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**Anton de Kom Universiteit van Suriname**

**FACULTY OF SOCIAL SCIENCES**

**Exchange rate pass-through in Suriname**

Thesis for the acquisition of the Bachelor of Science Degree in Economics

Field of Study: Economics

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Supervisor: Dr. William M. M. Orie,

Paramaribo, August 2021

## **Preface**

Exchange rate pass-through is a major issue for small developing states as Suriname. Therefore, I decided to do thorough research when my supervisor suggested it to me.

This thesis would not have been possible without the precious support and guidance of many people.

I owe my highest gratitude to Dr. William Orie. Thanks to his advice and suggestions, my first research journey has been a rewarding learning experience. I am thankful for his guidance, confidence, and patience.

I would also like to thank Drs. S. Ramlochan Tewarie, for her valuable suggestions. In turn, I would also like to thank Anton de Kom University for allowing me to showcase my study and providing me with a platform to present my work. Also want to thank the coordinator of Economics Drs. Varun Ramdin for his suggestions for the layout of this thesis.

During my undergraduate years, I was fortunate to meet extraordinary people, that I now call my friends. Thanking all of them individually would be difficult but I am extremely grateful for everyone who has supported me while working on this thesis, by providing insightful feedback and comments.

Finally, I am profoundly indebted to my family for their generous and continuous guidance, their support has been an immense source of motivation and encouragement. My parents and brother have always been there for me as guides and as role models.

My brother showed me to never give up no matter the circumstances.

*This thesis is dedicated to my family.*

I hope that this thesis may broaden the view of anyone interested in this subject.

Niaaz Salarbaks

Wanica, August 2021

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## **List of Abbreviations**

ERPT: Exchange rate pass-through

NER: Nominal exchange rate

RER: Real exchange rate

NEER: Nominal effective exchange rate

REER: Real effective exchange rate

IMF: International Monetary Funds

CPI: Consumer Price Index

## **Executive Summary**

This thesis investigates what Exchange Rate Pass-through (ERPT) is, the magnitude of ERPT in Suriname, and policy options to reduce the pass-through based on literature research. ERPT simply means how a change in the exchange rate passes through the inflation in a country. A change in the exchange rate affects the prices of imported goods and services, which in turn leads to an increase in consumer prices. Research shows that a low pass-through has a positive impact on the economy, but when the pass-through is high it harms the economy.

Studies in Suriname show that the exchange rate pass-through is between 0.4 to 0.6 within six months and up to 1.0 after a year. The main determinants of exchange rate pass-through in Suriname are the degree of the openness of the economy (a high import to GDP ratio), monetary instability, and inflation rate. An increase in the exchange rate leads quickly to an increase in the prices of imported goods and services expressed in local currency.

Policy options to reduce exchange rate pass-through in Suriname, are import substitution, export promotion, using import duties to counteract the impact of an exchange rate increase, credible monetary policy, central bank independence and transparency, inflation targeting, fixed exchange rate, and formal dollarization.

## **Introduction**

Exchange rate pass-through (ERPT) simply means how a change in the exchange rate passes through the inflation in a country (Campa, Manuel, Goldberg, & Linda, 2005). It is a measure of how responsive international prices are to changes in exchange rates. A high exchange rate pass-through is a challenge for countries as it becomes difficult for the monetary authorities to manage inflation. This challenge is more relevant in small states as their consumer basket, which is used to measure inflation, has a large import component. This means that it contains many imported goods. Thus, when the exchange rate for instance increases, the prices of those imported goods priced in local currency also go up.

In Suriname, there have been several studies on exchange rate pass-through and researchers concluded that the exchange rate pass-through has a value between 0.4 and 0.6 within six months and 1.0 after a year. This means that an increase in the exchange rate by 1 percent leads to an increase of inflation between 0.4 and 0.6 percent and 1.0 percent respectively.

Based on the quite high exchange rate pass-through in Suriname on the one hand, and the absence of a formal exchange rate pass-through policy in Suriname on the other hand, the research question of this thesis is formulated as follows:

**“What is the magnitude of exchange rate pass-through in Suriname and what are the policy options?”**

This research question will be answered with the following sub-questions:

1. What is exchange rate pass-through and why is it important for policymakers?
2. What are the explanations for exchange rate pass-through?
3. What are the findings on exchange rate pass-through in small states, including Suriname?
4. What are the policy options to reduce exchange rate pass-through in Suriname?

## **Conceptual framework**

In an ERPT-study, exchange rate and inflation are the two most important concepts. These concepts will be elaborated on in this section.

The exchange rate is the price of one currency in terms of another currency. Exchange rates can be either fixed or floating. Fixed exchange rates are decided by the central banks of a country whereas floating exchange rates are decided by the mechanism of market demand and supply. The nominal exchange rate (NER) is defined as the number of units of the domestic currency that can purchase a unit of a given foreign currency. A decrease in this variable is termed nominal appreciation of the currency. The real exchange rate (RER) is defined as the ratio of the price level abroad and the domestic price level, where the foreign price level is converted into domestic currency units via the current nominal exchange rate (CNB Czech National Bank, n.d.). Besides NER and RER there is also nominal effective exchange rate (NEER) and real effective exchange rate (REER). NEER is a measure of the value of a currency against a weighted average of several foreign currencies. An increase in NEER indicates an appreciation of the local currency against the weighted basket of currencies of its trading partners (International Monetary Funds, 2020). REER is the real effective exchange rate (a measure of the value of a currency against a weighted average of several foreign currencies) divided by a price deflator or index of costs. An increase in REER implies that exports become more expensive and imports become cheaper; therefore, an increase indicates a loss in trade competitiveness (International Monetary Funds, 2020).

Inflation is the quantitative measure of the rate at which the average price level of a basket of selected goods and services in an economy increases over some time. Inflation can also be divided into various types. The types of inflation that are most occurring in ERPT are headline inflation and core inflation. Headline inflation is the raw inflation figure reported through the Consumer Price Index (CPI) that is released monthly by the Bureau of Statistics. The CPI calculates the cost to purchase a fixed basket of goods, as a way of determining how much inflation is occurring in the broad economy. The CPI uses a base year and indexes the current year's prices according to the base year's values (Kenton, 2019). Core inflation is the change in the costs of goods and services, excluding the food and energy sectors. This measure of inflation excludes these items because their prices are much more volatile. It is most often calculated using the consumer price index (CPI), which is a measure of prices for goods and services.



In general, countries have five macroeconomic goals (Boyle, 2020):

1. Full employment
2. Economic growth
3. Equilibrium in the balance of payments
4. Fair distribution of income
5. Low inflation

Economic growth and inflation are considered the most two important macroeconomic goals (Boyle, 2020).

Low inflation has several merits. A low inflation rate contributes towards economic stability; firms can predict future costs and prices, which encourage saving; low inflation prevents savers from seeing fall in real value in savings, investment; low inflation encourages citizens and foreigners to invest in the country; stimulates economic growth; and contributes to maintaining competitiveness (Lumen macroeconomics, n.d.).

Governments usually target an inflation rate of 2 %. This moderate but low rate of inflation is considered a good compromise between avoiding the cost of inflation but also avoiding the cost of deflation.

Deflation is a decrease in the general prices of goods and services within an economy. It occurs when the inflation rate becomes negative. There are several cons of deflations (Kuepper, 2021):

1. Discourages consumer spending
2. Increase the real value of debt
3. Increase real interest rates
4. Real wage unemployment

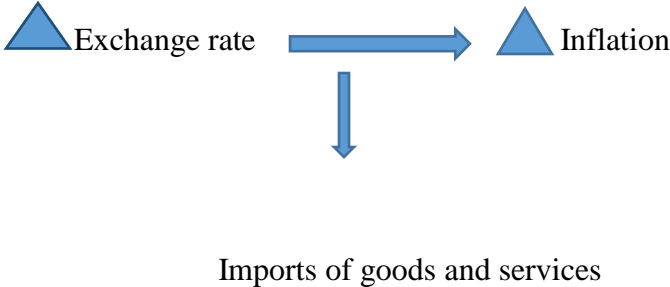
In small developing economies exchange rate and inflation usually go hand in hand, because if one rises the other rises too. This is one of the reasons why central banks and governments in developing countries try to have a stable exchange rate and a low inflation rate (Worstall, 2021).

The conceptual model below (Figure 1) shows that any changes in the exchange rate will have an impact on inflation. The impact depends on the import component of the consumer basket.

The important concepts are exchange rate, inflation, and import component.

The imported components play a very significant role in inflation, exchange rate, and exchange rate pass-through. If the consumer basket contains more imported goods and services, it is likely that that the ERPT will be high.

**Figure 1: Conceptual model**



If the exchange rate increases the value of imported goods in SRD must also increase, otherwise, importers will go bankrupt. These are known as the first and second-round effects. The first-round effect is the direct impact the exchange rate fluctuations have on imported products at the border. Following the exchange rate fluctuations, retail prices, wages, and distribution costs will also adjust. This is the second-round effect.

**Methodology**

This research is qualitative in nature. The literature review focuses on the definitions of exchange rate pass-through, determinants, magnitude, and ERPT policies. This research consists of a literature study: relevant scientific research was used from studies from the World Bank, the IMF, and the central bank of Suriname.

## **Purpose and Relevance**

This research investigates the magnitude of exchange rate pass-through in Suriname and what the possible policy options are to achieve a stable and low exchange rate pass-through. By doing so, the researcher formulates policy recommendations, which can be used by policymakers to reduce exchange rate pass-through in Suriname.

The social relevance is that if the policymakers can reduce the exchange rate pass-through in Suriname, the inflation will be better managed, and thus the purchasing power of the Surinamese dollar better defended.

## **Outline**

This thesis consists of an introduction, three chapters, and a conclusion. The first chapter is the literature review of what exchange pass-through is, the various types of exchange rate pass-through, the effect of exchange rate pass-through, exchange rate pass-through in advanced and small states, and why exchange rate pass-through different is in every country. The second chapter has more intensive research of exchange rate pass-through in Suriname. In chapter three the policy options to reduce exchange rate pass-through in small states, with the focus on Suriname, will be investigated.

## 2. Literature Review

In this chapter, various definitions of ERPT are discussed, and ERPT determinants are explained. In addition, the ERPT in small states versus advanced economies is presented. Finally, an inventory of the policies to reduce ERPT is discussed

### 2.1. Exchange Rate Pass-Through

There are various definitions of ERPT as:

1. ERPT is the extent to which exchange rate movements are passed through into traded goods prices, versus absorbed in producer profit margins or mark-up (Cunningham, Friedrich, Hess, & Kim, 2017).
2. The rate at which consumers' prices rise following a depreciation of the currency (Carrière-Swallow, Y., Magud, & Valencia, 2016).
3. It is a measure of how responsive international prices are to changes in exchange rates (Campa, Goldberg, & Linda, 2002).
4. The transmission of exchange rate movement to changes in the domestic price level. The exchange rate pass-through ratio (ERPTR) is defined as the ratio of the response of country-specific inflation to the response of the nominal exchange rate changes (Janine Aron, 2014).

All definitions highlight the aspect of a rise in inflation due to a rise in the exchange rate. As the first definition indicates, in the event of an exchange rate increase, the price of imported goods in local currencies must also increase and or partly be absorbed in the profit margin. The definition that will be used in this thesis is: ERPT is the percent change of the prices of imported goods expressed in local currency from a one percent change in the nominal exchange rate (Campa, Goldberg, & Linda, 2002). The reason for this definition is because if the exchange rate increases this will not only increase import prices but will also have an impact on locally produced products.

ERPT can be divided into completed and incomplete/partial pass-through. The complete pass-through appears in the long run and the incomplete pass-through appears in the short run. Short-term pass-through is the reaction of inflation to a change in the real exchange rate which happens in a year. The long-term pass-through is the overall response of inflation to a real exchange rate shock which happens in a period of longer than a year.

A complete pass-through is when the prices in the country have completed the transition in response to the international market. For instance, as the Euro gets stronger than the dollar, you would expect a complete pass-through to mean that prices in European countries would respond by decreasing (Takhtamanova, 2008). And an incomplete pass-through is if the price change is less than proportional (Pyne & Roy, 2008). Goldberg explains that to achieve a complete pass-through there are two conditions.

- (1) constant markups of price over cost, and
- (2) constant marginal cost.

Under these conditions, the elasticity of demand for imports drives the response of the trade balance to exchange rate changes.

## **2.2. The Incomplete Pass-Through**

The partial or incomplete character of ERPT has two main explanations: a macroeconomic justification in which the incompleteness comes from nominal rigidities leading to unresponsiveness in prices in the short run. Second, a microeconomic explanation linking the incomplete ERPT to an increasing degree of pricing to market behavior of firms. (L'opez-Villavicencio & Mignon, 2017). To explain the macroeconomic perspective is that once retail prices have risen, it is very difficult to decrease these prices due to a lack of control of the government, which leads to an increase of ERPT. The microeconomic perspective is that firms will set their prices based on supply and demand, which also leads to an incomplete pass-through.

Recent theoretical work has suggested many potentially important factors in explaining incomplete pass-through:

First, in oligopolistic markets, the response of prices to changes in costs depends on the curvature of demand and the market structure (Dornbusch, 1987; Knetter, 1989; Atkeson & Burstein, 2008).

Second, local costs may play an important role in determining pass-through (Sanyal & Jones, 1982; Burstein, Neves, & Rebelo, 2003; Corsetti, Dedola, & Leduc, 2003). Local costs drive a wedge between prices and imported costs that is unresponsive to exchange rate fluctuations. Consequently, if local costs are large, even a substantial increase in the price of an imported factor of production could have little impact on marginal costs.

Third, price rigidity and other dynamic factors have the potential to contribute to incomplete pass-through (Giovannini, 1988; Kasa, 1992 (Devereux & Charles, 2000), (Bacchetta & Wincoop, 2003)

Fourth, a common explanation is based on the market share of firms. Companies change their profit margins in order not to lose their market share. In a market where imperfect competition conditions apply and where companies make mark-up pricing against exchange rates, the incomplete exchange rate appears (Kotil, 2020).

Fifth, as a result of globalization, the exchange rate pass-through will also increase. The production process takes place in different places and thus different currencies, which causes the incomplete exchange rate pass-through (Kotil, 2020). According to Goldberg (2002) and Pyne and Roy (2008), the incomplete pass-through or the partial pass-through is most occurring in the short run, due to market segmentation. Market segmentation allows imperfectly competitive firms to charge different prices for the same product in different export markets (Pyne & Roy, 2008).

Sixth, the devaluation of the home currency, which leads to an increase in import prices in terms of home currency. Following home country currency depreciation, the price of imports in home country currency rises which in turn reduces the domestic demand for imports and results in the lowering of exporter's market share. To maintain the existing market shares, especially in the short run, exporters generally adjust their mark-ups. The higher the price elasticity of demand of a country the lower will be the mark-up over production cost. This explains why exchange rate movements often do not bring about proportional change in import prices and the incomplete exchange rate pass-through (Pyne & Roy, 2008)

## **2.3. The Determinants of exchange rate pass-through**

For policymakers, it is important to understand the determinants of ERPT to develop policies to reduce pass-through. These determinants are:

1. Exchange rate regime
2. Income level of countries
3. Fiscals sustainability
4. Monetary stability
5. Inflation
6. Imports components

### **Ad 1. Exchange rate regime**

On average, elasticities of pass-through are lower in countries with flexible exchange rate regimes than in fixed exchange rate regimes (Borensztein & Heideken, 2016).

A flexible exchange rate system is a monetary system that allows the exchange rate to be determined by supply and demand. A fixed exchange rate system is a regime applied by a government or central bank that ties the country's currency's official exchange rate to another country's currency or the price of gold. In fixed regimes, economic agents consider that a change in the exchange rate is permanent and will have a permanent impact on their production costs. Therefore, they adjust selling prices rapidly. In contrast, in flexible exchange regimes economic agents seem to consider changes in the exchange rate as temporary (Razafimahefa, 2012).

### **Ad 2. Income level of countries**

Higher-income countries show a lower exchange rate pass-through (Kabundi & Mbelu, 2016). The World Bank defines a high-income country as one that has a gross national income per capita exceeding US\$12,056 (The World Bank, 2020). Both developed and undeveloped countries may be classified as high-income countries (The World Bank, 2020). The dynamic pass-through elasticities are highly correlated with income per capita levels in countries with flexible exchange rate regimes. The income per capita can be interpreted to reflect the size of the domestic market. Exporters to or importers/producers in a high-income country seem to not fully increase their selling prices following currency depreciation, probably to preserve market share. A higher income

level may lead to and reflect a higher degree of competition in the domestic market. In such a case, firms have limited “pricing power” preventing them from rapidly and intensively passing exchange rate changes through to domestic prices (Razafimahefa, 2012).

### **Ad 3. Fiscal sustainability**

Sustainable fiscal policies are associated with lower pass-through elasticities. Fiscal policy is a tool by which a government adjusts its spending levels and tax rates to monitor and influence a nation's economy. It is the sister strategy to monetary policy through which a central bank influences a nation's money supply. These two policies are used in various combinations to direct a country's economic goals. In countries with flexible exchange rate regimes, a smaller basic primary fiscal deficit <sup>1</sup>(or a higher surplus) is associated with a lower degree of pass-through. Large fiscal deficits seem to be perceived by firms as increasing uncertainty, i.e. economic agents fear that the government will have to address accumulated fiscal deficits in the future through substantial increases in taxes or cuts in expenditures. The former weighs on the costs for firms, and the latter will contract the market; both measures will reduce profits. Expecting such a profit reduction in the future, firms would not delay or absorb the impacts of exchange rate changes in a given period but pass those changes through to domestic prices (Razafimahefa, 2005).

### **Ad 4. Monetary stability**

Monetary stability means stable prices and confidence in the currency. Devereux (2000) points out that if exporters set their prices in the currency of the country that has the most stable monetary policies, import prices in local currency terms would be more stable in countries with a more stable monetary policy. All else equal, the exchange rate pass-through would be higher for countries with more volatile monetary policy (Devereux & Engel, 2001). And if the importing country is unstable, the importer is likely to set their products in the exporter's currency which will also lead to increasing ERPT (Devereux & Charles, 2000).

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<sup>1</sup> Primary Deficit is the difference between the current year's fiscal deficit (total revenues – total expenditure of the government) and the interest paid on the borrowings of the previous year.



## **Ad .5 Inflation**

Taylor (2000) hypothesized that the decline in average inflation rates in the developed world has also resulted in a decline in the degree to which firms pass through changes in costs into prices for their final goods. In this view, all else equal, lower inflation leads to lower import price pass-through. The proposed theoretical framework suggests that the degree of real ERPT to aggregate consumer price index (CPI) inflation is determined by four factors. There is the degree of ERPT to the prices of individual firms, the friction of imports in the CPI basket, the fraction of flexible price firms in the economy, and the credibility of the monitoring authority.

## **Ad 6. Import components**

The consumer price index (CPI) measures the average change in prices over time that consumers pay for a basket of goods and services, commonly known as inflation. If the basket of goods and services has more import components than local components exchange rates increase will likely have a large pass-through effect on inflation.

## **2.4. The Exchange Rate Pass-Through Effects**

The pass-through effects of the exchange rate on domestic prices can occur in two ways. The first is the direct effect. Accordingly, the change in the exchange rate increases the cost of production by making imported inputs more expensive. At the same time, the prices of the imported finished goods increase; thus, it leads to an increase in domestic prices aggregately, which is measured by the consumer price index (CPI). The second effect relates to the competitiveness of goods in foreign markets. The depreciation of national currency makes domestic goods cheaper in foreign markets (Kotil, 2020).

The ERPT effect is known to be most evident in countries with a large amount of export-import operations and with high openness of the economy (McCarty, 2000). Higher PTE (pass-through effect) implies greater dependence on external shocks in the world market and higher volatility of domestic prices due to changes in the exchange rate. Therefore, the government authorities should know the degree of PTE to forecast domestic inflation and conduct adequate inflationary and exchange rate policies (Dobrynskaya & Levando, 2005).

According to Taylor, the higher the level, duration, and volatility of inflation, the stronger is the pass-through effect. Gopinath et al. (2005) confirmed this relationship showing that countries with low inflation are facing a mild ERPT. Whereas it gets stronger in most of the countries with traditional high inflation (Devereux & Charles, 2000).

Calvo and Reinhart (2000) show that the pass-through effect gets weaker as the economy becomes more stable. Researchers suggested that a decrease in inflation is one of the most important factors that reduce ERPT (Takhtamanova, 2008). When prices adjust in response to market disturbances, they usually do so in discrete jumps. Even when market conditions are changing continuously, prices tend to remain fixed for substantial lengths of time, which may be another reason for incomplete ERPT (Victoria, 2008).

There are three different ways goods can be purchased, and each modality has a different effect on the ERPT. These are:

1. The direct channel. The direct channel is closely associated with changes in domestic prices of imported goods expressed in the national currency (Obstfeld, 2001).
2. The indirect channel. The indirect channel relies on the possibility of cross-substitution between imported and domestic goods in both the domestic market and foreign markets of trade partners. Cross-substitution may be triggered by changes in relative prices of imported and domestic goods driven by the fluctuation of exchange rates (Obstfeld, 2001)
3. Foreign direct investment (FDI). The channel of exchange rate impact on the domestic market, foreign direct investment draws upon the effect associated with the relocation of foreign firms and manufacturing facilities (Kabundi & Mbelu, 2016). Products become cheaper due to fact that transport and import costs are not involved. Furthermore, these products are sold in local currency.

The reasons why ERPT is different in various countries and have different effects can be determined by (Borensztein & Heideken, 2016):

1. Transportation costs
2. Differences in the structure of imported goods and services may vary
3. Price discrimination
4. Possible discrimination of various market
5. The value of the exchange rate pass-through will vary in various markets
6. Differences in firms' pricing models
7. The Currency of pricing
8. The degree of market segmentation
9. The expectation of the future exchange rate
10. The extend of cross-substitution between intermediate domestic and imported goods

### **Ad 1. Transportation costs** (Bhundia, 2002)

The expenses involved in moving products or assets to a different place, which are often passed on to consumers. For example, a business would generally incur transportation costs if it needs to bring its products to retailers to have them offered for sale to consumers. which increases the value of imported goods and flattens the effect of exchange rate fluctuations on aggregate price and indices. The bigger the distance between the import and export countries, the more the value of imported goods increased, the higher the ERPT becomes.

### **Ad 2. Differences in the structure of imported goods and services may vary** (Bacchetta & Wincoop, 2003)

Differences in the structure of imported goods and services may vary; consumers pay for tradable services and goods. Therefore, the price of goods affected by exchange rate fluctuations may be small, while the pass-through effect is incomplete. It depends on what goods or services are being imported the exchange rate pass-through reacts. Energy, heavy materials, and oil had a higher ERPT than international food prices.

### **Ad 3. Price discrimination** (Bacchetta & Wincoop, 2003)

Price discrimination, price discrimination occurs when firms sell the same good to different groups of consumers at different prices. Price discrimination<sup>2</sup> can be divided into three parts, first-degree price discrimination<sup>3</sup>, second-degree price discrimination<sup>4</sup>, and third-degree price discrimination<sup>5</sup>. Depending on the producer, the quantity of goods is being imported and the market if exchange rate pass-through will increase or decrease.

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<sup>2</sup> Price discrimination is the practice of charging a different price for the same good or service.

<sup>3</sup>First-degree price discrimination, alternatively known as perfect price discrimination, occurs when a firm charges a different price for every unit consumed.

<sup>4</sup> Second-degree price discrimination means charging a different price for different quantities, such as quantity discounts for bulk purchases.

<sup>5</sup> Third-degree price discrimination means charging a different price to different consumer groups.

**Ad 4. Possible discrimination of various markets** (Campa, Goldberg, & Linda, 2002)

Possible discrimination of various markets. The ERPT will be different in every market. There are five different market types, perfect competition, monopoly, oligopoly, monopolistic competition, and monopsony. For example, if a producer imports a product that only is available in one country, that country can achieve maximum profit, and the exchange rate pass-through will be high. But if a producer can import a product from one country, the producer will choose the less expensive one, this leads to a reduced ERPT.

**Ad 5. The value of the ERPT will vary in various markets** (Campa, Goldberg, & Linda, 2002)

The value of the ERPT will vary in various markets. In monopolistic market prices are high because there is only one producer and the ERPT will increase, and in perfect competition market prices will be reasonable because there is more than one producer, and ERPT exchange rate pass-through will be reduced.

**Ad 6. Differences in firms' pricing models.** (L'opez-Villavicencio & Mignon, 2017)

ERPT is stronger when a price level and output volume are selected to maximize total profit. Whereas it gets weaker when the goal is to maximize market share which will affect ERPT.

**Ad 7. The Currency of pricing.**

The Currency of pricing is the currency in which goods are priced and companies' currency selection decisions. Countries whose national currency is less stable would have more goods priced in foreign currency. For example, if a country's currency is unstable and the public has lost trust in their currency, the producer will likely sell their products in foreign currency, which will increase ERPT.

**Ad 8. The degree of market segmentation.**

Market segmentation is the research that determines how your organization divides its customers or cohort into smaller groups based on characteristics such as, age, income, personality traits, or behavior. These segments can later be used to optimize products and advertising to different customers (Barone, 2019). ERPT is weaker in more segmented industries in which firms have more opportunities for consumer discrimination.

**Ad 9. The expectation of the future exchange rate.**

The macro situation in a country plays a significant role in estimating the pass-through affect value. For example, a high volatility exchange rate makes it less beneficial for importers, resulting in a weaker ERPT.

**Ad10. The extend of cross-substitution between intermediate domestic and imported goods.**

Driven by exchange rate fluctuations, intermediate imported production is substituted with domestic ones (Obstfeld, 2001).

Overall steady demand for goods also may impact the magnitude pass-through effect. Frequent change of the demand makes it less beneficial for importers to change prices resulting in a weaker exchange rate pass-through.

## **2.5 Exchange Rate Pass-Through in the Small States and Advanced Economies**

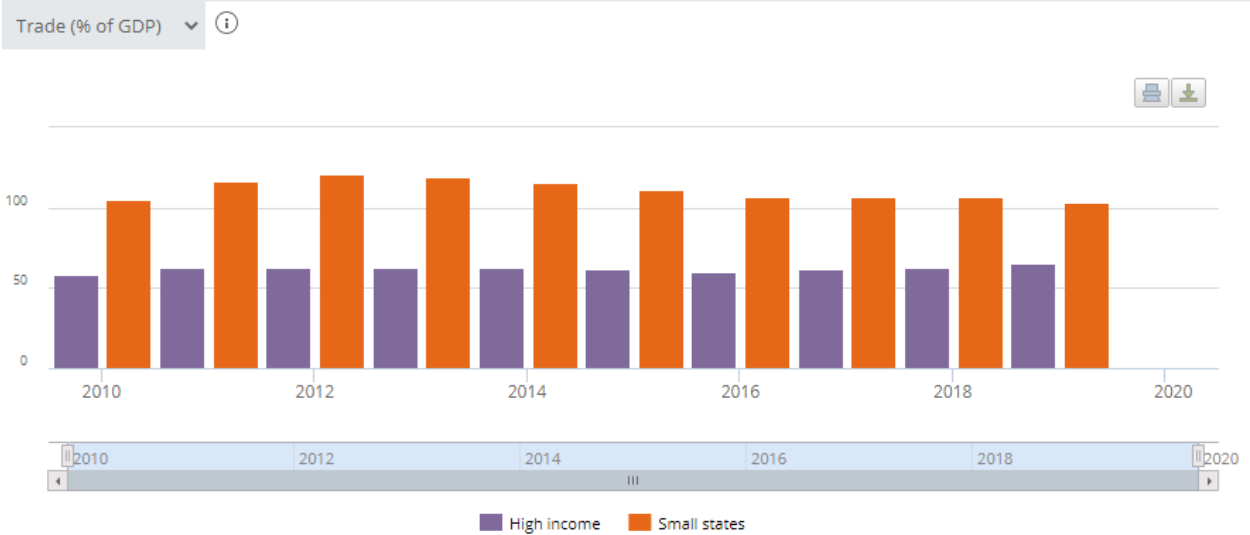
Small states are usually defined as states with a population of up to 1,500,000. Suriname is a small state (Orie, 2020).

ERPT in small states is more vulnerable to external shocks than larger economies because most of these countries or islands are import economies and are mostly dependent on the export of one a few commodity sectors. This is not the only reason why the ERPT is high in small states. In small states, the vast majority of prices of internationally traded goods are invoiced in US dollars or Euros (Borensztein & Heideken, 2016). Given the dominant foreign currency invoicing and small domestic markets, it is likely that pass-through at the border is quite high. Given the relative importance of distribution services like transportation, storage, and retail trade, the pass-through as reflected in the Consumer Price Index (CPI) should be expected to be significantly higher than 100 percent. Similarly, in the case of imported inputs, exchange rate changes will be reflected only to the extent of their share in the overall cost of production of final goods. Most of these small states adopted an inflation-targeting framework in conjunction with floating the exchange rate and gained credibility with markets fairly rapidly.

Advanced economies are a term used by the International Monetary Funds (IMF) to describe the most developed countries in the world. However, there is no established numerical convention to determine whether an economy is advanced or not, they are usually defined as a high level of gross domestic product (GDP) per capita, as well as a significant of industrialization (Market Business News, 2020)

In most advanced economies ERPT is low (Cunningham, 2017). The reason why advanced economies are most likely to have low ERPT is not only because of their dominant currency but because they have a stable inflation rate and greater monetary policy acts to reduce the degree of ERPT (Cunningham, Friedrich, Hess, & Kim, 2017). Furthermore, they point out that the use of inflation targeting reflects a better use of a monetary policy that can coordinate expectations. In contrast to small states, the ERPT is at the border of advanced economies low due to their dominant currency (Cunningham, Friedrich, Hess, & Kim, 2017). McCarthy also points out that advanced countries export more than they import (McCarthy, 1999).

Figure 2: Trade openness in high income versus small states



Source: (World bank, 2020)

Figure 2 shows trade openness in Small states and High-income countries. Small states have high trade openness and the High-income countries had low trade openness. According to McCarty, countries with high trade openness are most likely to experience high ERPT (McCarthy, 1999).

## **2.6 Exchange rate pass-through policies**

A high ERPT is a problem for every country because it complicates inflation management. As described earlier, this is especially the case in small states, due to their high trade openness (i.e. high import to export ratio) and the concentration of the exports on one or a few products. In this section, we present an inventory of policies to reduce ERPT.

### **1. Import substitution industrialization.**

A high import component in the consumption basket is an important determinant of ERPT. In small states, not only the consumption basket has a high import component, but also production requires a high import component. Therefore, it is logical to substitute the import as much as possible to reduce ERPT.

Import substitution industrialization is a development strategy that concentrates on promoting local products (Ahmad, 1980). Import substitution has two characteristics; competitiveness and economic effectiveness; the development of competitiveness is a plan to leave competitors behind. This policy is a strategic goal and the basis of the sustainable socio-economic growth of any country. The development of economic effectiveness also known as the knowledge economy is the major aspect influencing the growth of competitiveness. To initialize this policy, protection is needed which is done by the government. The government can help this policy through exchange rates, tariffs, interest rates, and the price of the factors of production. Noteworthy is that using one of these wrongly can be harmful to the market. However, when used well, this will not only replace foreign goods with local goods in the consumer basket but will decrease exchange rate pass-through, increase economic growth and stimulate employment (Yilmazkuday, 2003).

When applying the import substitution policy, these countries should have a flexible exchange rate regime than a fixed exchange rate regime. In a fixed exchange rate regime the government determines the exchange rate. However, after a while, the local currency appreciates which in turn harms the balance of trade. Overall, countries with a more volatile real exchange rate experienced low performances than those countries with stable real exchange rates (Edwards, 1993).



Import substitution strategy is evaluated as the process of modernizing the local economy and reaching the level of developed countries. Import substitution strategy comes to the picture with consumption goods and then it enlarges by including intermediate goods. The aim of including intermediate goods is to form a basis for producing a high level of technology (Yilmazkuday, 2003). There are two stages for import substitution, first is to produce consumption goods inside the country. There are two alternatives for the second stage, one is the export promotion and the other is to upgrade the production structure can produce intermediate goods.

## **2. Export promotion**

Export promotion is a policy that only promotes an industry that has the potential to compete with foreign companies. At the beginning of such an industry, the government needs to intervene until the company can manage its own (Yilmazkuday, 2003).

Exporters, facing increasing competition, must improve their technologies, their quality continues to compete with their rivals. They must research and development studies to keep up with foreign companies and to keep producing quality products.

Comparative advantage theory implies that a country must specialize in the production that uses the mostly possessed factors of production. In this way, the structure of the overall industry is in harmony with the country's structure. If the country has an advantage in human capital, then the EP strategy may be a remedy to the unemployment problem (Froot & Klemperer, 1989)

The indirect effect of the export promotion strategy appears in the export values of the countries. The increase in exports raises the foreign exchange inflow, which in turn stabilizes the exchange rate, and then the exchange rate pass-through (Yilmazkuday, 2003).

### **3. Monetary policy credibility**

While the literature has established that monetary policy credibility plays a small role in determining pass-through to prices at the border, it plays an important role in reducing the exchange rate pass-through to prices of domestically produced goods and services (Carrière-Swallow Y. , Gruss, Magud, & Valencia, 2017). A change in the exchange rate is expected to trigger a change in relative prices between tradeable and non-tradeable goods and services and a transitory change in consumer price inflation.

This is also known as the first-round effect and will also depend on how much the local currency price of imported goods adjust at the border and on the share of these goods in domestic consumption, including their role as inputs in the local production of consumer goods. When other prices in the economy, including retail markups, distribution costs, wages, and the price of non-tradable goods, also react to the exchange rate movement, it refers to the presence of second-round effects on consumer prices. The role of monetary policy credibility in determining the price response of domestically produced goods and services (including distribution costs and markups), which are more likely influenced by the domestic inflationary environment than prices at the border.

Researchers regressed estimates of second-round effects on measures of monetary policy credibility. They found that greater monetary policy credibility affects overall exchange rate pass-through to consumer prices primarily through reductions in second-round effects (Carrière-Swallow, Y., Magud, & Valencia, 2016)

### **4. Inflation targeting**

Inflation targeting is a monetary policy that is set at a specific rate as its goal, most countries set its rate between 2 and 3 percent. Before applying inflation targeting policy the government and central bank must meet certain conditions. The conditions for adopting inflation targeting are a degree of independence of monetary policy and absence of commitment to a particular level for the exchange rate. The inflation targeting applies to the core inflation rate. It takes out the effect of food and energy prices. These prices are volatile, which swing from month to month (Amadeo,

2020). Inflation targeting began in Germany and Switzerland in the 1970s after the Bretton Woods International Monetary System collapsed. The U. S dollar value fell sending other currencies higher. Germany has always been careful to avoid hyperinflation since its occurrence in the 1920s. Its success encourages other countries to adopt this policy (Amadeo, 2020).

Inflation targeting is straightforward, at least in theory. The central bank forecasts the future path of inflation and compares it with the target inflation rate (the rate the government believes is appropriate for the economy). The difference between the forecast and the target determines how much monetary policy has to be adjusted. Some countries have chosen inflation targets with symmetrical ranges around a midpoint, while others have identified only a target rate or an upper limit to inflation. Most countries have set their inflation targets in the low single digits. A major advantage of inflation targeting is that it combines elements of both rule and discretion in monetary policy. This constrained discretion framework combines two distinct elements: a precise numerical target for inflation in the medium term and a response to economic shocks in the short term (Jahan, 2020).

There are several advantages of inflation targeting;

First, it is a strategy that allows to anchor inflation expectations and increase price stability which, in turn, sustains long-run economic growth (Bernanke, et al., 1999). Second, in contrast to other strategies, such as stabilizing the exchange rate, Inflation Targeting allows adapting monetary policy to domestic goals (Mishkin, 2004). Third, setting an objective mandate also improves the accountability of monetary institutions: this advantage is particularly important in emerging market countries where, often, central banks need to prove their independence from political authorities.

Inflation Targeting usually focuses on its consequences on price stability and on its ability to act in response to exogenous shocks. While there is a broad consensus on the effectiveness of Inflation Targeting to keep prices stable, it is less clear whether focusing exclusively on inflation is the optimal strategy to respond to output shocks (Svensson & Woodford, 2003).

Concerning the interaction between Inflation Targeting and ERPT, empirical works seem to show that such a monetary strategy seems to reduce ERPT for Emerging Market countries (Coulibaly & Kempf, 2010).

Various studies have shown that ERPT has declined in recent years, particularly in developed economies. As these declines have coincided with significant falls in the level of inflation, researchers have examined whether the degree of exchange rate pass-through is related to the inflation environment. Taylor (2000) was the first to demonstrate how nominal rigidities in a low-inflation environment could result in low exchange rate pass-through. Evidence of this link was provided by Campa and Goldberg (2005) and Gagnon and Ihrig (2004) for developed economies and by Choudhri and Hakura (2006) and Ca'Zorzi, Hahn, and Sanchez (2006) for emerging markets.

Other justifications for the decline in exchange rate pass-through include those of Mishkin and Savastano (2001), Eichengreen (2002), and Schmidt-Hebbel and Werner (2002) argued these credibility gains from the adoption of inflation targeting were responsible for keeping low inflation expectations following depreciations. In this sense, it is clear that there are at least two channels through which the adoption of inflation targeting may lead to lower exchange rate pass-through, as under this framework researchers expect inflation to be lowered and stabilized and the central bank to gain credibility as an inflation-fighter (Junior, 2007).

## **5. Central Bank transparency and independence**

The central bank transparency is a voluntary code, composed of a comprehensive, central bank-focused set of principles and practices. The central bank transparency is solely focused on central banks and aims to encompass their broad range of mandates, governance frameworks, and institutional arrangements. The central bank transparency has five pillars; (IMF, 2020).

Pillar I. Transparency in governance, covering institutional issues.

Pillar II. Transparency in policies, focusing on the economics of the central bank policy decisions.

Pillar III. Transparency in operations, highlighting how policy decisions are implemented.

Pillar IV. Transparency in the outcome, focusing on how the outcome of central bank policies

and other actions are reported to stakeholders to facilitate accountability.

Pillar V. Transparency in official relations, covering the central bank interaction with the government and other domestic agencies and international relations and commitments (IMF, 2020)

Central bank independence is a necessary policy that simply means that politicians cannot manipulate monetary policy to bolster their pre-election popularity, their prioritization of short-term political gains could invite long-term pain for the economy, in the form of higher inflation or even hyperinflation. This political interference could undermine central banks' goals, such as stable inflation over time and, in some countries, maximum employment, and potentially create long-term risks to economic and financial stability (IMF, 2020). A central bank is more trustworthy when it explains in detail how and why its policies can deliver low inflation rates and achieve low pass-through. (IMF, 2020). The central banks can influence households' inflation expectations by building trust and educating the public about their targets (Schmidt, 2018).

#### **6. Exchange rate targeting.**

Exchange rate targeting is the process where a central bank targets the exchange rate at a specific level that is good for the economy. Taking up exchange rate targeting as a monetary regime will eventually decrease exchange rate pass-through (Lopez-Villavicencio & Mignon, 2016). De facto fixed exchange rates are known to exhibit less bilateral exchange rate volatility than floating rates, adding to price-to-market behavior from external exporters and invoicing in the destinations country currency, as a reaction ERPT will be expected to decrease under fixed exchange regime (Lopez-Villavicencio & Mignon, 2016).

#### **7. Flexible exchange rate**

Flexible exchange rates can be defined as exchange rates determined by the supply and demand of currency. In other words, they are prices of foreign exchange determined by the market that can rapidly change due to supply and demand and are not pegged or controlled by central banks (Policonomics, 2017).

Effects of the exchange rate volatility on inflation, as a part of the fixed versus flexible exchange rates dilemma, refer to relative changes in prices of exports and imports and associated price effects on the aggregate price level. Under fixed exchange rate arrangement, credible nominal anchor (i.

e. sound foreign currency of a country with low and stable inflation) provides a very efficient tool in fighting high inflation, while helping to stabilize inflation expectations. As a result, a country with fixed exchange rates should experience successful periods of disinflation (provided that a decision to adopt a fixed exchange rate originated from high inflation pressures).

The ability of the country to achieve price stability (and maintain low inflation differentials) within a reasonable time seems to be crucial for fixed exchange rate sustainability. Stable inflation expectations anchored by the fixed exchange rate to credible foreign currency represent a crucial role in understanding the price effects of the sudden exchange rate shifts. Exchange rate volatility under fixed exchange rate arrangement originated in anchoring foreign currency instability may cause the domestic price level to adjust accordingly in the short period, However, persisting inflation or disinflation pressures are not expected, due to the positive effects of stable inflation expectations that do not seem to be affected for a longer period (Mirdala, 2014).

However, price stability in countries with flexible exchange rate arrangements suffers even more in the short period due to the absence of credible nominal anchors provided that the monetary policy strategy of the central bank is based on inflation targeting or interest rate transmission channel. Low levels of inflation targeted by the monetary authority are more sensitive to exogenous price shocks originated from the sudden and unexpected exchange rate shifts. Price effects of exchange rate volatility in countries with flexible exchange rate arrangements maybe even are strengthened by corresponding effects of real output or its components to unexpected movements of exchange rate on domestic price level as a part of the exchange rate adjustment process. As a result, exchange rate fluctuations in countries with flexible exchange rate arrangements are usually associated with more intensive durable adjustments in the price level (Mirdala, 2014).

## **8. Import duties**

Import duty or import tariff is simply a tax. It adds to the cost borne by customers of imported goods and is one of several trade policies that a country can enact. Tariffs are paid to the customs authority of the country imposing the tariff. It is important to know that the taxes owed are paid by local consumers and not charge directly on the foreign country's export (Hoffman, 2016).

There are several reasons why import tariffs are used (Hoffman, 2016):

1. Protecting local employment

The charge of tariffs is highly politicized. The possibility of increased competition from imported goods can threaten domestic industries. These domestic companies may fire workers or shift production abroad to cut costs, which means higher unemployment and a less happy electorate.

2. Protecting consumers

A government may charge a tariff on products that it feels could endanger its population.

3. Infant industries

The use of new import tariffs to protect new industries can be seen by the import substitution industrialization policy above. This policy is employed by many developing countries. The authority of these countries will charge on imported goods industries, which it wants to foster growth. This increases the price of imported goods in industries and creates a domestic market for locally produced goods while protecting those industries from being forced out by competing pricing. This would allow developing countries to shift from agricultural goods to finished goods (Hoffman, 2016). By applying this policy, the government can counteract import prices by lowering the import tariffs on products that are essential for the community which will ultimately reduce ERPT.

## **9. Official dollarization**

Dollarization, one country officially adopting the currency of another for all financial transactions, except perhaps the need for coins (Berg, 2000). According to Worrel (2021), small states should step over to full dollarization because it opens more possibilities to the country and its residents, in all international commerce. After all, such transactions are conducted in US dollars or in currencies that are convertible to US dollars. The use of the US dollar eliminates the pass-through because most import products are invoiced in US dollars (Worrell, 2021).

## **3. Exchange Rate Pass-through Studies in Suriname**

### **3.1 Introduction**

This chapter provides a brief overview of the socioeconomic and political situation of the Republic of Suriname. Furthermore, in this chapter, ERPT studies in Suriname will be discussed.

### **3.2. General overview**

Suriname is a middle-income small state. This country has a surface of 166.000 km<sup>2</sup> and is located in the north of South America, bordering the Atlantic Ocean. The official language is Dutch and the capital is Paramaribo. Suriname has a population estimated at 585,792 (United Nations, 2020).

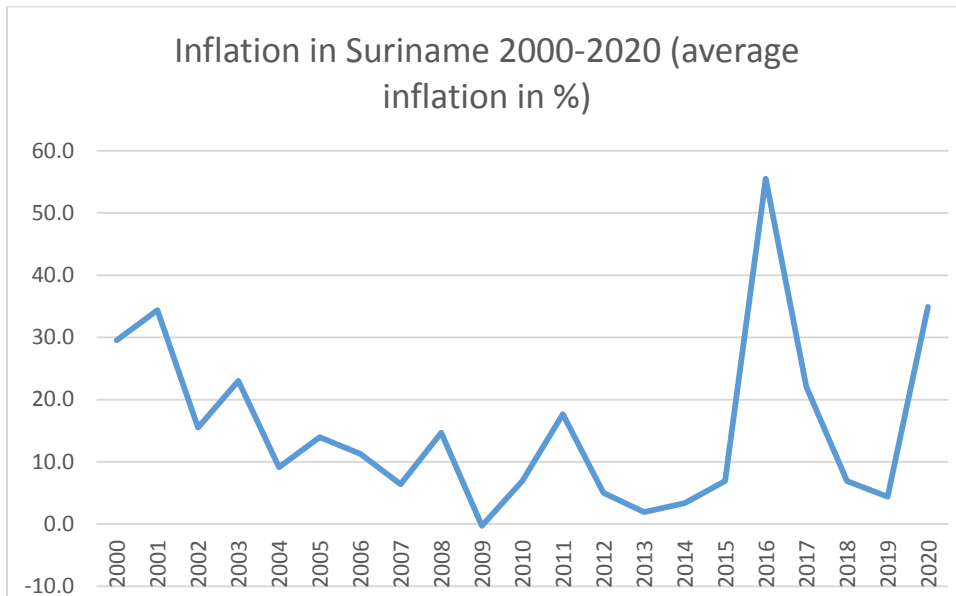
The country obtained self-government in 1954 and independence from the Netherlands in 1975. The post-independence government (1975 to 1980) experienced a difficult period since uncertainty was rising, the public sector was expanding and the private sector was diminishing during this period.

Suriname is a typical small state with a high trade openness of import goods. The export of goods is concentrated in the mining sector, with gold consisting of 80 percent of exports in the past 5 years.

Suriname had witnessed various episodes of exchange rate volatility and accompanying high inflation rates.



**Figure 3 Inflation rate in Suriname**



(IMF, 2021)

During the past twenty years, there were several episodes of inflation in Suriname, the highest was in 2016. The reason for these episodes of inflation was the fluctuating exchange rate (Figure 3) In 2004 Suriname switched from Surinamese guilder to Surinamese dollar, and the intention was to keep the value of the SRD stable. But in the past 6 years, we have seen high inflation again due to exchange rate increases.

### 3.3 Exchange Rate Pass-Through Studies for Suriname

Various studies on ERPT have been conducted for Suriname. In Table 1, we summarize these studies.

Table 1 Summary of studies about exchange rate pass-through in Suriname

Author(s)	Sample Period	Method	Data	Exchange rate pass-through within one year	Exchange rate pass-through within months	Determinants
Bernhard, Fritz-krockow	1992-2004	Bivariate auto regression		1,0	0,6 in four months	CPI, GDP, exchange rate, trade openness
Kanda, Chen, Kim and Tintchev	2000-2006	Vector autoregression	International food and oil prices	0.7	0,6 in six months	Nominal GDP, Exports, exchange rate, Fiscal expenditure
Sonneveld	1971-2012	Regression analysis	Oil price, money supply, and lending rate	1,0	0,6 in six months	trade openness, real GDP.
Dowling and Shibata	January 1980-February 2019	Vector autoregression	cambio's and casinos, oil prices	0,6-0,7	0,4-0,6 in six months	CPI, NEER, U.S. CPI, Parallel market exchange rate, oil price, international food prices

(Dowling & I.Shibata, 2019)

In the 1990s, the Surinamese economy was not successful as expected in comparison with countries in the region. This inadequate performance was inevitable because the Surinamese government-dependent only on the income of bauxite and due to this dependency they were vulnerable to external shocks. The economy was followed by low growth, a high degree of volatility, and high inflation. After the alumina price decline, high rates of monetary expansion, which resulted in exchange rate losses of the central bank. In 1994 the inflation went sky high,

reaching almost 600%. however, this was not the cause of ERPT that inflation accelerated, however, the rather poor performance of the government.

All existing studies confirm high exchange rate pass-through in Suriname ranging from 0.4 to 1. These results hold for various periods.

In these studies, there was the use of parallel exchange market data, extracted from cambio's and casinos. Oil prices from Thomas Reuters data, international food prices from Bloomberg. In these studies, the researchers used headline inflation data, but base on the research of this thesis core inflation would have been a better fit because it is often calculated using the consumer price index (CPI), which is a measure of prices for goods and services.

Furthermore, the import component of the CPI basket was not used as a determinant which would have been a better fit instead of trade openness if of course was available. Unfortunately, there is not a distinction between tradeable and non-tradeable goods in these studies.

Measurement of ERPT is typically performed using an aggregate price index, exchange rate, degree of openness, and oil prices, as was done by IMF researchers.

Fritz-Krockow, et al. (2009) used the bivariate vector autoregression<sup>6</sup> to measure the magnitude of ERPT in Suriname from 1992-2004. Statistical analysis suggests a high degree of pass-through from the exchange rate to the price level in Suriname. Depreciation of the black market exchange rate is positively correlated to inflation, as shown by the estimate of the correlation coefficient between depreciation and inflation at various lags. In particular, the correlation coefficient estimates of about 0.6 for lags of one to two months suggest a quick pass-through from changes in the exchange rate to prices. Moreover, a bivariate vector autoregression analysis suggests that the pass-through is almost complete: A 1 percent depreciation is estimated to increase the price level by about 0.6 percent within four months and about 1 percent within 12 months.

The second study was done by Chen, Kim, and Tintche (2016). The main focus of this study was to strengthen fiscal sustainability and external stability, to enhance growth and policy measures for the financial sector. In this part of the research, the IMF staff team study ERPT in the period

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<sup>6</sup> Vector Auto regression (VAR) is a multivariate forecasting algorithm that is used when two or more time series influence each other.

of 2000-2016. They used the vector autoregression (VAR) to measure the magnitude of ERPT in this period. The variables used were international food and oil prices. They calculated that the pass-through was 0.7 in a year and 0.6 within six month period each year.

The third inquiry of ERPT that was researched, was done by Sonneveld (2014). For this research, he uses the regression analysis <sup>7</sup>to measure the magnitude in the period of 1971-2012. To calculate the ERPT they use variables used are controlling for the oil price, trade openness, real GDP, money supply, and lending rate. They found out that the pass-through in the period of 1971-2012 was within six months 0.6 and 1.0 after a year.

The last inquiry of ERPT was executed by Dowling & Shibata (2019) from the IMF. They used the VAR method to estimate the magnitude from January 1980- February 2019. The data that Dowling and Shibata have used, are from cambio's and casinos, and oil prices from Thomas Reuters. The pass-through had a magnitude between 0.4-0.6 within six months and 0.6–0.7 within a year.

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<sup>7</sup> Regression analysis is a set of statistical methods used for the estimation of relationships between a dependent variable and one or more independent variables. It can be utilized to assess the strength of the relationship between variables and for modeling the future relationship between them.

## **4. Policies to reduce exchange rate pass-through in Suriname**

In the literature study, various ERPT policies have been identified. In this section, we discuss which policies are relevant for Suriname, given its small states nature.

Policies to reduce ERPT are;

Official dollarization, fixed exchange rates, or exchange rate targeting regimes seems logical to avoid or reduce ERPT in the context of a small state. If the US dollar would be the official exchange rate of the country, there would be no exchange rate movement and thus no ERPT.

In the case of fixed exchange rate or exchange rate targeting regimes, there is low inflation expectation and therefore a low ERPT. In both cases, the exchange rate peg should be credible and backed by appropriate policies such as sound fiscal and monetary policies.

The Central Bank adopted recently a flexible exchange rate regime within the context of the reserve money targeting regime. The argument is that the low-level international reserves and the weak fiscal position do not allow a fixed exchange rate regime. No information has been provided on the possibility of adopting official dollarization. The central bank explains the through tight management of reserve money, and market-determined interest rates, low inflation will be achieved.

Furthermore, import substitution and export promotion are also measures to reduce ERPT

Import substitution (IS) is a policy that's been used in many developed countries to be less dependent on foreign products. Research has shown that most products of the Suriname consumer basket have more import components than local products (Algemeen Bureau voor de Statistiek, 2020). IS policy will not only stimulate local products but will also reduce ERPT. The way that the IS policy will reduce ERPT is by substituting import components with local products. When the exchange rate increases, the prices of imported goods will increase however this will have less impact on local products, meaning that ERPT will reduce. The Government could select import products that could be substituted by Surinamese products and develop a policy to reach this goal over time (Yilmazkuday, 2003)

The export promotion (EP) comes after import substitution. EP is used by many countries to promote their goods and services. EP can also have incentive programs design to draw out more companies into exporting. Governments do this by assisting in the marketing and product identification and development, by arranging payment guaranty schemes, pre-shipment and post-shipment financing, trade visits, training, trade fairs, and foreign representation. By exporting more, more foreign exchange cash flow enters the country, allowing the monetary authorities to keep the exchange rate stable (Yilmazkuday, 2003).

Monetary credibility is a policy used in most countries to reduce ERPT. Higher credibility could reduce ERPT through better anchoring expectations. The role of monetary policy credibility in determining the price response of domestically produced goods and services (including distribution costs and markups), which are more likely influenced by the domestic inflationary environment than prices at the border. Researchers regressed estimates of second-round effects on measures of monetary policy credibility. They found that greater monetary policy credibility affects overall exchange rate pass-through to consumer prices primarily through reductions in second-round effects (Carrière-Swallow, Y., Magud, & Valencia, 2016)

Well anchored inflation expectations – where anchoring refers to the level and variability of anticipated future inflation – are important for the monetary transmission mechanism and are considered to be a reflection of credible monetary policy.

Inflation Targeting is a monetary policy framework that has gained remarkable attention in the last decade. The attractiveness of this policy is often motivated by its successful experiences in fulfilling its objective. Stabilizing inflation and its expectations represents a strategy that has proven to support sustainable economic growth. Following empirical research work of economic agents, the way that inflation targeting reduces ERPT is that inflation targeting usually focuses on its consequences on price stability and on its ability to act in response to exogenous shocks. While there is a broad consensus on the effectiveness of inflation targeting to keep prices stable (Gopinath, Itskhoki, & Rigobon, 2007)

Central bank transparency and independence is a policy that is suggested by the IMF for every central bank. The central bank should be transparent towards the community when passing down a policy. This could reduce the uncertainty formed by market participants and could also help

lower the pass-through. In this regard, the central bank of Suriname should adopt a communication policy to inform the public systematically about its monetary policy, the tools, the targets, and the results (IMF, 2020).

## 5.1 Conclusion

In this thesis, we investigate the magnitude of exchange rate pass-through in Suriname and the policy options to reduce the exchange rate pass-through.

The following sub-questions have been formulated to answer the research question:

1. What is ERPT and why should it be important for policymakers?
2. What are the explanations for ERPT?
3. What are the findings on ERPT in small states, including Suriname?
4. What are the policy options to reduce ERPT in Suriname?

Next, we summarize the findings per sub-question and reflect on the main research question.

*What is ERPT and why should it be important for policymakers?*

Qualitative research has shown that there are different definitions of exchange rate pass-through. The standard definition used in this study is, ERPT is a percent change in inflation for one percent depreciation in the exchange rate, which means how a change in the exchange rate passes through the inflation in a country.

Measurement of ERPT is usually calculated using aggregate price indexes. Thus, it is easy to understand that the degree of ERPT has important economic implications. For example, while determining monetary policy, it is fundamental to have an idea of how responsive import prices are to the currency exchange rate: with a very low ERPT, even a large devaluation might have limited inflationary consequences and, conversely, with high ERPT inflation is more exposed to currency shocks. Therefore, the level of ERPT also has considerable implications for the international transmission of economic shocks: in a low ERPT environment, the price level is more immune to large changes in the foreign exchange market. ERPT is important for policymakers because knowing the state of the ERPT the government can predict inflation and can thereby make the necessary policies.

*What are the explanations for ERPT?*

There are two sides to ERPT, it can be complete and incomplete. If ERPT is low, low means close to 0, which means no problem for the economy. However, if the ERPT is high then this will be a



problem for the economy, this means that prices will rise. Many different forces at play affect both the measurement and the degree of ERPT. For example, standard economic models often assume that the currency used is an exogenous component and, therefore, should not affect the level of ERPT. However, empirical works have shown that the currency used plays a significant role in determining import price rigidities: goods' prices tend to have a lower pass-through if they are expressed in local currency as compared to foreign currency. The decline of commodity-intensive supplies in imports over time can be a factor of ERPT reduction since commodity-intensive goods generally have a higher ERPT. In addition, the structure of markets also affects the transmission of foreign exchange dynamics: in a context of imperfect competition, through "pricing to market", firms can affect the degree of ERPT by absorbing exchange rate changes in the adjustment of mark-up on the price

The determinants of ERPT are inflation rate, exchange rate regime, monetary stability, fiscal stability, import components, and income of a country. Besides these determinants, other factors affect the ERPT. These are transport costs the way the import is structured in a country, the currency of pricing, and price discrimination. Research has shown that ERPT is low in advanced economies than in small states. The reason for this is because advanced economies have a strong currency, export more, and has strong monetary credibility.

*What are the findings on ERPT in small states, including Suriname?*

This research has shown that a high ERPT is more problematic for Small states than for advanced economies. The reason for this is that is mostly Small states are import countries and have small economies. Having a small and open import economy makes Small states sensitive to external shocks. In Suriname, there have been several studies for the magnitude of ERPT.

*The policies that can reduce exchange rate pass-through in Suriname are:*

1. Strengthened monetary policy credibility; stronger credibility could bring the pass-through down through better anchoring expectations.
2. Focused import substitution; substituting import products with locally produced products will not only reduce the pass-through but will also encourage economic growth and employment. Suriname should also focus on the natural resources that are extracted by multinationals. A push toward local content strives to ensure that a company is hiring local

labor and procuring local goods and services from the host country, which afterward will have a spinoff effect in the region they operating.

3. Export promotion; this policy encourages the government and local companies to export more. This will create more cash inflow and reduce the pass-through.
4. Dollarization; stepping over to full dollarization will eliminate the pass-through and have more choices for a country.
5. Inflation targeting: The idea that Inflation targeting might reduce ERPT seems plausible to the extent that, as mentioned in the literature. Inflation Targeting affects the price level environment and its expectations.
6. Central bank independence and transparency; this policy is good for the economy because it forces the government to not intervene with central bank policies and the transparency policy forces the central bank to be open with its citizens and to build trust within the community.
7. Exchange rate targeting; exchange-rate target forces a tightening of monetary policy when there is a tendency for the domestic currency to depreciate or a loosening of the policy when there is a tendency for the domestic currency to appreciate so that discretionary, time-consistent monetary policy is less of an option.

## 5.2 Recommendations

Given the small state's nature of Suriname, we recommend the Surinamese authorities explore the option of official dollarization, fixed exchange rate, and exchange rate targeting regime, to avoid or to reduce ERPT. A high ERPT will complicate inflation policies aimed at low inflation rates in Suriname.

Concerning official dollarization, we recommend the Central Bank of Suriname together with the government of Suriname to institute and lead a national platform to assess the feasibility of this policy option. With this option, the Surinamese government has many opportunities as Worrell stated that exclusive use of the US dollar gives the government more choices for the government and its residents. Examples of countries in the Surinamese region that has stepped over to full dollarization are; Panama, Ecuador, and El Salvador. Panama's GDP rose faster than the regional average consistently over the past three decades. Ecuador and El Salvador also experience economic growth than the regional average.

Inflation targeting is a monetary policy that has been adopted by many countries, in small as large economies. Over time, inflation targeting has proved to be a flexible framework that has been resilient in changing circumstances, including during the recent global financial crisis. Individual countries, however, must assess their economies to determine whether inflation targeting is appropriate for them or if it can be tailored to suit their needs. Example of countries that has this policy as a monetary instrument are; Armenia, the Czech Republic, Hungary, and Poland.

The Czech National Bank (CNB) is an example of an inflation-targeting central bank in a small open economy with a recent history of economic transition and real convergence to its Western European peers. Since 2010 the CNB uses 2 percent with a +/- 1pp range around it as the inflation target. Other countries that have adopted this policy in the Suriname region are Mexico and Peru. Mexico had an inflation target of 3+/-1 and Peru had an inflation target of 2+/-1. This policy option has worked for these countries because their central banks were transparent and independent.

Exchange rate targeting is also a policy that has been used to reduce ERPT. Exchange rate targeting is the process through which a central bank intervenes in the market mechanism to maintain the exchange rate at a particular level that they deem as desirable. For example, some countries have fixed exchange rate regimes where the central bank uses their net international reserves to alter the

supply of currency to keep it fixed or maintain it at a particular rate with another currency. For example, Barbados currency is fixed BB \$2 to \$1 with the US while Trinidad and Tobago manage their floating exchange rate at an average of TT \$6.50 to \$1 with the US. Maintaining a fixed exchange rate mechanism can be very costly in reserves and requires excessive monetary controls. Suriname has recently adopted a floating exchange rate regime.

The government could select a few products and promote them as final products or inputs such as cassava, napi, breadfruit, fruits. The government could support companies involved in import substitution by providing financing, helping them with training employees, providing tools on how to promote their products, and how to sell their products. Examples of countries in Latin America that have adopted import substitution as a policy are; Argentina, Brazil, Chile, Mexico, and Uruguay were successful with this policy because their government invested in technology. They experience economic growth but also unemployment. However, given the small size of Suriname, this policy option will be unlikely to happen. On the other hand, countries such as Peru, Bolivia, and Ecuador were unsuccessful because their governments lack to reach a reach agreement with each other. And they also failed to invest in technology to produce final products, now they are forced to export natural resources. Should the government of Suriname choose to adopt the policy they should learn from other government failures.

Central Bank transparency and communication are key in creating building trust and anchoring expectations. In this regard, and against the background of recent adverse developments at the Central Bank, we suggest enhancing transparency and communications. Central Bank policy independence and accountability are crucial to building trust and should be enhanced.

These policies have worked in other countries with the same characteristics as Suriname. To reduce or even avoid ERPT the government and central bank of Suriname should have the same plan. We also recommend that the government should invest more in the Surinamese citizen by building more technology and agriculture universities, following the practices of South American countries that have adopted the import substitution strategies.

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