Macedonia. In reviewing some stylized facts about the relationship between the savings and investments in Macedonia, we focus on the period since country's independence (1991) until 2014. Figure 1 shows the trend of gross domestic savings and investment in the analyzed period, both expressed as a share of GDP. It is clear that gross investment is greater than

gross domestic savings in the whole period, which is expected for a small developing country. If we analyze the movement of both variables during the analyzed period, we observe greater heterogeneity in the gross domestic savings than in gross investment (which in the whole analyzed period ranges between 20-25% of GDP). The largest reductions in gross domestic savings have been recorded in 1992/93 year (due to starting of the transition process, followed by a significant decline in economic activity, and consequently, a decline in the total savings, as well hyperinflation). In addition, the political crises of 2001 and the (global) economic crisis of 2007-2010 brought about large reductions in the savings.

Figure 1.

TRENDS IN GROSS DOMESTIC SAVINGS
AND INVESTMENT IN MACEDONIA

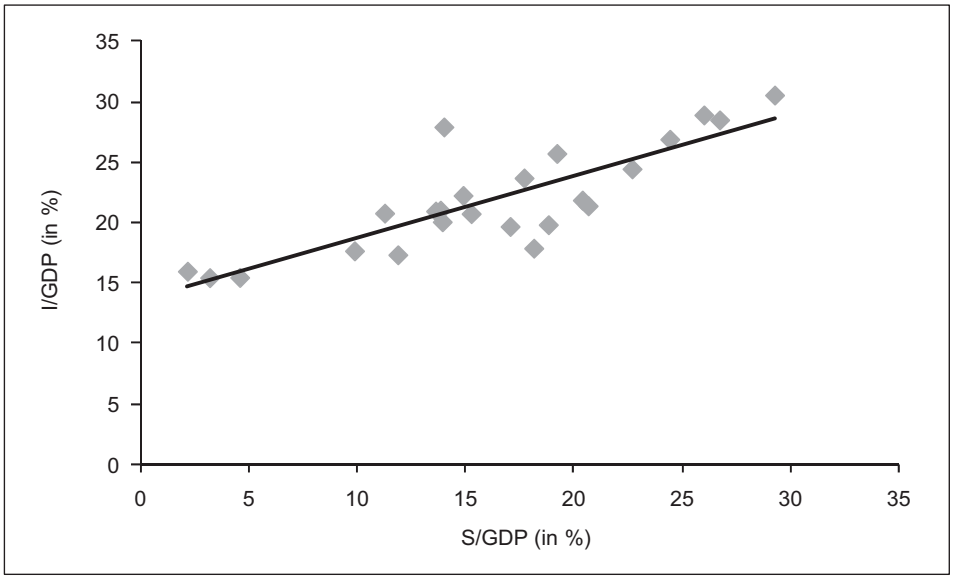


Source: World Economic Outlook; World Development Indicators

Figure 2 further reflects the potential positive relationship between these two variables over the same period (each bullet representing a year). The largest deviation from this pattern is observed in 2008, when gross domestic savings decreased by 21% in light of the reduced economic activity, while gross investment increased by 15% due to the time lag in the implementation of some of investments that started in the previous year (large construction projects, including public investments).

Figure 2.

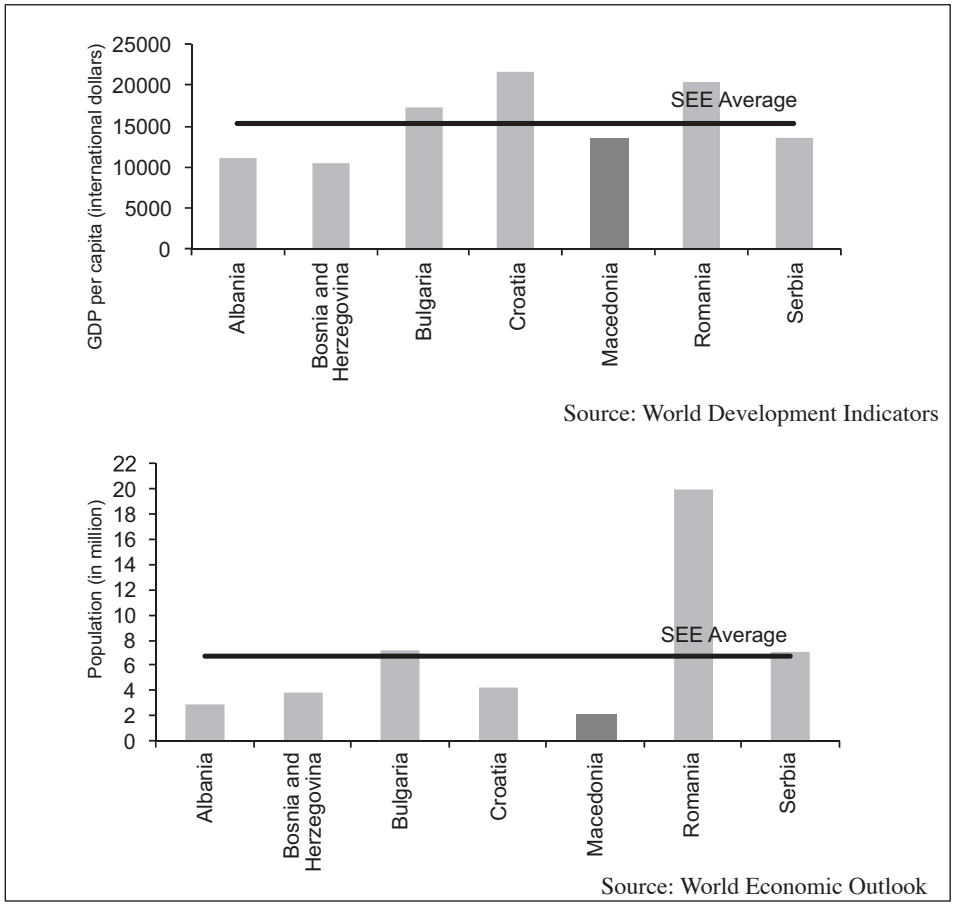
RELATIONSHIP BETWEEN DOMESTIC SAVINGS AND INVESTMENT (1991-2014) IN MACEDONIA



As shown in Section 3, the level of development and the size of the country may affect the value of the β coefficient. Therefore, here we provide comparative data on the size and development of Macedonia relative to the countries of Southeast Europe (SEE). With GDP per capita of 13.523 international dollars, Macedonia is positioned at about the middle of development across the SEE region (Figure 3, up).

Figure 3.

GDP PER CAPITA (UP) AND POPULATION IN SEE COUNTRIES (DOWN), IN 2015



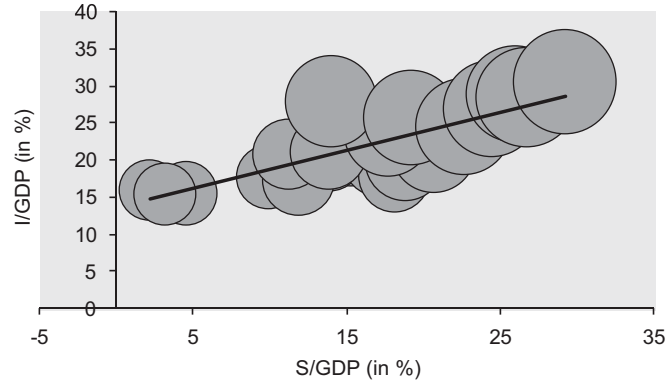
Similarly, Figure 3 (down) shows the relative size of the countries in the region (measured through population size), clearly exhibiting the very small size of Macedonia. Therefore, based on these two characteristics of the economy (development level and size), we would expect the value of the β coefficient in Macedonia to be relatively smaller than in other countries.

Figure 4 further investigates the link between savings and investments, through an interaction with the level of development (measured by GDP per capita over the period 1994-2014). The large circles (higher GDP per capita) on the up panel are in the upper part, at higher investment levels compared to savings.

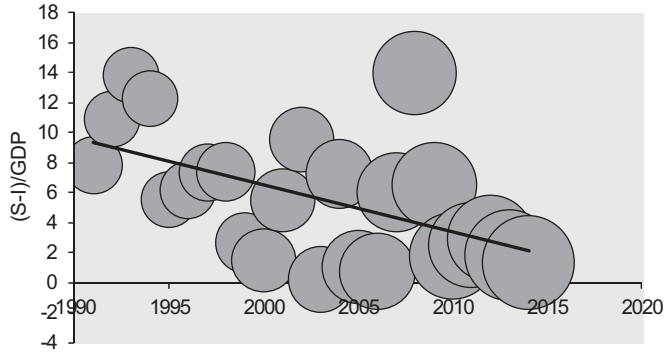
Moving from the up to the down side of the figure, the incident of large circles increases, indicating that at the higher levels of GDP per capita, domestic savings rise faster than investment. In other words, as the country became richer, most investment has been financed by domestic savings. An additional insight can be gained from the down panel which shows that over the years, the country became richer (circles are increasing as one goes to the figure down) and the need for foreign savings decreased (potentially negative relationship). These observations strengthen our previous expectations for values of the β coefficient in Macedonia attenuated by the small size and low level of development of the country.

Figure 4.

THE RELATIONSHIP BETWEEN GDP PER CAPITA AND DOMESTIC SAVINGS AND INVESTMENT



Source: World Economic Outlook; World Development Indicators
Note: Circle's size=GDP per capita; Each circle representes one year over the period 1991-2014.



Source: World Economic Outlook; World Development Indicators
Note: Circle's size=GDP per capita; Each circle representes one year over the period 1991-2014.

In summary, the stylized facts suggest that we can expect to find a significant positive relationship between savings and investments in Macedonia, thought, a β coefficient which is lower compared to richer and larger countries.

4. Methodology

The model we use in the empirical analysis is the original model Feldstein and Horioka (1980) used in their paper that was shown in Section 2:

$$(I / Y)_t = \alpha + \beta (S / Y)_t + u_t \quad t = 1,2,3,4.... N \text{ periods} \tag{2}$$

Where I is domestic investment (private and public) for country i at time t, S is domestic savings (private and public), Y is GDP. u_t is the error term satisfying N ~ (0,1). β is the coefficient of central importance in this study. Given that we would like to examine how the three variables used by Feldstein and Horioka and some other researchers (openness of the economy, population growth and size of the country) which potentially affect the relationship savings-investment (i.e. whether and how their inclusion in the analysis would have changed the β coefficient) we will upgrade equation (2) by adding these variables.

We employ a vector error-correction model (VECM) to correctly estimate the β coefficient. This is done for several reasons. First, it is likely that the variables of central interest (savings and investment) are persistent processes, (see Figure 1). Second, judging according to the trends on Figure 1, it is also likely that they move in tandem. If two variables are cointegrated, there must be a mechanism between them for error correction, determining their joint movement (Harris and Sollis, 2003). Third, we argued that both investment and savings may be determined by a third (unobserved) factor, as well suffer reverse causation, hence endogenizing the relationship. Fourth, the relationship between domestic savings and investment may be actually observed only in the long run, as immediate (short-term) shortfalls of domestic savings may be satisfied by immediate borrowing of foreign savings. These reasons justify the reliance on VECM which assumes cointegrated variable.

The cointegration analysis of time series begins with a test for the existence of a cointegration relationship, originally developed by Johansen (1991). In order to determine the number of cointegrating equation we use information criteria methods, the Schwarz Bayesian information criterion (SBIC) and the Hannan and Quinn information criterion (HQIC), that provides a consistent estimator of the number of cointegrating equations.

The model which is based on the finding of the existence of cointegration vector or containing a mechanism for correction of error is known as the Vector error correction model (Harris and Sollis, 2003). The general structure of this model has the following form:

$$\Gamma_0 \Delta y_t = \alpha[\beta' : \eta'][y_{t-1}] + \Gamma_1 \Delta y_{t-1} + \ldots + \Gamma_p \Delta y_{t-p} + B_0 x_t + \ldots + B_q x_q + CD_t + u_t \quad (3)$$

Where $y_t = (y_{1t},\ldots,y_{Kt})'$ is a vector of K observable endogenous variables, $x_t = (x_{1t},\ldots,x_{Mt})'$ is a vector of M observable non-modeled or exogenous variables. It is assumed that the residual vector u_t is K-dimensional unobservable process with average value of zero and it is white noise, with positive final covariance matrix $E(u_t u_t) = \Sigma_u$. Parametric matrices α and β have dimensions (K × r) and they must have a rank r. They determine the long-term part of the model, whereas β contains the cointegration relations (in our case, the ratio of central interest to this paper), and α represents the load coefficients (adjusting).

The analysis uses annual data for gross domestic savings, investment, trade, gross domestic product and population. The first three variables (domestic savings, investment and trade) are expressed as percent of GDP and the population variable is included as an annual rate of growth. Data is collected from the database of the International Monetary Fund (World Economic Outlook), World Development Indicators and the national statistical office. The covered period is 1991-2010.

5. Results and discussion

The visual inspection of the key variables in this analysis – investment and savings – suggests that they increased over time. Hence, we first examine the integration characteristics of the main variables, i.e. if they contain a unit root. Several formal tests are shown in Table 1. They are: Augmented Dickey-Fuller, Dickey-Fuller GLS, Phillips-Perron, which are often applied and details on them can be found, for example, in Wooldrige (2007). Although in practice various tests can lead to different results, in our case two of three tests suggest that the series of savings and investment are non-stationary, while the Dickey-Fuller GLS test rejects the null hypothesis of a unit root, but only at the 10% level of probability. Hence, we conclude that the variables are probably non-stationary and suitable for testing of their potential cointegration.

Table 1.

UNIT ROOTS

	t statistics	
Unit root test	**i/gdp**	**s/gdp**
Augmented Dickey-Fuller	-0.815	-1.056
Dickey-Fuller GLS	-3.218*	-3.378*
Phillips-Perron	-0.437	-0.782

Source: Author's estimations.

*Note: *,**,*** signify that the null hypothesis (has unit root) is rejected at the 10, 5 and 1% level. The number of time lags is automatically chosen based on the Schwarz information criterion.*

To test for cointegration or fit cointegrating VECMs, we must specify how many lags to include. Building on the work of Tsay (1984) and Paulsen (1984), Nielsen (2001) has shown that the methods implemented in varsoc can be used to determine the lag order for a VAR model with I(1) variables. The order of the corresponding VECM is always one less than the VAR. Vec makes this adjustment automatically, so we will always refer to the order of the underlying VAR. The output below uses varsoc to determine the lag order of the VAR.

Table 2.

SELECTION ORDER CRITERIA

Lag	LR	FPE	AIC	HQIC	SBIC
0		207.878	11.0125	11.032	11.1121
1	23.533*	96.0339*	10.2359*	10.2942*	10.5346*
2	6.2718	106.506	10.3223	10.4195	10.8202
3	5.6183	124.887	10.4414	10.5775	11.1384
4	1.3039	188.527	10.7762	10.9511	11.6724

Source: Author's estimations

*Note: * indicates that this estimator has selected the number of lags corresponding to this row of the table.*

We will use one lag for this bivariate model because all information criteria suggest that one lag is the most appropriate. Many multiple-testing problems in

the time-series literature have been solved by defining an estimator that minimizes an information criterion with known asymptotic properties. Selecting the lag length in an autoregressive model is probably the best-known example. Gonzalo and Pitarakis (1998) and Aznar and Salvador (2002) have shown that this approach can be applied to determining the number of cointegrating equations in a VECM. As in the lag-length selection problem, choosing the number of cointegrating equations that minimizes either the Schwarz Bayesian information criterion (SBIC) or the Hannan and Quinn information criterion (HQIC) provides a consistent estimator of the number of cointegrating equations.

The results of the Johansen's cointegration test are given in Table 3. Results are given for the order of the time lag of 1, for Schwarz Bayesian information criterion (SBIC) and Hannan and Quinn information criterion (HQIC). These tests indicate existence of one cointegration vector between investments and savings in Macedonia, providing grounds for continuing our investigation with setting vector error correction model (VECM).

Table 3.

COINTEGRATION TESTS

Maximum rank	Eigenvalue	SBIC	HQIC
0		10.6332	10.55929
1	0.42590	10.48722*	10.30246*
2	0.00853	10.61498	10.31877

Source: Author's estimations

*Note: * indicates that this estimator has selected the number of cointegrating equations corresponding to this row of the table.*

The VECM will calculate the β coefficient out of a long-term relationship between the variables of interest, and will evaluate the speed of adjustment (equilibration) of that relation when the equilibrium is infringed. The results for the value of the β coefficient – in a VECM setting - and other parameters are shown in Table 4. The coefficient β that is of central importance in this work is shown in the first row of the table (in bold characters). It is statistically significant at the 1% level and has a value of 0.685. It suggests that additional domestic saving of one denar results in investment of 0.685 denars. It does not refute the existence of the Feldstein-Horioka puzzle in Macedonia and indicates limited but not complete capital immobility.

Table 4.

RESULTS

Dependent variable: D.i/gdp	**variable: (1)**
s/gdp	**0.685*** **
Wald test – the coefficient before s/gdp is equal to 1	*43.73*** *
Ec – Error correction term	-0.192
Σ[D.s/gdp]	-0.464
Σ[D.i/gdp]	-0.385
Constant	1.094
Observations	22
Source: Author's estimations.	
*Note: *, **, *** signify that the null hypothesis is rejected at the 10, 5 and 1% level. D denotes a differentiated variable. Short-term coefficients are reported as the sum of the lags (where more than one exist), along with the Wald test for their joint significance.*	

The original idea of Feldstein and Horioka can be examined using the Wald test, where we set the null hypothesis that the β coefficient is equal to 1. We convincingly reject the null indicating that Macedonia still relies on foreign savings; i.e. it does not have enough domestic savings to finance its investment. The error correction term has the correct negative sign but is statistically insignificant, possibly indicating that a possible long-term adjustment in investment is not driven by domestic savings.

Table 4 also gives results for the short-term dynamics, with the cumulative coefficients and the Wald test for their joint statistical significance, where applicable. Their inclusion is mainly for statistical reasons, in order to take into account the possible existence of a serial correlation in the model.

Table 5.

β COEFFICIENT IN COMPARATIVE CONTEXT

Author	Countries	Econometric approach	β coefficient
This study	Macedonia	Time series	0.685
Petreska and Mojsoska-Blazevski (2013)	SEE	Panel	0.581
	CEE	Panel	0.859
Feldstein and Horioka	OECD	Multi-sector	0.887
Josic and Josic (2012)	Croatia	Time series	0.880
Payne and Kumazawa (2006)	Developing countries	Multi-sector	0.485

Table 5 shows the results of this survey, compared to some of the papers elaborated in Section 2. Our result has a similar value of the β coefficient with that of 0.581 for the SEE countries, a group of countries where Macedonia belongs, obtained in Petreska and Mojsoska-Blazevski (2013). Macedonian β coefficient has lower value than the one of CEE (Petreska and Mojsoska-Blazevski, 2013) and Croatia (Josic and Josic, 2012), which indicates that in terms of the relationship between domestic savings and investment, these countries are closer to the developed ones, compared to Macedonia. It resonates out intuition in Section 3 whereby we expected lower β in Macedonia compared to richer and larger countries. However, we should emphasize that this comparison is only indicative because the reviewed studies use different econometric techniques and different time period and part of them find a very low level of the β coefficient and refute the existence of the puzzle.

Table 6 extends the basic model with the inclusion of: the openness of the country (represented as total trade to GDP); the annual growth rate of population; and the logarithm of GDP (reflecting the size of the country). The purpose of this extension of the model is to examine its robustness, or whether the inclusion of these variables will have a significant impact on the saving-investment relationship (the β coefficient). In all specifications, the coefficient of adjustment and the short-run coefficients do not change their magnitude and statistical significance. However, controlling for the size and the level of development of the economy (columns 2 and 3) results in a slight increase of the β coefficient, suggesting that if these are not controlled for in the regression, than the true β is somehow attenuated. Again, this resonates with our discussion in Section 3, whereby we expected that Macedonia has lower β than compared to cases of larger and richer countries.

Table 6.

ROBUSTNESS ANALYSIS

Dependent variable: i/gdp	Added variable		
	Trade	Population	GDP per capita
	(1)	(2)	(3)
s/gdp	**0.539*** **	**0.721*** **	**0.767*** **
Ec – Error correction term	-0.298	-0.251	-0.134
Σ[D.s/gdp]	-0.053	-0.063	-0.51
Σ[D.i/gdp]	-0.313	-0.344	-0.428
Variables' coefficient	0.052	-1.533	0.643
Constant	-3.841	1.243	-14.150

Source: Author's estimations.
*Note: *, **, *** signify that the null hypothesis is rejected at the 10, 5 and 1% level. D denotes a differentiated variable. Short-term coefficients are reported as the sum of the lags (where more than one exists).*

7. Conclusion

In this paper we estimated the relationship between domestic savings and investment in Macedonia, in order to examine the existence of the Feldstein-Horioka puzzle. As small open economy, Macedonia relies on foreign capital, which coupled with its small size and relatively low level of development may suggest that the relationship between domestic savings and investment is far from being unitary. The analysis started with an examination of the integration features of these two variables by unit root tests. The results of these tests indicated that the series of domestic savings and investment in Macedonia probably follow a non-stationary process, and contain a unit root. Hence, we continued examining whether there is a long-term relationship between these two variables, i.e. a cointegration relationship. Tests indicate that likely one cointegration vector exists between the sets of savings and investment. These results enabled to set a model for error correction, which calculates the β coefficient central to this research. The econometric analysis suggested that the β coefficient for Macedonia has a value of 0.685 and is highly statistically significant, indicating limited but not complete capital immobility. The size of the coefficient indicates that Macedonia does not have enough domestic savings to finance its investment, which means it is dependent on foreign

capital. This is in line with the fact that Macedonia is a small economy that needs to attract foreign investors to place their funds in the country. These results give support to the government's "aggressive" policy in attracting foreign direct investment. Custom duties and tax exemptions, exemptions for construction fees and internal infrastructure, direct assistance and cheap labor, contributed to a significant level of foreign direct investment in recent years, which successfully complements the gap between domestic savings and investment.

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KOLIKO SU MALE, OTVORENE EKONOMIJE OTVORENE STRANOM KAPITALU?
UVID U FELDSTEN - HORIOKA ZAGONETKU U MAKEDONIJI

Sažetak

Cilj ovog rada je istražiti povezanost između domaće štednje i ulaganja u Makedoniji, kako bismo pronašli dokaze o tome u kojoj je mjeri država otvorena kapitalu. Teorijski okvir i polazište analize je Feldstein-Horioka zagonetka.

Koristili smo godišnje podatke za razdoblje 1991.-2014. i Johansenovu tehniku kointegracije. Nalazimo vrijednost koeficijenta otvorenosti 0,685, što ne opovrgava postojanje zagonetke i ukazuje na ograničenu mobilnost kapitala, ali ne i potpunu zatvorenost u Makedoniji. Štoviše, veličina koeficijenta ukazuje na to da Makedonija nema dovoljno domaće štednje za financiranje investicija, što znači da je ovisna o stranom kapitalu. Ovi rezultati daju određenu podršku vladinoj politici s jakim naglaskom na privlačenje izravnih stranih ulaganja.

Ključne riječi: Feldstein-Horioka zagonetka, domaća štednja, ulaganje, mobilnost kapitala, Makedonija