Export diversification and exchange-rate regimes: Evidences from 72 developing countries

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Abstract: Drawing on a new dataset of diversification of export products, the paper makes the first attempt in the empirical literature to test the impact of product diversification on the choice of exchange-rate regimes in a sample of 72 developing countries (1974-2010). The paper finds that diversification of export products has a positive but insignificant effect on the choice of fixed exchange-rate regimes. When export diversification is decomposed into the extensive and intensive margins, evidences of the paper show that higher level of product diversification at the extensive margin has a statistically positive effect on exchange-rate regime choices while the intensive margin has a negative but insignificant impact on the choice.

Key Words: Export Diversification, Extensive Margin, Intensive Margin, The Choice of Exchange-rate Regime, Developing Countries

JEL Classification: F41; F33

1. Introduction

In view of the traditional or old theories of trade trying to explain trade flow between countries in terms of comparative advantage, the expansion of existing products (intensive margin) is the only access to trade growth. The new trade theory incorporating imperfect competition and increasing returns since the early 1980s, however, argues that increases in the number of products (extensive margin) drive trade growth. Both theories assuming away differences among firms (assuming a representative firm), are inconsistent with a large number of empirical evidences about the important role firms playing in mediating countries' imports and exports since the mid 1990s. The challenges from new evidences posing for both traditional and the new trade theory have embarked on a series of heterogeneous-firm models which might be called the "new new" trade theory[①].

The "new new" trade theory argues that a country's trade may grow either at the intensive or the extensive margins (Melitz, 2003). The theory increasingly shifts economists' focus on countries and industries to firms and products. This shift also sparks a wealth of empirical literature examining export growth and diversification by decomposing export diversification into extensive and intensive margins. The decomposition has given birth to many new yet interesting findings in the literature and deepens our understanding on the driving forces of export growth (Hummels and Klenow, 2005), the evolution of export diversification patterns (Cadot *et al*., 2011), the relationship between export diversification and economic growth (Cadot *et al*., 2013), and the relation between exchange rate uncertainty and export growth (Lin, 2007; Bergin and Lin, 2008), etc.

The choice of exchange rate regimes is also an important but controversial topic in international economics that remains open. Traditional theory of exchange-rate regimes argues that export diversification is a potential determinant of the choice (Kenen, 1969; McKinnon, 1969). However, empirical evidences in the past 40 years focusing intensively on the diversification of trading partners or export destinations

① Baldwin (2005) and Bernard *et al*. (2007) are two recent surveys of the "new new" trade theory.

are mixed (Table 1). Product diversification of exports, the main focus of the traditional theory, seems largely missing in the literature due to the unavailability of detailed data on export products. In addition, existing literature fails to decompose diversification, be it trading partners or sectors, into the intensive and extensive margins and therefore may miss some important insights into the topic.

The paper examines the role of product diversification of export on the choice of exchange rate regimes in developing countries using a new dataset of product diversification which decomposes export diversification into the extensive and the intensive margins. The paper's contribution to the literature is twofold. First, to the best of our knowledge, this is the first attempt in recent decades to examine product diversification on the choice of exchange rate regimes since Holden *et al*. (1977).

Second, the paper provides new evidences regarding the effect of export diversification covering the intensive and the extensive margins on the choice of exchange-rate regimes. In particular, the paper finds that diversification of export products has a positive but insignificant effect on the choice of fixed exchange-rate regimes. When export diversification is decomposed into the extensive and intensive margins, the paper finds that more diversification of export products at the extensive margin has a statistically positive effect on exchange-rate regime choices while the intensive margin has a negative but insignificant impact on the choice. The two opposing effects may cancel out when combined, leading to an insignificant effect of the overall indicator of export diversification on the choice of regimes[①]. The paper's findings cast new insights on the traditional topic in international finance, the choice of exchange-rate regimes, and may explain the mixed results of empirical evidences in the past several decades as well. The finding also helps to understand which margin seems to be a stronger driver of exchange-rate regime choices in developing countries. It is therefore of vital importance for the design of exchange rate polices and export policies in developing countries.

[①] In addition, the paper's findings may also sparks rethinking on the role of diversification, and more specifically, the extensive margin of product diversification, on the choice of exchange rate regimes in the framework of the "new new " trade theory.

The rest of the paper is organized as follows. Section 2 surveys literature related. Section 3 offers empirical evidences on the role of export diversification on the choice of exchange rate regimes using a sample of 72 developing countries spanning from 1974 to 2010. Section 4 concludes the paper.

2. Literature Review

It is claimed that "highly diversified economies are viewed as better candidates for currency areas than less-diversified economies since the diversification provides some insulation against a variety of shocks, forestalling the need of frequent changes in terms of trade via the exchange rate (Tavlas, 1993)." The argument could be dated back as early as to the 1960s. In discussing the optimum currency area, Kenen (1969, p49) points out,

"A country that engages in a number of activities is also apt to export a wide range of products. Each individual export may be subject to disturbances, whether due to changes in external demand or in technology. But if those disturbances are independent, consequent on variations in the composition of expenditure or output, rather than massive macroeconomic swings affecting the entire export array, the law of large numbers will come into play. At any point in time, a country can expect to suffer significant reversals in export performance, but also enjoy significant success. …. From the standpoint of external balance, taken by itself, economic diversification, reflected in export diversification, serves, ex ante, to forestall the need for frequent changes in the terms of trade and therefore, for frequent changes in national exchange rates."

Kenen's (1969) arguments imply that product diversification makes fixed exchange rates most appropriate to well-diversified economies. The argument was quickly responded and questioned by McKinnon (1969, p112) who argued that,

"*Kenen's main conclusion could be put as follows: the more diversified an economy the stronger the case for fixed exchanger rates. However, the more diversified an economy, the larger it is, and, because it is diversified, the smaller the foreign trade sector. Therefore, Kenen's conclusions imply that a lager diversified*

economy with small foreign sector should have fixed exchange rates whereas small open economies should adhere to floating rates. "

Do empirical evidences support Kenen's argument or McKinnon's argument? As a matter of fact, empirical evidences are quite mixed (Table 1). More importantly, extant empirical literature focuses specifically on diversification of trade partners or geographical diversification and sectoral diversification. Only one exception, Heller (1978), finds that an economy with higher level of product diversification is more likely to be associated with a flexible exchange rate.

In recent years, the development of the "new new" trade theory shifts economists' focuses on countries and industries emphasized by the traditional and new trade theory to both the extensive and intensive margins of trade. And thanks to the more disaggregated data on trade flows, economists are in a position to study trade diversification empirically along both margins. The development in trade theory and empirics also inspires economists' renewed interests on the effect of diversification on the choice of exchange-rate regimes.

One important yet recent contribution to the literature is Chowdhury *et al*. (2014) who find that diversification is associated with flexible regimes in countries experiencing greater external shocks. The contribution of Chowdhury *et al*. (2014), is they make the first attempt in literature to empirically explore the role of sector diversification (rather product diversification) on the choice of exchange rate regimes using the Theil index to measure sectoral diversification and decomposing sectoral diversification into intensive and extensive margins. The decomposing approach they use is also similar to Cadot *et al*. (2011) which is an innovative application of the Theil index decomposing export diversification into the intensive and extensive margins of trade.

Inspired by both developments in trade theory and Chowdhury *et al*. (2014), the paper, using a new dataset of products diversification developed by the IMF, attempts to present new empirical evidences on the relation between diversification of export products and the choice of exchange-rate regimes in developing countries. The primary purpose of the paper aims at providing some insights into the traditional topic

and sparks renewed interests in the field.

3. Empirical Evidences

3.1 Model specification

To test the impact of export diversification on the choice of exchange-rate regimes, we estimate variants of the following equations.

$$err_{it} = \alpha_0 + \alpha_1 exd_{it} + \sum_{j=1}^{T} \beta_j control_{it}^{j} + \gamma_i + \zeta_t + \varepsilon_{it} \quad (1)$$

Where, $i = 1,2,\cdots,N;\quad t = 1,2,\cdots T$. In equation (1), eer_{it} is a dummy variable which is assigned one if country i is a fixer at time t and zero otherwise. exd_{it} is the level of export diversification of country i at time t. The indicator, as discussed below, is a Theil index measuring a country's level of export product diversification. In regressions, we use the overall, extensive and intensive indices to estimate the impact of different dimensions of diversification on the choice of exchange rate regimes. The coefficient, α_1, according to the above discussions, is indeterminate. The variables $control_{it}^{j}$ are control variables. γ_i is the country-fixed characteristics. It is captured by two dummies for landlocked country and colonial origins. The landlocked dummy accounts for the geographic features of a country which may affect its production diversification. The colonial origin dummy captures the historical factor that may also affect the current production structure (Harms and Hoffmann, 2011; Chowdhury *et al*. 2014). ζ_t is the aggregate time effects captured by year-dummies and ε_{it} is the error term.

We will first estimate the equation (1) by OLS. One advantage of the linear probability model (LPM) is it does not depend on a particular assumption about the distribution of the error term. The other advantage of the model is it is easy to interpret the regression coefficients. However, the model also has an unattractive property that the fitted values of the dependent variable, the probability that a country adopt a fixed regime, do not necessarily fall into the interval between zero and unity.

Alternatively, we will also estimate a probit regression which is based on the latent variable model[①],

$$err_{it}^{*} = \alpha_0 + \alpha_1 exd_{it} + \sum_{j=1}^{T} \beta_j control_{it}^{j} + \zeta_t + \varepsilon_{it} \quad (2a)$$

$$err_{it} = 1, \text{ if } eer_{it}^{*} > 0, \ err_{it} = 0 \text{ if otherwise} \quad (2b)$$

Following Carmignani *et al*. (2008), Frieden *et al*. (2010), Levy-Yeyati, *et al*. (2010), Harms and Hoffmann (2011), Chowdhury *et al*. (2014) and Méon and Minne (2014), we lagged all explanatory and control variables one period to avoid or reduce possible endogeneity problem.

3.2 Data

We use a panel dataset covering 72 developing countries (1974-2010) to estimate the effect of export diversification has on the choice of exchange rate regimes. Countries are listed in Table A1. Our data consists of three parts. First, the classification of exchange-rate regimes forms the basis of our dependent variables. Second, indicators of export diversification form our explanatory variables. Third, other economic and political variables consist of the control variables. Table A2 lists the name, meaning and source of each variable in the paper.

3.2.1 The classification of exchange-rate regime and the dependent variable

There are basically two schemes in classifying exchange rate regimes. One is the *de jure classification* in which the International Monetary Fund (IMF) classifies its member countries' exchange rate regimes based on their official notifications to the Fund. The classifications are documented in the *Annual Report on Exchange Rate Arrangements and Exchange Restrictions* compiled by the IMF. Until the late 1990s, most previous empirical studies have relied on the IMF's *de jure* classification dataset.

The IMF's classification, however, suffers from many shortcomings. In practice, *de facto* exchange-rate regimes often differ from what they were announced to be. In one case, some *de jure* fixers devalue frequently. In the other, many *de jure* floaters try to keep exchange rates in a narrow band. Recognizing these drawbacks, the IMF

① Usually, both logit and probit models yield very similar results.

and many economists have proposed new exchange-rate regime classifications based on information of actual exchange rates and (or) official exchange market interventions. The new classification schemes are thus labeled as *de facto* or *behavior* classification. Typical examples in this line include Reinhart and Rogoff (2004, RR classification hereafter), Shambaugh (2004, SH hereafter), and Levy-Yeyati and Sturzenegger (2005, LYS classification hereafter). Using datasets of the RR and other *de facto* classifications, more and more economists reexamine some important problems in the field ranging from the evolution of exchange-rate regimes and the determinant of exchange-rate regime choices to the relation between exchange-rate regimes and macroeconomic performances.

For the sake of a more comprehensive and systematic valuation on the effect of export diversification on the choice of exchange-rate regimes, the paper uses three classifications including the RR, SH and IMF to define the dependent variable.

A dichotomy approach is used in the paper classifying various exchange-rate regimes into fixed (or fixer) vs. non-fixed regimes (or more flexible regimes). The fixer includes four types of regimes ranging from "no separate legal tender", "pre announced peg or currency board arrangement", "pre announced horizontal band that is narrower than or equal to ±2%" to "de facto peg" in the RR classification or the IMF classification dataset[①]. The remaining eleven types of regimes are classified as non-fixed. The dependent variable, err_{it}, takes the value of unity if any country/year observation falls into the fixed regime, and zero if otherwise.

A novel aspect of the RR classification is that it creates "a new separate category for countries whose twelve-month rate of inflation is above 40 percent". Reinhart and Rogoff (2004) label it as freely falling (coded 14 in the classification). The episode accounts for 12.5% of the total observations in their sample which is 3 times that of free floating cases (4.5%). Therefore, in regressions using the RR classification, we actually generate two dependent variables with one including the freely falling (considered as non-fixed regimes) and the other excluding the case. In addition, the

① The classification of fixers is line with Rogoff *et al*. (2003), Harms and Kretschmann (2009), Singer (2010) and Steinberg and Malhotra (2014).

case “dual market in which parallel market data is missing” coded 15 in the RR classification is deleted from the sample.

The SH classification classifies exchange rate regimes into fixed vs. non fixed regimes by determining whether the exchange rate stayed within ±2% percent bands against the base currency. To prevent breaks in the peg status due to one-time realignments, Shambaugh also considers cases of exchange rate that had a percentage change of zero in eleven out twelve months as fixed[①]. The dependent variable, err_{it}, takes the value of unity if any country/year observation in the SH classification equals unity (indicating a fixed rate), and zero if otherwise.

The reason we do not use the LYS and other classifications is worth more discussions. First of all, the dataset of the LYS classification has a much shorter time period covering from 1974-2004 compared to the three classifications used in the paper. Second, and more importantly, the LYS and other classifications rely heavily on changes of international reserves and official exchange rates. On the one hand, the use of international reserves has considerable limitations. For example, changes in international reserves may be caused by exchange rate changes, or interests paid, or asset prices changes. So reserve is a noisy indicator and therefore may not reflect a country’s actual exchange-rate behaviors. Also, the use of reserves in the LYS classification gives rise to many cases of “one classification variable not available.” On the other hand, official exchange rates may be misleading in cases of dual or multiple rates. “In the developing world, such practices (dual or multiple rates) remained commonplace through the 1980s and 1990s and into the present (Reinhart and Rogoff, 2004, pp. 3).” In the presence of dual or multiple rates, market-determined exchange rate is a better indicator of the underlying monetary policy than the official exchange rate (Reinhart and Rogoff, 2004).

3.2.2 Explanatory variables

The indicator for export diversification comes from the dataset developed by the IMF covering indices of diversification across products and trading partners. Using an

① Shambaugh (2004, pp.317) points out that “the decision of 1 percent compared with 2 percent bands and the decision to include single peg breaks do not influence the results substantially.”

updated version of UN-NBER dataset, which harmonizes COMTRADE bilateral trade flow data at the 4-digit SITC level, the IMF calculates the overall, extensive and intensive Theil indices following the definitions and methods employed in Cadot *et al*. (2011). The overall Theil index is the sum of the extensive and intensive components. Diversification itself is defined by the IMF dataset as the shift to a more varied production structure, involving the introduction of new or expansion of pre-existing products, including higher quality products. The extensive margin of export diversification reflects an increase in the number of export products while the intensive margin considers the shares of export volumes across active products. Higher values of each index, however, indicate lower level of diversification, and vice versa[①].

Figure 1 witnesses a much stable and slower moving of the intensive margin of export diversification which dominates the action of export growth in the sample periods. It is also revealed by the figure that both the overall index and the extensive margin index have been gradually declining in the past 37 years, indicating a more diversification of export products in developing countries. The more diversified export in the sample countries is obviously owing to the growth at the extensive margin.

【Figure 1 about here】

3.2.3 Control variables

The theory on the choice of exchange-rate regimes in the past 70years has identified that three types of factors, including factors of optimum currency area (OCA), macroeconomic and external factors, and political factors, are potentially fundamental determinants of a country's choice of exchange-rate regimes. We therefore control for the three types of variables in our regressions which are briefly clarified as follows.

OCA Factors

The OCA theory was pioneered by Robert A. Mundell in 1961 (Mundell, 1961) and later extended by McKinnon (1963) and Kenen (1969). The theory relates a country's

① Visit https://www.imf.org/external/np/res/dfidimf/diversification.htm or IMF (2014) for more detailed explanations on the indices.

economic characteristics, such as openness, factor mobility, and product diversification to a country's choice of exchange rate regimes (Mundell, 1961; McKinnon, 1963; Kenen, 1969). It is held that an economy with higher level of openness, diversification and facto mobility across borders tend to opt for a fixed rate.

The extension of the theory also points out that economic development is an important contributor to the choice of exchange-rate regimes. Specifically, it is argued that less developed economies are more likely to be associated with fixed rates, and vice versa (Holden *et al*., 1979)[①]. In addition, it can be inferred from both McKinnon (1963) and Kenen (1969) that economic size is a potential determinant of the choice of exchange-rate regimes too. However, the effect of economic size on exchange-rate regime choices is ambiguous. On the one hand, larger economies are more diversified. This means that larger economies may be less open than small economies. Therefore, larger economies should float their exchange rates as suggested by McKinnon (1963). On the other hand, the criterion of Kenen (1969) suggests that larger economies with more diversified productions should fix their rates.

Given the unavailability of data on factor mobility across countries, we use trade openness (the GDP share of exports plus imports, *open*), economic development (the logarithm of a country's GDP per capita adjusted by PPP, *ecodev*) and economic size (the logarithm of a country's GDP adjusted by PPP, *ecosize*) to control for the impact of OCA factors on the choice of exchange-rate regimes.

Macro Economic and External Factors

Inflation (inf). The impact of inflation on the choice of exchange-rate regimes is twofold. On the one hand, a country should not join in a currency area if inflation differentials between domestic and foreign countries are high. On the other hand, an economy with high inflation may probably fix its exchange rate to reduce inflation via the nominal anchor effect. We use the CPI indicator to measure inflation. Following

① Holden *et al*. (1979) points out that the OCA theory neglect the role of economic development on the choice of exchange-rate regimes. To the best of our knowledge, only Holden *et al*. (1979) has ever discussed or documented the role of what economic development plays on the choice of exchange-rate regimes.

Ghosh *et al*. (1997) and von Hagen and Zhou (2007), we divide inflation by one plus inflation to avoid bias caused by episodes of hyperinflation and higher inflations in our sample.

International reserves (reserve). The more reserves a country has, the more possible it is to successfully fight back speculative attacks. It is therefore argued that the size of reserves is positively associated with the likelihood of a fixed exchange rate. We use M2/reserves to capture the impact of reserves have on the choice of exchange-rate regimes.

External debt (exdebt). The theory of the first generation of currency crisis argues that fiscal deficit caused by expansionary fiscal policy is not consistent with a fixed rate since countries with more external debts may retire debts by expansionary fiscal policy. Therefore, an economy with more external debts is more likely to favor a floating rate. Another argument holds that a country with more external debts may be more likely to fix its exchange rate if large shares of external debts are denominated in foreign currencies. The two opposite arguments imply an ambiguous relation between external debts and the choice of exchange-rate regimes. To control for the effect of external debts on the choice of exchange rate regimes, we use external debts/GDP to proxy for a country's external debts.

Economic shocks. The Mundell-Fleming type model shows that economies with larger real shocks should allow more flexibility in exchange rates to stabilize output while those shocked by monetary disturbances should fix their exchange rates. Therefore, real shocks are negatively correlated with the likelihood of adopting fixed exchange-rate regimes while monetary shocks are positively associated with that likelihood. We use standard deviation of the logarithm of terms of trade over the previous five years and standard deviation of the growth rate of broad money supply in the previous five years to proxy for real (*totshk*) and monetary shocks (*monshk*) respectively (Levy-Yeyati, *et al*., 2010).

Financial development (fd). In principle, developing countries with more underdeveloped financial systems are more likely to keep a stable exchange rate (Frieden *et al*., 2010; Lin and Ye, 2011; Berdiev *et al*. 2012). Following Frieden *et al*.

(2010), Lin and Ye (2011) and Berdiev *et al*. (2012), we use private credit by deposit money banks and other financial institutions/GDP to capture financial development.

Capital account openness (kopen). The classic principle of impossible triangle states that only two of the three goals that most countries share—independence of monetary policy, stability in the exchange rate, and the free movement of capital—can be reached simultaneously. Therefore, given substantive capital flows across countries, a country has to either fixes its exchange rate or floats its exchange rate. A recent literature holds that a country with higher level of capital account openness should fix its exchange rate (Levy-Yeyati *et al*., 2010). The argument points out that currency depreciations or devaluations in developing countries may worsen balance sheets and investment of private sectors since these sectors have substantive liabilities denominated in foreign currencies. Therefore, devaluations are not expansionary as what have been documented in textbooks but contractionary in these economies due to liability dollarization. Consequently, a more open capital account may lead policymakers in these economies to stabilize exchange rates to avoid contractionary effects of devaluations (Levy-Yeyati *et al*. 2010). In a word, the effect of capital account openness on the choice of exchange-rate regimes is not unambiguous either.

We use Chinn and Ito (2006) index to measure capital account openness which is available for 182 economies covering the period of 1970-2010. Higher values of the index imply higher overall level of capital account openness.

Political Factors

Since the mid 1990s, politics has been introduced into the field of exchange-rate regime choices. Literature in this strand shows that political factors including democracy and political instability are important in determining the choice of exchange rate regimes. To control the impacts of politics on the choice of exchange-rate regimes, we include two political variables—democracy and political instability—in our regressions.

Democracy (demo). Some political scientists argue that democratic governments are more easily subject to the influence of interest groups and it is difficult for democratic governments to take actions which are not supported by social and

political groups to defend a fixed exchange rate. Therefore, compared to autocratic governments, democratic governments are more likely to prefer floating exchange rates (Bernhard and Leblang, 1999; Broz, 2002; Bearce and Hallerberg, 2011). Other political scientists aruge that democratic governments may be more likely to fix exchange rates in an attempt to be immune to the influence of interest groups on policymaking.

Political instability (polin). Some literature argues that politically instable countries may enhance governments' credibility by committing to fixing exchange rates. Others, on the contrary, argue that breaking from a promise to maintain a currency peg is highly visible and politically costly relative to gradual depreciations under a floating regime. "Therefore, where political instability is high, governments with tenuous political support and short time horizons will be less likely to choose a fixed exchange-rate regime *ex ante* (Broz, 2002, pp. 875)."

We use Polity 2 indicator from Polity IV database to proxy for democracy. The Polity 2 indicator is an aggregate index indicating the openness of domestic political institutions with values ranging from -10 (autocracy) to 10 (democracy). A higher value of the indicator means a higher degree of democracy. We use ACTOTAL indicator from major episodes of political violence databank (MEPV) to capture political instability. The indicator contains factors that may result in a country's political instability. These factors include regional conflicts and violence events within a country, domestic social conflicts (such as ethic conflicts), international conflicts and wars etc.

3.3 Empirical evidences

3.3.1 Baseline results

Results of the baseline LPM and probit models are listed in Table 2-1 to Table 2-3. It is revealed that the overall indicator of export diversification has a positive effect on the choice of fixed exchange-rate regimes, implying that less diversified economy of export products (higer values of the indicator) tend to adopt fixed exchange-rate regimes. But, the effect is not statistically significant at standard confidence level.

One advantage of using the Theil index to measure export or trade diversification is the index can be decomposed into the extensive and intensive margins. The overall indicator is the sum of indices of extensive and intensive margins. We therefore rerun the baseline regressions by decomposing the overall index into two margins. Results of Table 2-2 and 2-3 show that the extensive margin has a statistically positive effect on exchange-rate regime choices, implying that a more diversified economy at the extensive margin is more likely to adopt non-fixed regimes, while the intensive margin has a negative but insignificant impact on the choice. Therefore, the reason that the overall indicator has no statistical impact on the choice of exchange-rate regimes may owe to the facts that these two opposing effects may cancel out when combined.

【Table 2-1 to Table 2-3 about here】

A country's export would be more easily subject to external shocks and therefore be more volatile if the country's export grows predominantly at the intensive margin under which export concentrates on relatively a few firms and products. In addition, "if larger economies intensively export more of each variety, the prices of their national varieties should be lower on the world market (Hummels and Klenow, 2005, pp704)." The lower prices in turn may lead to the deterioration of terms of trade and the trap of immiserizing growth. On the contrary, the likelihood that a reverse effect of terms of trade would be greatly reduced if a country's export grows at predominantly the extensive margin. The more diversified extensive margin of export imply a more diversified production structure of the country in consideration, much stronger competition of firms in international market, and less impact of external shocks on export. Therefore, developing countries with higher level of diversification at the extensive margin are more likely to allow more flexibility in exchange rates.

We not turn our focus to the quantitative effect of the extensive margin on the choice of exchange-rate regimes. Results ofg OLS regressions in Table 2-2 reveal that a one percentage decrease in the extensive margin (implying more diversification of exports) tend to increase the likelihood of adopting a fixed regime by approximately 0.18 to 0.27 percent point. In addition, we also calculate the average marginal effect

of the extensive margin indicator when running probit models. The results are very close to the coefficients in the OLS regressions[①]. In a word, the effect of the extensive margin on the choice of exchange-rate regimes is not only statistically positive but also quantitatively large.

3.3.2 Robustness

Endogneity

It is quite possible that export diversification may be affected by exchange rate regimes. For example, Lin (2007) finds that exchange rate uncertainty has a negative effect on the extensive margin and a positive effect on the intensive margin, both of which are statistically significant. A further study confirms that currency unions have raised trade predominantly at the extensive margin while direct pegs have worked almost entirely at the intensive margin (Bergin and Lin, 2008). Cavallari and D′Addona (2013) find that the mean response of extensive margins in fixers is almost 4 times as high as the response among floaters in the presence of a real shock. In case of a nominal shock, such as a one-standard deviation increase in the Federal Fund Rate, while extensive margins increase in both regimes and the more so for peggers, intensive margins decline in the sample of peggers.

Therefore, we need to pay close attention to the problem of potential endogeneity in our regressions caused by reversal causation. To this end, we have lagged the explanatory variables one period in estimating the baseline models in equation (1) and (2). Using lagged regressors may mitigate the problem to some extent, but our estimates may still be biased. We therefore estimate an IV probit and the LPM using two stage least square estimation (2SLS). With the assumption that endogeneity is primarily due to reverse causation, we use the 10-year lag value of diversification as an instrument following Chowdhury *et al*. (2014). The much deeper lag is less likely to be contaminated by reverse causation.

The F statistics in the first stage across all regressions are larger than 10 and significant at 1% confidence level[②]. The tests of exogeneity in regressions of the

[①] The results are 0.22, 0.19, 0.21 and 0.25 in the SH, IMF, RR and RR_D regressions.

[②] The F statistics in the first stage are not reported in Table 3-1 to Table 3-3 (available upon

intensive margin on the choice of regimes using the IMF classification (the second column in Table 3-3) indicate that the intensive margin may be endogenous. Therefore, the 2SLS and IV probit estimations maybe preferred to the corresponding baseline model in the second column in Table 2-3. The results confirm a negative but statistically significant relation between the intensive margin of export and the choice of exchange-rate regimes. All the remaining results in Table 3-1 to Table 3-3 indicate that the overall indicator, the extensive margin and the intensive margin should be considered exogenous in regressions. The results again confirm our main conclusions drawn from the baseline models.

【Table 3-1 to Table 3-3 about here】

Alternative definition of fixed regime

In this section, we also consider some regimes with more flexibility as fixers. Since both the IMF and the SH classifications fail to collapse exchange rate regimes into more detailed types, we use only the RR classification to redefine the dependent variable. Specifically, we consider two more flexible regime types, namely "pre announced crawling peg" and "pre announced crawling band that is narrower than or equal to ±2" (coded 5 and 6 respectively in the RR classification) as fixers and rerun all the regressions again. We fail to find evidences against our main conclusions (Table 4-1 to Table 4-3).

【Table 4-1 to Table 4-3 about here】

Fixed and Random Effect Estimators

Since the fixed-effects estimator will exclude information from those countries with time-invariant variables (Steinberg and Malhotra, 2014), it "is of little use in estimating variables that display limited variability over time, such as political and institutional variable (Carmignani *et al*., 2008, pp.1181)." In addition, Carmignani *et al*. (2008, pp. 1181) hold that a random effect estimator is also problematic when we investigate "a large number of countries and the sample cannot be considered as drawn from a large distribution". Steinberg and Malhotra (2014) argue that pooled

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requests).

probit estimator is more suitable than either the fixed-effect or random-effects alternatives when using binary models (Steinberg and Malhotra, 2014). The above arguments are reasons we use a pooled estimator to perform our baseline regressions. However, some economists also use both random-effects and fixed-effects estimator when exploring the determinants of exchange-rate regimes (for example, Calderón and Schmidt-Hebbel, 2008). For the sake of the robustness, we also run regressions using panel probit with random effect and loti models with both random and fixed effects. Results in Table 5-1 to Table 6-3 are still in supportive of our conclusions.

【Table 5-1 to 6-3 about here】

Sample Variation

We also check whether our results are driven by the early period covering the 1970s to 1980s, limiting our focus on observations after 1985 and 1990 respectively. The results again lend additional credibility to our conclusions (Results are available upon requests).

4. Conclusions

Diversification is one of the long-standing debates in international economics. The traditional and new theories of trade seek to promote specialization to reap the benefits of comparative advantage, productivity gains and increasing returns on scale. Recent literature emphasizes the benefits of a growth payoff and a stability payoff produced by increased diversifications (Cadot *et al*. 2013; IMF, 2014). An implicit inference from the above discussions is export diversification may be considered as one of the key determinants of the choice of exchange-rate regimes. Despite of the compelling theoretical arguments, the effect of diversification of export products on exchange rate regimes has not been put to an empirical test in the previous literature.

The paper, drawing on a newly-developed dataset of export diversification decomposed into the extensive and the intensive margins by the IMF, makes the first attempt in empirical literature to test the impact of product diversification on the choice of exchange-rate regimes and provide new evidences in the regard. The paper finds that diversification of export products has a positive but insignificant effect on

the choice of fixed exchange-rate regimes. Higher level of product diversification at the extensive margin has a statistically positive effect on exchange-rate regime choices while the intensive margin has a negative but insignificant impact on the choice. The results indicate that understanding which margin seems to be a stronger driver of exchange-rate regime choices is important not only for its own sake, but also for the design of both exchange-rate policies and export policies.

One of the biggest problems that the paper fails to cover is to understand why and how exchange-rate regimes respond to different margins of diversification. Another problem of the paper concerns the endogeneity problem where we need to figure out more appropriate instrument variables to test the robustness of the relation between export diversification and the choice of regimes. We therefore would like to consider our results as a preliminary step towards a much deeper and better understanding of the effect of export diversification on exchange-rate regimes due to many problems remaining open or unsolved in the current paper.

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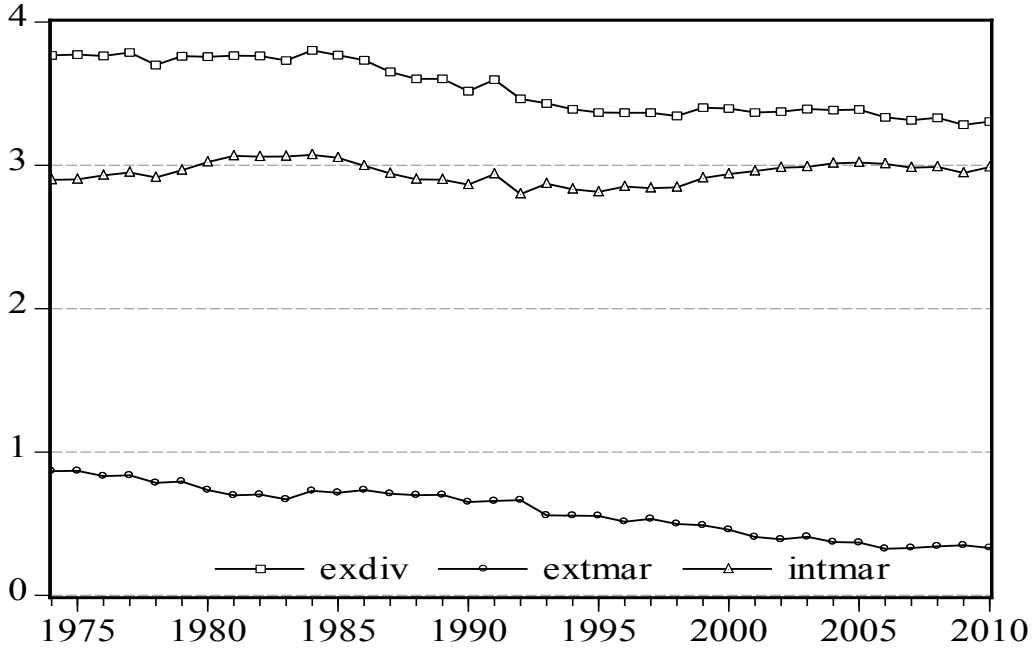

Figure 1 Export diversification in developing countries (1974-2010)

Table 1 Summary of the literature related

Authors	Sample	ERR classifications	Measurement of export diversification	Econometric model	Conclusions
Heller (1978)	86 countries (1976)	IMF	• Geographical diversification: The percentage of total trade accounted for by the largest trading partner	Discriminate analysis (cross section)	—^
Holden *et al*. (1979)	76 countries (1974-1975)	HHS index	• Product diversification: the percentage of total exports accounted for by the largest export in terms of the two digit Standard International Trade Classification (SITC) • Geographical diversification: the percentage of total exports accounted for by exports to the largest market	Linear regression (cross section)	—^^ —
Melvin (1985)	64 countries (1976-1978)	IMF	• Geographical diversification: the fraction of total trade accounted for by the dominant trading partner	Multinomial logit (cross section)	+^; —
Rizzo (1998)	20 developed countries (1974-1995)	IMF	• Geographical diversification: the percentage of the three largest export destinations	Binary and ordered probit (cross section)	+^^
Poirson (2001)	93 countries (1999)	IMF; de facto classification	• Sector diversification: share of manufacturing in value added • Geographical diversification: share of major trade partner in total exports	Ordered probit; linear regression	+^^ +^
Méon and Rizzo (2002)	125 countries (1980-1994)	IMF	• Geographical diversification: the percentage of the three largest export destinations	Binary probit	+^^
Markiewicz (2006)	23 transition economies	IMF; RR	• Geographical diversification: the ratio of exports from a transition economy to the EU to total exports to the world the country	Ordered logit	+^^

(Continued)

Authors	Sample	ERR classifications	Measurement of export diversification	Econometric model	Conclusions
von Hagen and Zhou (2007)	94-128 countries (1981-1999)	IMF	• Geographical diversification: share of the largest trading partner in total trade	Multinomial logit	+^^; —
Carmignani *et al*. (2008)	96 countries (1974-2000)	RR; IMF	• Geographical diversification: share of trade with the three largest export partners	LPM；probit；logit	+^^; —
Jin (2009)	50 countries (1975-2000)	RR	• Geographical diversification: exports to the largest trading partner as a share of total exports.	Ordered probit	—^^
Frieden *et al*. (2010)	21 transition economies (1992-2004)	IMF; RR; LYS	• Geographical diversification: total value of exports to Germany	Binary probit; ordered and non-ordered logit	+^^
Levy-Yeyati *et al*. (2010)	183 countries (1974-2004)	IMF; RR; LYS	• Geographical diversification : the share of exports to the reference currency country multiplied by openness	Multinomial logit	Results not available
Chowdhury *et al*. (2014)	135 countries (1985-2006)	RR	• Sectoral diversification: Theil index based on sectoral value added and sectoral employment shares • Decomposing the Theil index into within and between components	LPM	—^^

Note: 1. The symbol + means a more diversified economy is more likely to adopt a peg or is less likely to adopt a more flexible exchange rate regime; — indicates a more diversified economy is less likely to adopt a peg or is more likely to adopt a more flexible exchange rate.

2. ^^ indicates regression coefficients are statistically significant in all or most cases, ^ indicates regression coefficients are significant in some specifications.

3. HHS index is the index for estimating exchange-rate regime flexibility by Holden *et al*. (1979); IMF=IMF classification; RR=Reinhart and Rogoff (2004) classification; LYS=Levy-Yeyati and Sturzenegger (2005) classification. ERR indicates exchange-rate regimes.

4. LPM stands for linear probability model.

Table 2-1 Export diversification and exchange-rate regimes (overall indicator)

	SH		IMF		RR		RR_D	
	LPM	probit	LPM	probit	LPM	probit	LPM	probit
exdiv	0.051	0.195	0.034	0.127	0.037	0.163	0.046	0.179
	(0.05)	(0.15)	(0.04)	(0.14)	(0.05)	(0.16)	(0.05)	(0.17)
open	0.068	0.305	0.081	0.197	0.211	0.707	0.237	0.799
	(0.15)	(0.44)	(0.15)	(0.45)	(0.16)	(0.48)	(0.16)	(0.50)
ecodev	-0.026	-0.131	0.048	0.160	-0.083	-0.309	-0.095	-0.336
	(0.07)	(0.21)	(0.06)	(0.19)	(0.07)	(0.22)	(0.07)	(0.23)
ecosize	-0.045*	-0.151	-0.061*	-0.204*	-0.014	-0.068	-0.016	-0.069
	(0.03)	(0.09)	(0.04)	(0.12)	(0.03)	(0.11)	(0.03)	(0.11)
inf	-0.656***	-5.002***	-0.620***	-2.266***	-0.459***	-2.519**	-1.134***	-3.543***
	(0.19)	(1.40)	(0.20)	(0.77)	(0.17)	(1.00)	(0.38)	(1.35)
reserve	0.004	0.017	0.003	0.005	-0.008	-0.025	-0.007	-0.021
	(0.01)	(0.02)	(0.01)	(0.02)	(0.01)	(0.03)	(0.01)	(0.03)
exdebt	-0.095	-0.197	-0.013	-0.016	-0.168*	-0.502	-0.159	-0.529
	(0.10)	(0.30)	(0.11)	(0.33)	(0.10)	(0.33)	(0.11)	(0.36)
totshk	-0.277	-1.003	-0.241	-0.877	-0.212	-0.757	-0.255	-0.941
	(0.23)	(0.70)	(0.28)	(0.84)	(0.24)	(0.77)	(0.26)	(0.80)
monshk	0.153	0.490	0.128	0.361	0.231	0.764	0.216	0.884
	(0.24)	(0.88)	(0.23)	(0.83)	(0.28)	(1.11)	(0.29)	(1.17)
fd	0.082	0.182	0.028	0.052	-0.105	-0.242	-0.150	-0.367
	(0.26)	(0.74)	(0.29)	(0.88)	(0.27)	(0.81)	(0.27)	(0.83)
kaopen	-0.058**	-0.182**	-0.043	-0.115	-0.018	-0.048	-0.024	-0.060
	(0.03)	(0.08)	(0.03)	(0.09)	(0.03)	(0.09)	(0.03)	(0.10)
demo	-0.012*	-0.042**	-0.009	-0.028*	-0.015**	-0.053***	-0.017**	-0.058***
	(0.01)	(0.02)	(0.01)	(0.02)	(0.01)	(0.02)	(0.01)	(0.02)
polin	-0.023	-0.080	-0.018	-0.075	-0.033**	-0.122**	-0.030*	-0.115*
	(0.02)	(0.05)	(0.02)	(0.06)	(0.01)	(0.06)	(0.02)	(0.06)
N	1256	1256	1245	1245	1273	1273	1126	1126
F statistics	4.51***		7.80***		2.56***		3.13***	
Adj. R2	0.211		0.227		0.190		0.200	
Wald Chi2		342.8***		212.9***		249.8***		267.3***
Pseudo R2		0.218		0.193		0.184		0.178

Note: 1.The dependent variable, EER, equals 1 if fixer, and zero otherwise.

2.*, **and ***denote 10%, 5% and 1% confidence level.

3.Robust standard errors clustered at the country level in parentheses.

4.Dummies for landlocked countries and colonial origin, year dummies and constant are not reported.

Table 2-2 Export diversification and exchange-rate regimes (extensive margin)

	SH		IMF		RR		RR_D	
	LPM	probit	LPM	probit	LPM	probit	LPM	probit
extmar	0.243***	0.810***	0.188**	0.643***	0.235**	0.778***	0.270***	0.877***
	(0.08)	(0.27)	(0.07)	(0.24)	(0.09)	(0.30)	(0.09)	(0.32)
open	0.147	0.545	0.156	0.464	0.291**	0.986**	0.315**	1.081**
	(0.14)	(0.43)	(0.14)	(0.45)	(0.14)	(0.49)	(0.14)	(0.49)
ecodev	-0.051	-0.193	0.023	0.116	-0.114*	-0.414*	-0.133**	-0.460**
	(0.06)	(0.20)	(0.06)	(0.20)	(0.06)	(0.22)	(0.07)	(0.22)
ecosize	-0.038	-0.147	-0.051	-0.181	-0.001	-0.042	-0.006	-0.052
	(0.03)	(0.09)	(0.03)	(0.12)	(0.03)	(0.11)	(0.03)	(0.11)
inf	-0.525**	-4.742***	-0.505**	-1.970**	-0.311*	-2.182**	-0.909**	-3.082**
	(0.20)	(1.40)	(0.20)	(0.78)	(0.18)	(1.03)	(0.36)	(1.27)
reserve	0.004	0.021	0.004	0.006	-0.008	-0.022	-0.006	-0.016
	(0.01)	(0.02)	(0.01)	(0.02)	(0.01)	(0.03)	(0.01)	(0.03)
exdebt	-0.118	-0.325	-0.027	-0.077	-0.185*	-0.623*	-0.192*	-0.691**
	(0.09)	(0.29)	(0.10)	(0.31)	(0.09)	(0.32)	(0.11)	(0.35)
totshk	-0.091	-0.349	-0.115	-0.499	-0.046	-0.198	-0.051	-0.321
	(0.24)	(0.72)	(0.28)	(0.84)	(0.26)	(0.82)	(0.28)	(0.87)
monshk	0.090	0.459	0.054	0.173	0.144	0.502	0.129	0.656
	(0.23)	(0.87)	(0.22)	(0.81)	(0.28)	(1.12)	(0.30)	(1.21)
fd	0.132	0.285	0.081	0.0900	-0.018	-0.068	-0.030	-0.114
	(0.26)	(0.79)	(0.31)	(0.92)	(0.28)	(0.88)	(0.29)	(0.92)
kaopen	-0.049*	-0.159**	-0.036	-0.091	-0.007	-0.019	-0.014	-0.030
	(0.03)	(0.08)	(0.03)	(0.08)	(0.03)	(0.09)	(0.03)	(0.09)
demo	-0.011**	-0.046**	-0.009	-0.032*	-0.015**	-0.056***	-0.017***	-0.062***
	(0.01)	(0.02)	(0.01)	(0.02)	(0.01)	(0.02)	(0.01)	(0.02)
polin	-0.031**	-0.109*	-0.023	-0.095	-0.040***	-0.150**	-0.037**	-0.145**
	(0.02)	(0.06)	(0.02)	(0.07)	(0.01)	(0.06)	(0.01)	(0.06)
N	1253	1253	1242	1242	1271	1271	1124	1124
F statistics	6.41***		10.60***		2.79***		4.16***	
Adj. R2	0.248		0.249		0.231		0.248	
Wald Chi2		292.1***		323.0***		258.2***		193.9***
Pseudo R2		0.250		0.214		0.220		0.221

Note: 1.The dependent variable, EER, equals 1 if fixer, and zero otherwise.

2.*, **and ***denote 10%, 5% and 1% confidence level.

3.Robust standard errors clustered at the country level in parentheses.

4.Dummies for landlocked countries and colonial origin, year dummies and constant are not reported.

Table 2-3 Export diversification and exchange-rate regimes (intensive margin)

	SH		IMF		RR		RR_D	
	LPM	probit	LPM	probit	LPM	probit	LPM	probit
intmar	-0.046	-0.121	-0.042	-0.109	-0.055	-0.156	-0.057	-0.162
	(0.05)	(0.16)	(0.05)	(0.15)	(0.05)	(0.17)	(0.05)	(0.17)
open	0.098	0.377	0.100	0.249	0.237	0.780	0.262	0.868*
	(0.15)	(0.43)	(0.15)	(0.46)	(0.16)	(0.49)	(0.16)	(0.50)
ecodev	-0.016	-0.095	0.059	0.200	-0.074	-0.269	-0.084	-0.293
	(0.07)	(0.21)	(0.06)	(0.19)	(0.07)	(0.22)	(0.07)	(0.23)
ecosize	-0.060**	-0.192**	-0.074**	-0.241**	-0.028	-0.106	-0.031	-0.111
	(0.03)	(0.09)	(0.03)	(0.12)	(0.03)	(0.10)	(0.03)	(0.11)
inf	-0.718***	-5.131***	-0.660***	-2.351***	-0.510***	-2.655***	-1.176***	-3.671***
	(0.20)	(1.38)	(0.20)	(0.78)	(0.18)	(1.02)	(0.39)	(1.35)
reserve	0.005	0.024	0.004	0.008	-0.007	-0.020	-0.006	-0.015
	(0.01)	(0.02)	(0.01)	(0.02)	(0.01)	(0.03)	(0.01)	(0.03)
exdebt	-0.103	-0.239	-0.014	-0.035	-0.175*	-0.540*	-0.176	-0.575
	(0.10)	(0.30)	(0.11)	(0.32)	(0.10)	(0.32)	(0.11)	(0.35)
totshk	-0.146	-0.557	-0.132	-0.515	-0.078	-0.328	-0.111	-0.479
	(0.25)	(0.75)	(0.28)	(0.85)	(0.27)	(0.84)	(0.29)	(0.87)
monshk	0.208	0.730	0.194	0.605	0.291	1.091	0.316	1.283
	(0.24)	(0.90)	(0.24)	(0.86)	(0.29)	(1.13)	(0.31)	(1.21)
fd	-0.032	-0.194	-0.050	-0.196	-0.203	-0.594	-0.248	-0.721
	(0.26)	(0.73)	(0.29)	(0.87)	(0.26)	(0.81)	(0.27)	(0.82)
kaopen	-0.062**	-0.196**	-0.046	-0.125	-0.022	-0.059	-0.028	-0.071
	(0.03)	(0.08)	(0.03)	(0.09)	(0.03)	(0.09)	(0.03)	(0.09)
demo	-0.015**	-0.051***	-0.011*	-0.033**	-0.017***	-0.059***	-0.020***	-0.065***
	(0.01)	(0.02)	(0.01)	(0.02)	(0.01)	(0.02)	(0.01)	(0.02)
polin	-0.021	-0.073	-0.015	-0.066	-0.032**	-0.117**	-0.028*	-0.107*
	(0.02)	(0.06)	(0.02)	(0.06)	(0.01)	(0.06)	(0.01)	(0.06)
N	1256	1256	1245	1245	1273	1273	1126	1126
F statistics	4.54***		8.84***		2.76***		3.77***	
Adj. R2	0.210		0.228		0.193		0.202	
Wald Chi2		205.0***		227.3***		318.9***		263.1***
Pseudo R2		0.214		0.192		0.184		0.177

Note: 1.The dependent variable, EER, equals 1 if fixer, and zero otherwise.

2.*, **and ***denote 10%, 5% and 1% confidence level.

3.Robust standard errors clustered at the country level in parentheses.

4.Dummies for landlocked countries and colonial origin, year dummies and constant are not reported.

Table 3-1 IV regressions (overall indicator)

	SH		IMF		RR		RR_D	
	2sls-LPM	IV probit	2sls-LPM	IV probit	2sls-LPM	IV probit	2sls-LPM	IV probit
exdiv	-0.002	0.185	-0.063	-0.107	0.087	0.381	0.244**	0.912***
	(0.11)	(0.38)	(0.09)	(0.30)	(0.10)	(0.38)	(0.12)	(0.35)
open	0.076	0.169	0.104	0.206	0.188	0.570	0.232	0.866*
	(0.17)	(0.51)	(0.18)	(0.56)	(0.18)	(0.55)	(0.15)	(0.51)
ecodev	-0.003	-0.052	0.059	0.196	-0.102	-0.367	-0.201***	-0.766***
	(0.07)	(0.25)	(0.07)	(0.23)	(0.08)	(0.28)	(0.08)	(0.26)
ecosize	-0.061*	-0.173	-0.076**	-0.244*	0.001	-0.013	0.018	0.024
	(0.03)	(0.12)	(0.04)	(0.13)	(0.03)	(0.13)	(0.04)	(0.16)
inf	-0.579***	-7.018***	-0.557**	-2.119**	-0.275*	-2.047*	-2.606***	-10.71***
	(0.21)	(1.59)	(0.23)	(0.85)	(0.16)	(1.14)	(0.49)	(2.11)
reserve	0.003	0.010	0.003	0.001	-0.005	-0.019	-0.004	-0.009
	(0.01)	(0.02)	(0.01)	(0.02)	(0.01)	(0.03)	(0.01)	(0.03)
exdebt	-0.065	-0.030	0.015	0.118	-0.209*	-0.653	-0.163	-0.588
	(0.12)	(0.40)	(0.12)	(0.37)	(0.11)	(0.40)	(0.13)	(0.45)
totshk	-0.154	-0.754	-0.118	-0.704	-0.329	-1.129	-0.527*	-1.962**
	(0.28)	(0.97)	(0.33)	(1.06)	(0.28)	(0.95)	(0.29)	(0.94)
monshk	0.039	0.067	0.180	0.411	0.068	0.053	-0.256	-1.595
	(0.26)	(1.09)	(0.24)	(0.94)	(0.28)	(1.21)	(0.29)	(1.02)
fd	0.199	0.605	0.044	0.175	0.117	0.479	0.219	0.941
	(0.31)	(0.94)	(0.33)	(1.02)	(0.29)	(0.98)	(0.30)	(1.02)
kaopen	-0.061**	-0.179**	-0.058*	-0.150	-0.007	-0.003	0.016	0.074
	(0.03)	(0.09)	(0.03)	(0.10)	(0.03)	(0.10)	(0.03)	(0.11)
demo	-0.015**	-0.045**	-0.016**	-0.050**	-0.015**	-0.050**	-0.012*	-0.048**
	(0.01)	(0.02)	(0.01)	(0.02)	(0.01)	(0.02)	(0.01)	(0.02)
polin	-0.022	-0.092	-0.009	-0.049	-0.035**	-0.132*	-0.021	-0.076
	(0.02)	(0.07)	(0.02)	(0.06)	(0.02)	(0.07)	(0.02)	(0.08)
N	927	927	936	936	945	945	722	722
Wald Chi2	343.7***	440.1***	239.7***	127.9***	201.2***	429.3***	368.0***	506.3***
Adj. R2	0.231		0.229		0.191		0.278	
Tests of exogeneity	0.722	0.915	0.134	0.232	0.857	0.727	0.271	0.254
First stage results of lagged 10-year diversification on current indicator								
exdiv_10	0.484***	0.484***	0.542***	0.542***	0.546***	0.546***	0.505***	0.505***
	(0.08)	(0.08)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)

Note: 1.The dependent variable, EER, equals 1 if fixer, and zero otherwise.

2.*, **and ***denote 10%, 5% and 1% confidence level.

3.Robust standard errors clustered at the country level in parentheses.

4.Dummies for landlocked countries and colonial origin, year dummies and constant are not reported.

5.Numbers in the row of "Tests of exogeneity" are p values of DWH test in the 2sls-LPM and Wald test in the IV probit model respectively.

Table 3-2 IV regressions (extensive margin)

	SH		IMF		RR		RR_D	
	2sls-LPM	IV probit	2sls-LPM	IV probit	2sls-LPM	IV probit	2sls-LPM	IV probit
extmar	0.261**	0.937**	0.191[a]	0.666*	0.248*	0.824*	0.347***	1.195**
	(0.13)	(0.45)	(0.12)	(0.39)	(0.14)	(0.48)	(0.13)	(0.47)
open	0.147	0.418	0.172	0.458	0.289*	0.903	0.341**	1.299**
	(0.16)	(0.53)	(0.17)	(0.58)	(0.17)	(0.57)	(0.13)	(0.51)
ecodev	-0.038	-0.100	0.008	0.081	-0.121	-0.423	-0.180***	-0.709***
	(0.07)	(0.24)	(0.06)	(0.22)	(0.08)	(0.27)	(0.07)	(0.26)
ecosize	-0.046*	-0.181*	-0.048	-0.184	0.001	-0.039	-0.019	-0.116
	(0.03)	(0.11)	(0.03)	(0.13)	(0.03)	(0.11)	(0.03)	(0.14)
inf	-0.378*	-6.419***	-0.352*	-1.618*	-0.155	-1.641	-2.050***	-9.100***
	(0.20)	(1.51)	(0.21)	(0.84)	(0.17)	(1.11)	(0.53)	(2.26)
reserve	0.004	0.018	0.004	0.003	-0.003	-0.009	0.000	0.014
	(0.01)	(0.03)	(0.01)	(0.03)	(0.01)	(0.03)	(0.01)	(0.04)
exdebt	-0.113	-0.304	-0.0250	-0.0240	-0.265**	-0.964**	-0.294**	-1.146**
	(0.12)	(0.43)	(0.12)	(0.37)	(0.11)	(0.44)	(0.13)	(0.48)
totshk	0.017	0.096	-0.096	-0.498	-0.098	-0.222	-0.058	-0.335
	(0.29)	(0.94)	(0.34)	(1.05)	(0.32)	(0.98)	(0.36)	(1.15)
monshk	-0.048	-0.013	0.050	0.113	0.047	0.080	-0.140	-0.957
	(0.23)	(0.99)	(0.23)	(0.90)	(0.26)	(1.11)	(0.24)	(0.97)
fd	0.349	0.873	0.233	0.573	0.141	0.481	0.155	0.490
	(0.29)	(0.95)	(0.34)	(1.06)	(0.29)	(1.00)	(0.33)	(1.20)
kaopen	-0.045*	-0.140*	-0.042	-0.103	-0.000	0.011	0.005	0.046
	(0.03)	(0.08)	(0.03)	(0.09)	(0.03)	(0.10)	(0.03)	(0.11)
demo	-0.013**	-0.048**	-0.014**	-0.047**	-0.016***	-0.058***	-0.019***	-0.073***
	(0.01)	(0.02)	(0.01)	(0.02)	(0.01)	(0.02)	(0.01)	(0.02)
polin	-0.027*	-0.110	-0.014	-0.0650	-0.035**	-0.137*	-0.017	-0.063
	(0.02)	(0.07)	(0.02)	(0.07)	(0.02)	(0.07)	(0.01)	(0.07)
N	923	923	932	932	942	942	720	720
Wald Chi2	319.6***	540.8***	255.7***	148.6***	235.5***	387.5***	880.7***	1986***
Adj. R2	0.282		0.265		0.239		0.338	
Tests of exogeneity	0.810	0.987	0.887	0.724	0.780	0.804	0.726	0.771
First stage results of lagged 10-year diversification on current indicator								
extmar_10	0.577***	0.577***	0.635***	0.635***	0.607***	0.607***	0.585***	0.585***
	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.08)	(0.08)

Note: 1.The dependent variable, EER, equals 1 if fixer, and zero otherwise.

2.*, **and ***denote 10%, 5% and 1% confidence level. [a]=11.7%.

3.Robust standard errors clustered at the country level in parentheses.

4.Dummies for landlocked countries and colonial origin, year dummies and constant are not reported.

5.Numbers in the row of "Tests of exogeneity" are p values of DWH test in the 2sls-LPM and Wald test in the IV probit model respectively.

Table 3-3 IV regressions (intensive margin)

	SH		IMF		RR		RR_D	
	2sls-LPM	IV probit	2sls-LPM	IV probit	2sls-LPM	IV probit	2sls-LPM	IV probit
intmar	-0.163	-0.417	-0.196**	-0.555*	-0.067	-0.165	0.025	0.133
	(0.10)	(0.33)	(0.10)	(0.29)	(0.10)	(0.35)	(0.11)	(0.38)
open	0.161	0.406	0.192	0.447	0.230	0.669	0.250	0.899
	(0.17)	(0.50)	(0.18)	(0.53)	(0.18)	(0.56)	(0.17)	(0.58)
ecodev	0.014	0.022	0.066	0.239	-0.071	-0.238	-0.124	-0.460
	(0.07)	(0.24)	(0.06)	(0.21)	(0.08)	(0.27)	(0.08)	(0.30)
ecosize	-0.084***	-0.262**	-0.092***	-0.297**	-0.0270	-0.105	-0.024	-0.105
	(0.03)	(0.11)	(0.04)	(0.12)	(0.03)	(0.12)	(0.04)	(0.15)
inf	-0.600***	-6.779***	-0.524**	-1.925**	-0.356**	-2.217*	-2.589***	-10.49***
	(0.19)	(1.58)	(0.21)	(0.83)	(0.16)	(1.22)	(0.56)	(2.16)
reserve	0.005	0.021	0.005	0.010	-0.004	-0.011	-0.001	0.001
	(0.01)	(0.02)	(0.01)	(0.02)	(0.01)	(0.03)	(0.01)	(0.03)
exdebt	-0.106	-0.246	-0.028	-0.056	-0.225**	-0.737*	-0.188	-0.683
	(0.12)	(0.43)	(0.12)	(0.39)	(0.11)	(0.40)	(0.13)	(0.46)
totshk	0.113	0.128	0.149	0.134	-0.120	-0.445	-0.323	-1.230
	(0.34)	(1.10)	(0.40)	(1.21)	(0.34)	(1.09)	(0.34)	(1.11)
monshk	0.099	0.394	0.218	0.588	0.175	0.608	0.025	-0.259
	(0.25)	(1.04)	(0.26)	(0.94)	(0.29)	(1.20)	(0.30)	(1.18)
fd	0.066	0.046	-0.027	-0.140	-0.054	-0.129	-0.099	-0.290
	(0.28)	(0.85)	(0.31)	(0.92)	(0.28)	(0.91)	(0.29)	(0.99)
kaopen	-0.065**	-0.197**	-0.058*	-0.153	-0.016	-0.038	-0.009	-0.011
	(0.03)	(0.09)	(0.03)	(0.09)	(0.03)	(0.10)	(0.04)	(0.12)
demo	-0.019***	-0.058***	-0.019***	-0.055***	-0.019***	-0.061***	-0.019**	-0.068***
	(0.01)	(0.02)	(0.01)	(0.02)	(0.01)	(0.02)	(0.01)	(0.03)
polin	-0.018	-0.075	-0.006	-0.039	-0.030*	-0.116*	-0.014	-0.051
	(0.02)	(0.07)	(0.02)	(0.07)	(0.02)	(0.07)	(0.02)	(0.07)
N	927	927	936	936	945	945	722	722
Wald Chi2	357.4***	423.7***	203.6***	167.9***	101.8***	245.5***	351.2***	512.5***
Adj. R2	0.227		0.205		0.180		0.271	
Tests of exogeneity	0.196	0.294	0.022	0.045	0.609	0.689	0.843	0.887
First stage results of lagged 10-year diversification on current indicator								
intmar_10	0.549***	0.549***	0.576***	0.576***	0.553***	0.553***	0.576***	0.576***
	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.09)	(0.09)

Note: 1.The dependent variable, EER, equals 1 if fixer, and zero otherwise.

2.*, **and ***denote 10%, 5% and 1% confidence level.

3.Robust standard errors clustered at the country level in parentheses.

4.Dummies for landlocked countries and colonial origin, year dummies and constant are not reported.

5.Numbers in the row of "Tests of exogeneity" are p values of DWH test in the 2sls-LPM and Wald test in the IV probit model respectively.

Table 4-1 Broader definition the dependent variable (overall indicator)

	RR		RR_D	
	LPM	probit	LPM	probit
exdiv	0.037	0.128	0.046	0.152
	(0.05)	(0.14)	(0.05)	(0.15)
open	0.154	0.466	0.162	0.493
	(0.15)	(0.43)	(0.16)	(0.46)
ecodev	-0.072	-0.235	-0.080	-0.249
	(0.07)	(0.21)	(0.07)	(0.21)
ecosize	-0.019	-0.073	-0.023	-0.082
	(0.03)	(0.10)	(0.04)	(0.11)
inf	-0.406**	-1.765***	-0.938**	-2.700**
	(0.17)	(0.65)	(0.37)	(1.09)
reserve	-0.009	-0.025	-0.007	-0.021
	(0.01)	(0.03)	(0.01)	(0.03)
exdebt	-0.155	-0.466	-0.135	-0.431
	(0.10)	(0.32)	(0.12)	(0.34)
totshk	-0.200	-0.610	-0.243	-0.797
	(0.26)	(0.77)	(0.27)	(0.80)
monshk	0.400	1.574	0.385	1.668
	(0.30)	(1.12)	(0.32)	(1.16)
fd	0.036	0.264	-0.002	0.148
	(0.27)	(0.76)	(0.27)	(0.77)
kaopen	-0.002	-0.000	-0.007	-0.013
	(0.03)	(0.09)	(0.03)	(0.09)
demo	-0.013**	-0.041**	-0.014**	-0.045**
	(0.01)	(0.02)	(0.01)	(0.02)
polin	-0.031**	-0.109*	-0.028*	-0.101*
	(0.02)	(0.06)	(0.02)	(0.06)
N	1273	1273	1126	1126
F statistics	3.37***		3.42***	
Adj. R2	0.158		0.162	
Wald Chi2		285.6***		262.3***
Pseudo R2		0.143		0.139

Note: 1.The dependent variable, EER, equals 1 if fixer, and zero otherwise.
2.*, **and ***denote 10%, 5% and 1% confidence level.
3.Robust standard errors clustered at the country level in parentheses.
4.Dummies for landlocked countries and colonial origin, year dummies and constant are not reported.

Table 4-2 Broader definition the dependent variable (extensive margin)

	RR		RR_D	
	LPM	probit	LPM	probit
extmar	0.202**	0.609**	0.233**	0.693**
	(0.09)	(0.27)	(0.10)	(0.29)
open	0.222	0.668	0.229	0.693
	(0.14)	(0.43)	(0.15)	(0.45)
ecodev	-0.098	-0.311	-0.111	-0.339
	(0.07)	(0.21)	(0.07)	(0.21)
ecosize	-0.009	-0.051	-0.016	-0.069
	(0.03)	(0.10)	(0.03)	(0.11)
inf	-0.284	-1.477**	-0.749**	-2.280**
	(0.17)	(0.67)	(0.35)	(1.03)
reserve	-0.008	-0.022	-0.006	-0.016
	(0.01)	(0.03)	(0.01)	(0.03)
exdebt	-0.169*	-0.543*	-0.164	-0.544
	(0.10)	(0.31)	(0.11)	(0.34)
totshk	-0.051	-0.166	-0.059	-0.284
	(0.28)	(0.81)	(0.29)	(0.85)
monshk	0.334	1.442	0.322	1.584
	(0.31)	(1.14)	(0.33)	(1.20)
fd	0.105	0.446	0.094	0.397
	(0.28)	(0.82)	(0.29)	(0.84)
kaopen	0.006	0.025	0.001	0.012
	(0.03)	(0.09)	(0.03)	(0.09)
demo	-0.013**	-0.043**	-0.014**	-0.047**
	(0.01)	(0.02)	(0.01)	(0.02)
polin	-0.037**	-0.129**	-0.034**	-0.123*
	(0.01)	(0.06)	(0.02)	(0.06)
N	1271	1271	1124	1124
F statistics	3.75***		5.40***	
Adj. R2	0.187		0.195	
Wald Chi2		289.2***		290.6***
Pseudo R2		0.167		0.167

Note: 1.The dependent variable, EER, equals 1 if fixer, and zero otherwise.
2.*, **and ***denote 10%, 5% and 1% confidence level.
3.Robust standard errors clustered at the country level in parentheses.
4.Dummies for landlocked countries and colonial origin, year dummies and constant are not reported.

Table 4-3 Broader definition the dependent variable (intensive margin)

	RR		RR_D	
	LPM	probit	LPM	probit
intmar	-0.042	-0.119	-0.042	-0.116
	(0.05)	(0.16)	(0.06)	(0.17)
open	0.174	0.523	0.182	0.547
	(0.15)	(0.44)	(0.16)	(0.46)
ecodev	-0.0640	-0.207	-0.0690	-0.218
	(0.07)	(0.21)	(0.07)	(0.22)
ecosize	-0.031	-0.108	-0.036	-0.120
	(0.03)	(0.10)	(0.03)	(0.11)
inf	-0.454**	-1.910***	-0.982**	-2.843***
	(0.17)	(0.68)	(0.37)	(1.10)
reserve	-0.008	-0.021	-0.006	-0.016
	(0.01)	(0.03)	(0.01)	(0.03)
exdebt	-0.161	-0.488	-0.149	-0.462
	(0.10)	(0.32)	(0.12)	(0.34)
totshk	-0.088	-0.274	-0.124	-0.436
	(0.29)	(0.83)	(0.30)	(0.86)
monshk	0.454	1.788	0.475	1.955*
	(0.31)	(1.13)	(0.32)	(1.18)
fd	-0.051	-0.011	-0.091	-0.132
	(0.27)	(0.76)	(0.27)	(0.76)
kaopen	-0.006	-0.009	-0.011	-0.022
	(0.03)	(0.09)	(0.03)	(0.09)
demo	-0.015**	-0.047**	-0.016**	-0.051**
	(0.01)	(0.02)	(0.01)	(0.02)
polin	-0.030**	-0.104*	-0.0260	-0.094
	(0.01)	(0.05)	(0.02)	(0.06)
N	1273	1273	1126	1126
F statistics	3.66***		4.14***	
Adj. R2	0.159		0.161	
Wald Chi2		322.3***		283.6***
Pseudo R2		0.143		0.137

Note: 1.The dependent variable, EER, equals 1 if fixer, and zero otherwise.
2.*, **and ***denote 10%, 5% and 1% confidence level.
3.Robust standard errors clustered at the country level in parentheses.
4.Dummies for landlocked countries and colonial origin, year dummies and constant are not reported.

Table 5-1 Fixed effect estimator (overall indicator)

	SH	IMF	RR	RR_D
exdiv	0.598*	0.652*	0.065	0.273
	(0.32)	(0.34)	(0.45)	(0.47)
open	1.535	-0.612	2.065	2.885
	(1.04)	(1.15)	(1.65)	(1.90)
ecodev	-7.479***	3.359	3.858	-2.797
	(2.43)	(2.26)	(3.43)	(3.94)
ecosize	7.368***	0.201	-11.19***	-5.422
	(2.78)	(2.58)	(3.95)	(4.41)
inf	-7.851***	-3.330***	-3.824**	-4.394
	(1.77)	(1.13)	(1.86)	(3.22)
reserve	-0.070	0.014	-0.089	-0.167*
	(0.04)	(0.04)	(0.07)	(0.10)
exdebt	-0.199	0.371	-1.488**	-1.135
	(0.58)	(0.54)	(0.75)	(0.83)
totshk	2.681	-0.433	0.331	1.229
	(1.63)	(1.52)	(2.59)	(2.90)
monshk	-1.614	-0.835	-1.248	-1.347
	(1.51)	(1.63)	(1.97)	(2.26)
fd	6.633***	1.291	8.963***	12.37***
	(1.55)	(1.41)	(2.49)	(3.04)
kaopen	-0.552***	-0.213	0.307	0.271
	(0.16)	(0.15)	(0.22)	(0.26)
demo	-0.025	-0.095**	-0.299***	-0.619***
	(0.04)	(0.04)	(0.07)	(0.13)
polin	0.177*	-0.062	0.562***	0.904***
	(0.10)	(0.11)	(0.18)	(0.24)
N	666	674	542	478
LR	115.6***	146.0***	122.9***	130.0***

Note: 1.The dependent variable, EER, equals 1 if fixer, and zero otherwise.
2.*, **and ***denote 10%, 5% and 1% confidence level.
3.Robust standard errors clustered at the country level in parentheses.
4.Year dummies not reported.

Table 5-2 Fixed effect estimator (extensive margin)

	SH	IMF	RR	RR_D
extmar	1.493**	0.126	2.372**	3.171**
	(0.61)	(0.56)	(1.09)	(1.26)
open	2.646**	-0.053	4.227**	6.558***
	(1.08)	(1.20)	(1.77)	(2.24)
ecodev	-8.955***	4.582**	3.528	-3.072
	(2.41)	(2.26)	(3.45)	(3.98)
ecosize	8.995***	-1.198	-11.06***	-5.560
	(2.75)	(2.68)	(4.01)	(4.45)
inf	-8.026***	-3.396***	-3.456*	-3.276
	(1.75)	(1.13)	(1.90)	(3.40)
reserve	-0.076*	0.026	-0.112	-0.182*
	(0.04)	(0.04)	(0.08)	(0.10)
exdebt	-0.421	0.390	-2.191***	-2.149**
	(0.57)	(0.53)	(0.82)	(0.92)
totshk	2.777*	-0.546	0.036	0.531
	(1.63)	(1.51)	(2.62)	(2.98)
monshk	-1.047	-0.683	-1.245	-1.455
	(1.54)	(1.64)	(1.98)	(2.28)
fd	6.223***	0.864	9.732***	13.16***
	(1.51)	(1.38)	(2.48)	(3.04)
kaopen	-0.505***	-0.297*	0.446*	0.514*
	(0.17)	(0.15)	(0.23)	(0.28)
demo	-0.024	-0.090**	-0.323***	-0.666***
	(0.04)	(0.04)	(0.07)	(0.14)
polin	0.136	-0.048	0.496***	0.875***
	(0.11)	(0.11)	(0.19)	(0.24)
N	664	672	542	478
LR	117.2***	141.9***	127.7***	135.9***

Note: 1.The dependent variable, EER, equals 1 if fixer, and zero otherwise.
2.*, **and ***denote 10%, 5% and 1% confidence level.
3.Robust standard errors clustered at the country level in parentheses.
4.Year dummies not reported.

Table 5-3 Fixed effect estimator (intensive margin)

	SH	IMF	RR	RR_D
intmar	0.195	0.968**	-0.355	-0.218
	(0.31)	(0.43)	(0.45)	(0.48)
open	1.648	-1.554	2.948	3.716*
	(1.08)	(1.28)	(1.83)	(2.10)
ecodev	-8.028***	3.722*	3.809	-2.740
	(2.41)	(2.21)	(3.46)	(3.98)
ecosize	8.020***	-0.854	-11.15***	-5.517
	(2.77)	(2.45)	(4.00)	(4.46)
inf	-8.108***	-3.487***	-3.809**	-4.415
	(1.76)	(1.13)	(1.86)	(3.22)
reserve	-0.064	0.020	-0.086	-0.160
	(0.04)	(0.04)	(0.07)	(0.10)
exdebt	-0.214	0.373	-1.717**	-1.332
	(0.57)	(0.54)	(0.78)	(0.86)
totshk	2.795*	-0.422	0.044	0.831
	(1.63)	(1.53)	(2.59)	(2.90)
monshk	-1.583	-1.005	-1.231	-1.309
	(1.51)	(1.65)	(1.98)	(2.27)
fd	6.149***	1.532	8.470***	11.63***
	(1.50)	(1.43)	(2.43)	(2.96)
kaopen	-0.607***	-0.248*	0.297	0.255
	(0.16)	(0.15)	(0.22)	(0.25)
demo	-0.020	-0.098**	-0.300***	-0.624***
	(0.04)	(0.04)	(0.07)	(0.14)
polin	0.195*	-0.051	0.564***	0.908***
	(0.10)	(0.11)	(0.18)	(0.23)
N	666	674	542	478
LR	112.3***	147.4***	123.5***	129.4***

Note: 1.The dependent variable, EER, equals 1 if fixer, and zero otherwise.
2.*, **and ***denote 10%, 5% and 1% confidence level.
3.Robust standard errors clustered at the country level in parentheses.
4.Year dummies not reported.

Table 6-1 Random effect estimator (overall indicator)

	SH		IMF		RR		RR_D	
	RE probit	RE Logit	RE probit	RE Logit	RE probit	RE Logit	RE probit	RE Logit
exdiv	0.390**	0.790***	0.336**	0.570*	-0.057	-0.028	0.083	0.229
	(0.15)	(0.28)	(0.17)	(0.29)	(0.21)	(0.38)	(0.23)	(0.47)
open	0.637	1.135	-0.227	-0.575	0.979	1.690	1.524*	2.631
	(0.50)	(0.88)	(0.57)	(0.99)	(0.72)	(1.30)	(0.78)	(1.85)
ecodev	-0.447	-0.864	1.542***	2.707***	-1.010**	-2.168***	-1.582**	-3.323***
	(0.37)	(0.65)	(0.45)	(0.80)	(0.51)	(0.80)	(0.77)	(1.26)
ecosize	-0.348	-0.618	-0.792***	-1.363***	-0.934***	-2.135***	-0.741**	-1.310**
	(0.22)	(0.38)	(0.27)	(0.44)	(0.24)	(0.37)	(0.33)	(0.63)
inf	-3.617***	-6.797***	-1.760***	-3.155***	-2.272***	-5.161***	-2.825*	-5.305*
	(0.79)	(1.59)	(0.56)	(1.05)	(0.75)	(1.69)	(1.50)	(2.78)
reserve	-0.021	-0.033	0.003	0.015	-0.040	-0.080	-0.060	-0.147*
	(0.02)	(0.04)	(0.02)	(0.04)	(0.03)	(0.06)	(0.04)	(0.08)
exdebt	-0.165	-0.294	0.167	0.253	-0.735**	-1.286*	-0.606	-0.830
	(0.30)	(0.54)	(0.29)	(0.51)	(0.37)	(0.68)	(0.40)	(0.79)
totshk	0.909	1.708	-0.458	-0.785	0.560	1.102	0.138	0.312
	(0.87)	(1.54)	(0.87)	(1.49)	(1.23)	(2.25)	(1.35)	(2.57)
monshk	-0.497	-1.216	-0.539	-1.067	-0.997	-1.983	-0.851	-1.817
	(0.87)	(1.50)	(0.93)	(1.60)	(1.02)	(1.85)	(1.12)	(2.14)
fd	3.289***	6.084***	1.316*	2.248*	4.143***	8.511***	5.035***	10.55***
	(0.75)	(1.38)	(0.73)	(1.29)	(1.07)	(2.03)	(1.27)	(2.40)
kaopen	-0.272***	-0.479***	-0.108	-0.187	0.069	0.100	0.096	0.169
	(0.08)	(0.14)	(0.08)	(0.14)	(0.10)	(0.18)	(0.13)	(0.23)
demo	-0.037*	-0.064*	-0.057***	-0.102***	-0.131***	-0.266***	-0.238***	-0.518***
	(0.02)	(0.04)	(0.02)	(0.04)	(0.03)	(0.05)	(0.05)	(0.10)
polin	0.102*	0.174*	-0.021	-0.036	0.195**	0.399**	0.324***	0.690***
	(0.06)	(0.10)	(0.06)	(0.10)	(0.08)	(0.16)	(0.11)	(0.19)
N	1256	1256	1245	1245	1273	1273	1126	1126
Wald Chi2	93.23***	85.63***	120.5***	111.1***	108.2***	108.0***	93.12***	117.5***

Note: 1.The dependent variable, EER, equals 1 if fixer, and zero otherwise.

2.*, **and ***denote 10%, 5% and 1% confidence level.

3.Robust standard errors clustered at the country level in parentheses.

4.Dummies for landlocked countries and colonial origin, year dummies and constant are not reported.

Table 6-2 Random effect estimator (extensive margin)

	SH		IMF		RR		RR_D	
	RE probit	RE Logit	RE probit	RE Logit	RE probit	RE Logit	RE probit	RE Logit
extmar	0.995***	1.893***	0.190	0.228	1.292**	2.452**	1.598***	2.922***
	(0.30)	(0.53)	(0.27)	(0.48)	(0.51)	(1.15)	(0.57)	(1.06)
open	1.310**	2.478***	0.016	-0.172	1.844**	3.597**	2.947***	5.222***
	(0.51)	(0.90)	(0.59)	(1.03)	(0.85)	(1.77)	(0.92)	(1.78)
ecodev	-0.576*	-1.103*	1.586***	2.788***	-1.526***	-2.905**	-1.962***	-4.012***
	(0.35)	(0.61)	(0.45)	(0.80)	(0.57)	(1.32)	(0.56)	(1.17)
ecosize	-0.274	-0.467	-0.799***	-1.400***	-0.666**	-1.262	-0.633	-1.245*
	(0.20)	(0.36)	(0.26)	(0.45)	(0.33)	(0.83)	(0.46)	(0.64)
inf	-3.606***	-6.683***	-1.806***	-3.289***	-1.962**	-4.748***	-2.388	-4.251
	(0.79)	(1.57)	(0.57)	(1.06)	(0.78)	(1.76)	(1.58)	(2.80)
reserve	-0.021	-0.031	0.006	0.022	-0.048	-0.098	-0.064	-0.149*
	(0.02)	(0.04)	(0.02)	(0.04)	(0.03)	(0.07)	(0.04)	(0.08)
exdebt	-0.364	-0.659	0.195	0.321	-1.067***	-1.869**	-1.082**	-1.902**
	(0.30)	(0.53)	(0.29)	(0.51)	(0.40)	(0.74)	(0.43)	(0.87)
totshk	0.989	1.816	-0.400	-0.696	0.680	1.176	0.155	0.566
	(0.84)	(1.50)	(0.87)	(1.48)	(1.22)	(2.25)	(1.56)	(2.50)
monshk	-0.146	-0.556	-0.490	-0.958	-1.079	-2.053	-0.956	-2.075
	(0.88)	(1.52)	(0.94)	(1.60)	(1.04)	(1.89)	(1.14)	(2.14)
fd	2.930***	5.198***	1.098	1.900	4.814***	8.993***	5.508***	11.14***
	(0.72)	(1.30)	(0.72)	(1.27)	(1.15)	(2.52)	(1.22)	(2.36)
kaopen	-0.219***	-0.384***	-0.139*	-0.244*	0.156	0.259	0.202	0.336
	(0.08)	(0.15)	(0.08)	(0.14)	(0.12)	(0.23)	(0.13)	(0.25)
demo	-0.041**	-0.074**	-0.058***	-0.104***	-0.141***	-0.284***	-0.259***	-0.543***
	(0.02)	(0.04)	(0.02)	(0.04)	(0.03)	(0.06)	(0.04)	(0.09)
polin	0.075	0.122	-0.019	-0.027	0.169**	0.321*	0.305***	0.617***
	(0.06)	(0.10)	(0.06)	(0.10)	(0.08)	(0.17)	(0.10)	(0.19)
N	1253	1253	1242	1242	1271	1271	1124	1124
Wald Chi2	96.62***	89.49***	120.0***	110.8***	85.24***	64.09***	128.8***	104.1***

Note: 1.The dependent variable, EER, equals 1 if fixer, and zero otherwise.

2.*, **and ***denote 10%, 5% and 1% confidence level.

3.Robust standard errors clustered at the country level in parentheses.

4.Dummies for landlocked countries and colonial origin, year dummies and constant are not reported.

Table 6-3 Random effect estimator (intensive margin)

	SH		IMF		RR		RR_D	
	RE probit	RE Logit	RE probit	RE Logit	RE probit	RE Logit	RE probit	RE Logit
intmar	0.136	0.286	0.389*	0.712**	-0.342	-0.602	-0.212	-0.338
	(0.15)	(0.27)	(0.21)	(0.36)	(0.22)	(0.43)	(0.25)	(0.48)
open	0.719	1.236	-0.494	-1.110	1.558*	3.095**	2.042**	3.402*
	(0.52)	(0.91)	(0.60)	(1.06)	(0.81)	(1.57)	(0.86)	(2.03)
ecodev	-0.444	-0.837	1.580***	2.773***	-1.267**	-2.686***	-1.682**	-3.675***
	(0.37)	(0.65)	(0.46)	(0.81)	(0.57)	(1.00)	(0.70)	(1.27)
ecosize	-0.376*	-0.670*	-0.881***	-1.535***	-0.819***	-1.430**	-0.747**	-1.641**
	(0.22)	(0.38)	(0.28)	(0.46)	(0.19)	(0.72)	(0.38)	(0.77)
inf	-3.694***	-6.966***	-1.916***	-3.435***	-2.282***	-5.248***	-2.917*	-5.200*
	(0.79)	(1.57)	(0.56)	(1.05)	(0.76)	(1.79)	(1.52)	(2.85)
reserve	-0.017	-0.024	0.006	0.021	-0.037	-0.078	-0.053	-0.122
	(0.02)	(0.04)	(0.02)	(0.04)	(0.03)	(0.06)	(0.04)	(0.07)
exdebt	-0.179	-0.297	0.201	0.301	-0.901**	-1.457**	-0.742*	-1.203
	(0.30)	(0.53)	(0.29)	(0.51)	(0.38)	(0.69)	(0.41)	(0.77)
totshk	0.990	1.834	-0.489	-0.840	0.425	0.554	0.018	0.508
	(0.87)	(1.54)	(0.89)	(1.51)	(1.26)	(2.36)	(1.42)	(2.60)
monshk	-0.479	-1.125	-0.548	-1.103	-1.039	-1.917	-0.869	-1.739
	(0.87)	(1.49)	(0.94)	(1.61)	(1.04)	(1.90)	(1.13)	(2.14)
fd	2.990***	5.401***	1.368*	2.367*	3.989***	7.975***	4.777***	9.695***
	(0.74)	(1.34)	(0.73)	(1.30)	(1.11)	(2.12)	(1.33)	(2.55)
kaopen	-0.296***	-0.534***	-0.136*	-0.234*	0.063	0.122	0.084	0.130
	(0.08)	(0.14)	(0.08)	(0.14)	(0.11)	(0.20)	(0.12)	(0.23)
demo	-0.037*	-0.064*	-0.057***	-0.101***	-0.132***	-0.271***	-0.243***	-0.521***
	(0.02)	(0.04)	(0.02)	(0.04)	(0.03)	(0.06)	(0.04)	(0.11)
polin	0.114**	0.199**	-0.015	-0.026	0.194**	0.403**	0.328***	0.684***
	(0.06)	(0.10)	(0.06)	(0.10)	(0.08)	(0.17)	(0.10)	(0.20)
N	1256	1256	1245	1245	1273	1273	1126	1126
Wald Chi2	90.34***	83.56***	118.3***	109.0***	97.77***	67.89***	91.13***	77.92***

Note: 1.The dependent variable, EER, equals 1 if fixer, and zero otherwise.

2.*, **and ***denote 10%, 5% and 1% confidence level.

3.Robust standard errors clustered at the country level in parentheses.

4.Dummies for landlocked countries and colonial origin, year dummies and constant are not reported.

Table A1 Country coverage

Albania	Colombia	Latvia	Peru
Algeria	Congo, Dem. Rep.	Lithuania	Philippines
Argentina	Congo, Rep.	Macedonia, FYR	Romania
Armenia	Costa Rica	Madagascar	Russian Federation
Azerbaijan	Cote d'Ivoire	Malaysia	Senegal
Bangladesh	Dominican Republic	Mali	South Africa
Belarus	Ecuador	Mauritania	Sri Lanka
Benin	Egypt, Arab Rep.	Mauritius	Sudan
Bolivia	El Salvador	Mexico	Syrian Arab Republic
Brazil	Gabon	Moldova	Tanzania
Bulgaria	Gambia, The	Morocco	Thailand
Burkina Faso	Guatemala	Mozambique	Togo
Burundi	Honduras	Nepal	Tunisia
Cameroon	India	Nicaragua	Turkey
Cape Verde	Indonesia	Pakistan	Uganda
Central African Republic	Jordan	Panama	Ukraine
Chad	Kazakhstan	Papua New Guinea	Uruguay
China	Kenya	Paraguay	Zambia

Table A2 Data sources

Variables	Definition and Sources
Dependent variables	
RR	Reinhart and Rogoff (2004) classifications http://www.carmenreinhart.com
SH	Shambaugh (2004)
IMF	The IMF classification http://www.carmenreinhart.com
Independent variables	
exdiv	Overall index of export diversification https://www.imf.org/external/np/res/dfidimf/diversification.htm
extmar	Extensive margin of export diversification https://www.imf.org/external/np/res/dfidimf/diversification.htm
intmar	Intensive margin of export diversification https://www.imf.org/external/np/res/dfidimf/diversification.htm
Control variables	
OCA factors	
Trade openness (open)	(Exports+imports)/GDP, World Development Indicators (WDI)
Economic development (ecodev)	The log of GDP per capital (in PPP) World Development Indicators (WDI)
Economic size (ecosize)	The log of GDP (in PPP) World Development Indicators (WDI)
Macro economic and external factor	
Inflation	CPI/(1+CPI), WDI
International reserve	WDI
External debt	WDI
Real shocks	standard deviation of the logarithm of terms of trade over the previous five years, WDI
Monetary shocks	standard deviation of the growth rate of broad money supply in the previous five years, WDI
Financial development	Private credit by deposit money banks and other financial institutions/GDP, World Bank
Capital account openness	De jure capital account openness of Chinn and Ito (2006) http://web.pdx.edu/~ito/Chinn-Ito_website.htm
Political factors	
Democracy (demo)	Polity IV Indicator of democracy; http://www.systemicpeace.org
Political instability (polin)	Political instability indicator; http://www.systemicpeace.org
Dummy variables	
Landlocked	1=landlocked country, 0, otherwise. CIA World Fact Book.
Colonial origin	0=never colonized by a western overseas colonial power; 1=Dutch; 2=Spanish; 3=Italian; 4=U.S.; 5=British; 6=French; 7=Portuguese; 8=Belgian; 9=British-French; 10=Australian. The QOG dataset

Table A3 Descriptive statistics

	peg_rr	peg_imf	peg_sh	exdiv	extmar	intmar	open	ecodev	ecosize	inf	reserve	exdebt	totshk	monshk	kaopen	fd	demo	polin
Mean	0.336	0.471	0.400	3.498	0.587	2.912	0.648	7.980	24.37	0.120	4.793	0.562	0.153	0.880	-0.306	0.231	1.698	0.994
Sd.	0.472	0.499	0.489	0.988	0.591	0.798	0.317	0.892	1.707	0.149	4.480	0.368	0.102	0.091	1.352	0.156	6.56	1.923
Min.	0.000	0.000	0.000	1.702	-0.045	1.451	0.091	5.711	19.83	-0.150	0.864	0.074	0.000	0.213	-1.864	0.016	-10.00	0.000
Max.	1.000	1.000	1.000	6.084	2.826	5.862	1.988	9.776	28.96	0.992	30.79	2.230	1.122	1.000	2.439	0.764	10.00	10.00
Correlation matrix																		
peg_rr	1.00																	
peg_imf	0.53***	1.00																
peg_sh	0.66***	0.59***	1.00															
exdiv	0.22**	0.34***	0.26***	1.00														
extmar	0.28***	0.35***	0.31***	0.59***	1.00													
intmar	0.07***	0.15***	0.09*	0.80***	-0.01*	1.00												
open	0.15***	0.12***	0.13***	0.07***	-0.19***	0.22***	1.00											
ecodev	-0.16***	-0.21***	-0.17***	-0.42***	-0.33***	-0.27***	0.23***	1.00										
ecosize	-0.27***	-0.38***	-0.29***	-0.54***	-0.35***	-0.40***	-0.34***	0.48***	1.00									
inf	-0.26***	-0.24***	-0.29***	-0.16***	-0.08***	-0.14***	-0.22***	0.18***	0.22***	1.00								
reserve	-0.02	0.08***	0.03	-0.00	0.04*	-0.03	-0.10***	0.02	0.15***	0.08***	1.00							
exdebt	-0.02	0.05	0.01	0.19***	0.10***	0.15***	0.19***	-0.27***	-0.32***	0.04*	0.07***	1.00						
totshk	0.00	-0.00	-0.03	0.19***	-0.01	0.24***	0.06**	-0.06**	-0.03	0.09***	0.00	0.03	1.00					
monshk	0.09***	0.03	0.02	0.19***	0.15***	0.12***	0.04*	0.06**	-0.21***	0.29***	-0.10***	0.15***	0.10***	1.00				
kaopen	0.03	-0.14***	-0.06**	-0.25***	-0.24***	-0.14***	0.18***	0.29***	0.05*	-0.19***	-0.15***	-0.07***	-0.04*	-0.00	1.00			
fd	-0.03	-0.02	-0.01	-0.35***	-0.27***	-0.24***	0.26***	0.31***	0.24***	-0.16***	0.17***	-0.06***	-0.14***	-0.32***	0.19***	1.00		
demo	-0.21***	-0.26***	-0.22***	-0.35***	-0.29***	-0.22***	0.09***	0.27***	0.13***	0.06***	-0.17***	-0.11***	-0.11***	0.00	0.20***	0.04*	1.00	
polin	-0.18***	-0.20***	-0.18***	-0.07**	0.05**	-0.13***	-0.30***	-0.13***	0.34***	0.05**	0.04*	-0.08*	0.00	-0.21***	-0.09***	-0.06***	-0.00	1.00

Note: *, **and ***denote 10%, 5% and 1% confidence level.